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Editor's Foreword

Psychology Days in Zadar is an international conference organized biennially by the Department of Psychology of the University of Zadar. It started over 40 years ago and has evolved over decades into a recognizable psychology conference that attracts many researchers from Croatia and abroad. Participants to the conference may enjoy high quality dissemination of scientific and professional knowledge from all psychology fields, as well as the pleasant and warm Mediterranean surroundings of the city of Zadar along with its beautiful nature and distinct culture.

The 20th jubilee Psychology Days conference in Zadar was held on May 19-21 2016. It was organized by an international organizational-scientific committee and gathered over 400 participants from Croatia, Austria, Belgium, Bosnia and Herzegovina, Ireland, Serbia, Slovenia, Sweden, US, and UK who presented their work through three invited lectures, three symposia, thirteen oral sessions, two poster sessions, four workshops, two round tables and three student sessions. The number of participants, as well as the amount of good quality research papers which were presented at the conference, encouraged us to engage in a demanding but rewarding process of collecting the most interesting research to be published in the Book of Selected Proceedings of 20th Psychology Days in Zadar.

The book contains the full-length versions of the invited lectures and individual papers that were presented at the conference, submitted by its authors, and selected on the basis of the review process. Each paper underwent a two-round review process and was carefully evaluated by at least two expert reviewers. It should be noted that the review process was anonymous. Also, reviewers came both from Croatia and abroad and their full list can be found at the end of the book. Upon the finalization of the review process, twenty-nine papers were accepted for publication in the Book of Selected Proceedings of 20th Psychology Days in Zadar. The selected papers present research from diverse psychology disciplines and hopefully would make an important and quality contribution to the existing base of scientific knowledge.

I would like to take this opportunity and thank all the authors for choosing the Book of Selected Proceedings of the 20th Psychology Days in Zadar to have their valuable work published, as well as for their prompt submission of the original and revised manuscripts respecting the reviewers' suggestions. I also express my gratitude to the reviewers who agreed to spend their valuable time and effort to carefully evaluate the submitted papers and provide important insights and suggestions, which undoubtedly has increased the overall scientific quality of this publication. Lastly, I would like to acknowledge the excellent and demanding work of the members of the Editorial Board who made their invaluable contribution through all stages of preparing this volume – from reading the originally submitted papers, suggesting suitable reviewers to the careful reviewing of the papers.

On behalf of the members of the Editorial Board and all the authors whose works are published in this volume, I wish to express my sincere hopes and aspirations that the Book of Selected Proceedings of the 20th Psychology Days of Zadar will be recognized as a respectable source of scientific information for a wide range of interested audience. Finally, this publication should serve as an acknowledgment for all the hard work and efforts that members of the Department of Psychology invested through years to make Psychology Days in Zadar an internationally visible and attractive place of scientific knowledge dissemination for many distinguished researchers and experts in the field of psychology.

Irena Burić, Editor-in-Chief

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Multiple Lights on the Dark Side of Personality

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Abstract

This chapter reviews key lines in the history of the conceptualization and assessment of dark side personality or dysfunctional personality tendencies, with specific attention of its implications for the employability of persons and how such tendencies are manifested in work behavior. Direct and indirect ways to assess dark traits are reviewed and discussed, including the prevalence of dysfunctional tendencies and their subclinical manifestations. The chapter closes with the identification of key issues that need the immediate attention of both researchers and practitioners to advance this emergent field both scientifically and professionally.

Keywords: Dysfunctional Tendencies, Dark Side, Dark Triad, Employment Screening, Employment Risk Assessment

Introduction

The management and human resources literature and professional practice have been heavily influenced by positive psychology in the past decades. There was huge attention in these fields for successes, with a whole series of ceremonies and awards, highlighting and underscoring the fields' progress and achievements in their recent past. This bright side focus has been overshadowed in the past 10 years by many examples of management derailment or mismanagement that have been widely discussed in the public domain. In many instances, personal factors were clearly central and assumed to have at least contributed to the problematic situations. Traits such as greed or the overly confident and risky mindset of bankers and brokers were vast ingredients explaining the financial crises that hit the world in 2008 and subsequent years. The case of Bernie Madoff, a former NASDAQ president, who fooled and financially misled hundreds of investors including his own children, generated a lot of discussion on corporate psychopathy (Babiak & Hare, 2007) and ethical business practices. Along with these eye-catching and highly mediatized examples, recent organization surveys show that on average 50% of employees are dissatisfied with the leadership they experience (Hogan, Hogan, & Kaiser, in press). A recent Gallup survey (<https://q12.gallup.com>) organized in 142 countries/areas revealed that only 13% of employees on average describe themselves as engaged, 63% as not engaged, and 24% even described themselves as actively disengaged. These findings are more surprising, given the large amounts of money that have been invested in human resources development and leadership training programs in the past years. Reviewing this diversity of alarming findings sharpened the interest of industrial and organizational psychologists during the past decade in studying the dark side of people in organizations, to have a better understanding of how it went wrong in organizations, what we can learn from this history, and how to prevent these phenomena.

Robert and Joyce Hogan were among the first to explicitly call the attention of industrial and organizational psychologists to a broad spectrum of dysfunctional tendencies with their Hogan Development Survey (HDS; Hogan & Hogan, 2001). The HDS distinguishes 11 tendencies that may hinder adequate functioning at work. The HDS scales Skeptical, Reserved, Imaginative, Mischievous, Excitable, Histrionic, Bold, Cautious, Dutiful, Obsessive-Compulsive and Leisurely refer to subclinical manifestations of 11 personality disorders, 10 of which are listed in the DSM-IV nomenclature (APA; American Psychiatric Association, 1994), except for Leisurely. Leisurely refers to the Passive-Aggressive personality disorder, which was listed in the appendix of DSM-IV, though clearly has a history in IO (Industrial/Organizational) psychology. The passive-aggressive behavior pattern was initially described by Menninger to refer to soldiers' reaction to military compliance during World War II.

Although these tendencies were initially considered as weaknesses given their clinical background, more current thinking also considers (some) of them, under specific circumstances, as a kind of strength (Hogan & Kaiser, 2005). The employee with cautious characteristics, for example, may suffer from indecisiveness and is risk-averse, probably missing opportunities in competitive job environments, though is generally careful and precise, which means an asset in many job contexts. Likewise, an obsessive-compulsive collaborator is working hard and up to high standards, but may be overly perfectionistic and micro-managing, even at risk of losing the bigger picture and not delivering on time. Indeed, nowadays, coaching and personal development programs are not only about learning to deal with the sharp tendencies of one's personality, though may also be targeted at challenging the notion of 'not enough dark traits', suggesting that there may be a "dark optimum" of these tendencies in some work circumstances or for particular jobs (Wille, De Fruyt, & De Clercq, 2013).

Besides these broader conceptualizations of dysfunctional tendencies, considerable attention has also been paid to the configural dark side patterns. One that achieved probably most attention is the Dark Triad (Paulhus & Williams, 2002; Wu & Lebreton, 2011) cluster, referring to the traits of Machiavellianism, Antisocial tendencies and Narcissism. Related, though probably best kept conceptually distinct, is the literature on the corporate psychopath (Babiak & Hare, 2007). In the popular human resources literature, the terms antisocial and psychopathy are sometimes used interchangeably, though given its strong negative connotation, it is probably best to use the term psychopathy with caution. Traits associated with psychopathy include insincerity, pathological lying, egocentricity, unreliability, lack of remorse and an inability to experience empathy or concern for others. Psychopathy is further characterized by a pattern of callous-unemotional traits (Decuyper, De Caluwe, De Clercq, & De Fruyt, 2014), reflecting coldness and indifference to what other people feel. Finally, psychopaths often use superficial charm to get what they want. The prevalence of "clinical" psychopaths in the general population is very low (around 1%). Many psychopaths show antisocial characteristics, though roughly only 1 in 4 persons with antisocial tendencies exhibit psychopathic features. To conclude, the dark side of personality at work has many shades, including the previously described tendencies, but also

encompasses counterproductive behavior, integrity problems, grey absenteeism (being present at work, though becoming passive and not productive), aggression towards colleagues and customers, and workplace bullying.

The Bright And Dark Continuum

In addition to the Hogan Development Survey (HDS) and Dark Triad measures, there have only been a few additional attempts to conceptualize and assess dark side tendencies in the workplace, beyond the clinical field. The conceptually probably most challenging and promising one is considering extreme positions (either low or high) on general personality traits as indicative of a risk for exhibiting dark side behavior, pending on contextual factors. In addition, some new broader but also more specific measures were introduced to assess derailment risk, beyond the DSM-5 trait set (American Psychiatric Association, 2013) to help assess dysfunctional manifestations of traits.

Utility of FFM personality disorder compounds. The categorical conceptualization and operationalization of personality disorders has been heavily questioned for almost 3 decades, though finally remained unchanged in the most recent version of DSM-5. Criticisms are multiple and refer to the heterogeneous nature of the symptoms per disorder, the fact that patient samples often qualify for multiple disorders, the lack of clear demarcation points for personality disorder symptoms, and the large number of patients diagnosed as Personality-Disorder Not Otherwise Specified (PD NOS). Together these criticisms show that the current taxonomic system is inadequate to describe personality pathology in patients (Widiger & Clark, 2000; Widiger & Trull, 2007). Several dimensional models describing dysfunctional personality were introduced, as alternatives to the categorical approach, with the Five-Factor Model (FFM) of general personality as a prominent replacement candidate (Widiger, Livesley, & Clark, 2009; Widiger & Mullins-Sweatt, 2009; Widiger, Trull, Clarkin, Sanderson, & Costa, 2002). The proposition of a general model of personality perfectly aligns with the notion that personality disorders are disorders of personality. Samuel and Widiger (2008) conducted a meta-analytic review of the relationships between FFM facets and personality disorders, to be in a better position to describe personality disorders in terms of high and low scores on the 30 facets of the FFM assessed with the NEO-PI-R (Costa & McCrae, 1992).

Miller and colleagues (2005) introduced a practical way to describe personality pathologies in FFM terms, showing that an additive FFM personality disorder (FFMPD) compound based on selective (reversed scored) FFM facets was as good a proxy for personality pathology as more complex profile analysis techniques comparing a patient's FFM scores with different personality disorder FFM configurations. For example, the dependent FFMPD compound is computed as the sum of the scores on the following NEO-PI-R (Costa & McCrae, 1992) facets: N1: Anxiety + N4: Self-Consciousness + N6: Vulnerability + E3r (Assertiveness – reverse scored) + A1: Trust + A4: Compliance + A5: Modesty. Miller et al. (2005) suggest flagging people as 'at risk' who score 1.5 standard deviation above the mean on a particular FFMPD compound, and recommend to follow these individuals further up with structured interviews. The FFMPD technique hence functions as a kind of screening instrument. Bastiaansen, Rossi and De Fruyt (2013) provided further empirical suggestions to refine the set of FFM facets that go into the FFM PD compound to make these more discriminant ones valid. Given that this technique uses a general personality descriptive model (and inventory), the technique opens up a series of other assessment applications beyond just clinical use, where the identification of subclinical manifestations of personality dysfunction is important, for example to prevent inadequate functioning at work.

De Fruyt and colleagues (2009) were among the first to apply and demonstrate the utility of the FFMPD technique for industrial and organizational applications. Given that it is likely that respondents will provide a favorable description of their personality in development (mid stakes) or selection assessments (high stakes), these authors suggested new FFMPD compound cut-offs that were computed on normative samples that were administered the NEO-PI-R in respective contexts of career development or selection questions. De Fruyt et al. (2009) further examined the utility of this technique to screen job applicants for different jobs, including public transport staff (drivers, administrative and technical personnel, and security staff) and police recruits. An attractive feature of the compound technique for industrial and organizational psychologists is that it adds an additional way to analyze the personality facets of the NEO-PI-R, when this inventory is used to get a personality picture of an applicant in the course of selection assessment. Besides a description of the applicant's general personality, the FFMPD compounds provide an additional personality derailment risk assessment. It is important to underscore that those flagged as at risk, are not necessarily pathological nor dysfunctional per se. Potential for

dysfunction relying on general personality inventories will always have to be evaluated against the characteristics of a particular job or environment (see further in this chapter). The technique only helps in identifying individuals that may need additional assessment and interviewing, before considered eligible for the job.

Wille, De Fruyt and De Clercq (2013) demonstrated the utility and validity of the FFMPD compounds in a 15-year longitudinal study following a large sample of university undergraduates in the exploration phase of their unfolding careers. Participants were administered the NEO-PI-R prior to graduation and also after 15 years on the labor market. Subjective (perceived job and career satisfaction) and objective (income, hierarchical position, number of subordinates) indices of career success were examined after 15 years on the labor market. Specific FFMPD compounds were predictive of subjective and objective career advancement indicators concurrently, but some also predicted across the 15 year time span. The avoidant FFMPD compound, for example, was consistently negatively associated with career satisfaction, managerial level, number of subordinates, and income across both assessment occasions, separated by 15 years. FFM PD counts were not only negatively associated with outcomes (dark side effects), but the narcissistic and antisocial FFMPDs were also concurrently positively associated with managerial level and the antisocial FFMPD with number of subordinates, underscoring also positive effects of FFMPD traits.

Finally, De Fruyt, Wille and Furnham (2013) analyzed personality data obtained from a large sample of middle and senior managers (N= 6774; 21.1% females, mean age = 41.64 years, SD = 7.05) administered both the NEO-PI-R and HDS in the context of a development center. Data were collected across multiple companies over several years, to have a large enough sample available for analyses per industrial/vocational sector. De Fruyt et al. (2013) first examined the correspondence between FFMPD compounds and their corresponding HDS scales. In addition, the data set was split according to industrial/vocational sector, describing the percentage of flagged individuals when applying the 1.5 standard deviation above the mean cut-off rule. Prevalence rates were compared to percentages of clinically diagnosed personality disorders in the NESARC study in the US (Ettner, Maclean, & French, 2011). In the entire sample, 3.8% of the sample was flagged as at risk for the schizoid pattern and 11.6% for the obsessive-compulsive personality pattern, with the other tendencies providing percentages in-between those. In the subgroup "Legal sector", for example, 12.4% of the group was identified as having avoidant personality patterns and 10.6% as exhibiting dependent FFMPD patterns. Across all other sectors (banking, accounting, engineering, telecom, retail, ...), prevalence rates for these two specific patterns were all below 5%. The dependent and avoidant personality patterns do not align with the function requirements for working in this type of environments, underscoring their utility for the selection process. In the "Retail" subgroup, on the other hand, 15.5% qualified for the histrionic pattern, which is probably more an asset for working in a flashy and hip designer and sales environment.

Specific measures and approaches. In addition to using models capturing general personality trait measures to assess potential derailment, also more comprehensive and specific measures to assess maladaptive traits were developed. Mathieu, Hare, Jones, Babiak, and Neumann (2013) recently introduced the B-scan 360, a corporate psychopathy measure, useful in 360 degree development assessment exercises. Rolland and Pichot (2007) developed Tendances Dysfonctionnelles (TD-12), an inventory to identify 12 dysfunctional personality styles hindering work performance. TD-12 assesses the 10 dysfunctional personality patterns included in DSM-IV, supplemented with passive-aggressive and depressive personality dysfunctional tendencies. De Fruyt and Rolland (2003) used this inventory in a study in military personnel.

Parallel to these specific developments, DSM-5 was published in 2013, including in its Section III a trait system to describe personality disorders that needs further evaluation and research. Krueger and colleagues (2012) developed an inventory, entitled the Personality Inventory for DSM-5 (PID-5), assessing these 25 traits, subsumed under five higher-order trait factors: *Negative Affectivity*, includes Emotional lability, Anxiousness, Separation insecurity, Submissiveness, Hostility, and Perseveration; *Detachment* encompasses Withdrawal, Intimacy avoidance, Anhedonia, Depressivity, Restricted affectivity, and Suspiciousness; *Antagonism* includes Manipulativeness, Deceitfulness, Grandiosity, Attention seeking, and Callousness; *Disinhibition* entails Irresponsibility, Impulsivity, Distractibility, Risk taking, and Rigid perfectionism; *Psychoticism*, finally, includes the scales Unusual beliefs and experiences, Eccentricity, Cognitive and Perceptual dysregulation. Guenole (2014) has argued that this trait system could also be useful in the workplace, and recently developed the G-50 (Guenole, 2015), relying on this taxonomy, with 50 items to assess these broad five dysfunctional factors in the work context.

Prospects and challenges

The previous review made it clear that interest in the dark side has steadily been growing in the past years (Wille & de Fruyt, 2014). A tentative agenda is outlined below describing the key themes that deserve the attention of both practitioners and academics to move this field further.

Integrating the bright and dark side. The meta-analytic research by Samuel and Widiger (2008) and the strong associations between FFMPD compounds and their clinical counterparts make it clear that there is substantial overlap between general and maladaptive trait models. Indeed, extreme levels of general traits have been considered as potentially maladaptive, but may also be a desired characteristic, dependent on the situational characteristics. Conditional on the nature of the job or context, dark tendencies are sometimes considered an asset. Except for the FFMPD compounds, the bright and the dark side of personality are usually assessed separately from each other, implying that the practitioner needs two methods or inventories to administer to applicants or incumbents. Given the strong interrelationship between general and maladaptive traits, this is probably not the most optimal and efficient assessment scenario for an applied psychologist. Ideally for professional assessment practice, general and maladaptive item content are represented in a single inventory. Such new scales can be constructed using item response theory, to assure sufficient coverage by different items across the latent continuum of each trait construct (Samuel, Simms, Clark, Livesley, & Widiger, 2010; Suzuki, Samuel, Pahlen, & Krueger, 2015).

Predictive validity. A legitimate and crucial concern is whether dark trait measures predict outcome variance considered important on the labor market beyond general traits. Although dysfunctional tendencies might be interesting to study in their own right, from a practitioners' point of view, it is important to demonstrate incremental validity beyond FFM personality assessment as usual. The demonstration of predictive validity is already challenging, because outcomes are usually determined by multiple factors, including (dysfunctional) personality. Rolland and De Fruyt (2003), for example, showed that, when looking at too broad outcomes, maladaptive models do not predict variance beyond general traits. Maladaptive trait models probably best demonstrate their utility examining specific professional criteria, beyond the classic three, i.e. task, adaptive and contextual performance. Potentially interesting alternative and additionally important criteria might be counterproductive behaviors, work efficiency, micro-managing, careless risk-taking, and issues of integrity, just to list a few examples. The demonstration of incremental validity should hence be preceded by a careful analysis of the criteria maladaptive measures are assumed to predict beyond the big five. If necessary, new scales to assess these outcomes will have to be constructed.

Triggering the dark side. People usually show themselves from their best side, building a reputation in their personal networks. Hogan (Hogan et al., in press; 2000) argues that the dark side of personality is manifested when people get out of their comfort zone, in situations of stress or when fatigued, or in the absence of external control mechanisms, when they think they are not observed (De Fruyt et al., 2013). Specific situational characteristics seem to trigger something in the person(-ality), giving expression to either bright (desirable) or dark (undesirable) behaviors affecting their life or professional outcomes. The key issue becomes then to examine those situational triggers that are (co-)responsible for the manifestation of dysfunctional trait patterns, dark side behavior or (un)desirable outcomes. This line of reasoning is clearly spelled out in Tett and Burnett's trait activation theory (2003). Trait-activation theory has been taken as a basic framework to study the emergence and development of personality disorders (De Fruyt & De Clercq, 2014) or psychopathology in general (De Fruyt, De Clercq, De Clauwé, & Verbeke, 2016).

The systematic study of situational triggers was substantially hampered in the past by the absence of comprehensive and carefully developed taxonomies of situations, indicating the key variables characterizing situations. In the recent past, two situational taxonomies have been proposed that can move this field of triggering factors of dysfunctional traits forward. Relying on extensive empirical work, Rauthmann et al. (2014) recently proposed the DIAMONDS model, suggesting that everyday human situations can be broadly described by eight psychologically meaningful dimensions, i.e. Duty, Intellect, Adversity, Mating, pOsitivity, Negativity, Deception, and Sociality, summarized in the acronym DIAMONDS. This comprehensive taxonomy seems particularly useful to study situational trait triggers. An alternative has been the CAPTION-ing the situation model, a lexically-derived taxonomy of psychological situation characteristics developed by Parrigon, Woo, Tay and Wang (2016). This model distinguishes psychological situations relying on their Complexity, Adversity, Positive Valence, Typicality, Importance, Humor and Negative Valence. The availability of these two situational taxonomies opens a broad range of perspectives to study situational triggers of dark traits. These two models provide unique opportunities to investigate

under what circumstances dysfunctional tendencies appear and cause potential harm. In addition, these situational models may help to study how maladaptive traits and dark tendencies develop. At present, there is barely any knowledge on how dysfunctional tendencies develop.

Screening and interview. Dark side self-administered personality inventories are ideally accompanied by a behaviorally-oriented interview to additionally examine individuals flagged as at risk relying on their inventory scores. Inventories are ideal for a comprehensive screening, checking whether someone qualifies for one or more dysfunctional tendencies. Rather than selecting-out these persons a priori, these individuals need extra and specific interviewing. The development of an inventory-based assessment of dysfunctional personality should go hand-in-hand with the development of an adequate interview further exploring these specific tendencies, and evaluating these in situational contexts. Conducting such interviews with all applicants would be probably best, though it will be too time-consuming, making it financially unfeasible. The inventory-based first screening should help identify those individuals that require additional investigation and reduce substantially the interviewing workload.

Comprehensiveness. Although measures like TD-12 or HDS are examining multiple dysfunctional patterns, this does not mean that these tools provide the most comprehensive assessment of dysfunctional tendencies observable in the workplace. Future research should re-examine whether the tendencies that are currently assessed are prevalent and important enough to retain, whereas others may be missing in the available measures. Imposter tendencies, for example, may be a good candidate to add to the current set of dysfunctional tendencies. Imposter behaviors, turned out to be sufficiently prevalent, important for understanding individual's daily professional (dis)functioning and to be rooted well in people's personality (Vergauwe, Wille, Feys, De Fruyt, & Anseel, 2015). Likewise, 'selective memory' or 'denying/twisting' one's own words or commitments, is another frequently occurring dysfunctional tendency, which strongly affects interpersonal behaviors at work. Both phenomena may be potential expansions of current models of dysfunctional tendencies.

From select-out to development. Finally, and probably most important is that the assessment of dysfunctional tendencies is making a quick transition nowadays from a tool to select-out people to a method that is used to coach individuals who are already in the organization. This shift will have implications for the way these measures will be used and elaborated, but also for their accompanying reporting tools. This new form of application aligns with current coaching practices focusing on both strengths, but also targeting the employee's weak points. In this respect, one can expect more bottom-up evaluations of dysfunctional tendencies.

Epilogue

The present chapter has provided an overview of different ways to assess personality difficulties from a broad and applied perspective. It is clear that this is a scientifically emerging and challenging field with a potentially large impact on the world of professional psychological assessment. Moreover it is a field where different disciplines of psychology (personality, psychometrics, IO, clinical, developmental, ...) will have to work together to achieve useful results for both theory and practice. We hope this chapter is a first step in this direction.

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References

- American Psychiatric Association. (1994). *Diagnostic and statistical manual of mental disorders* (4th ed.). Washington, DC: Author.
- American Psychiatric Association. (2013). *Diagnostic and Statistical Manual of Mental Disorders - Fifth Edition*. Washington, DC: Author.
- Babiak, P., & Hare, R. D. (2007). *Snakes in suits: When psychopaths go to work*: Harper Collins Publishers.
- Bastiaansen, L., Rossi, G., & De Fruyt, F. (2013). Comparing Five Sets of Five-Factor Model Personality Disorder Counts in a Heterogeneous Sample of Psychiatric Patients. *European Journal of Personality*, 27(4), 377-388.

- Costa, P. T., & McCrae, R. R. (1992). *Revised NEO Personality Inventory and Five-Factor Inventory Professional Manual*. Odessa, FL: Psychological Assessment Resources.
- De Fruyt, F., & De Clercq, B. (2014). Antecedents of Personality Disorder in Childhood and Adolescence: Toward an Integrative Developmental Model. *Annual Review of Clinical Psychology, Vol 10, 10*, 449-476.
- De Fruyt, F., De Clercq, B., De Clauwé, E., & Verbeke, L. (2016). Personality development and psychopathology. In J. Specht (Ed.), *Personality Development in Context*: Elsevier.
- De Fruyt, F., De Clercq, B. J., Miller, J., Rolland, J. P., Jung, S. C., Taris, R., et al. (2009). Assessing Personality at Risk in Personnel Selection and Development. *European Journal of Personality, 23*(1), 51-69.
- De Fruyt, F., Wille, B., & Furnham, A. (2013). Assessing Aberrant Personality in Managerial Coaching: Measurement Issues and Prevalence Rates across Employment Sectors. *European Journal of Personality, 27*(6), 555-564.
- Decuyper, M., De Caluwe, E., De Clercq, B., & De Fruyt, F. (2014). Callous-unemotional traits in youth from a dsm-5 trait perspective. *Journal of Personality Disorders, 28*(3), 334-357.
- Ettner, S. L., Maclean, J. C., & French, M. T. (2011). Does Having a Dysfunctional Personality Hurt Your Career? Axis II Personality Disorders and Labor Market Outcomes. *Industrial Relations, 50*(1), 149-173.
- Guenole, N. (2014). Maladaptive Personality at Work: Exploring the Darkness. *Industrial and Organizational Psychology-Perspectives on Science and Practice, 7*(1), 85-97.
- Guenole, N. (2015). The Hierarchical Structure of Work-Related Maladaptive Personality Traits. [Article]. *European Journal of Psychological Assessment, 31*(2), 83-90.
- Hogan, J., Hogan, R., & Kaiser, R. B. (in press). Mangement derailment: Personality assessment and mitigation. In Z. S. (Ed.), *American Psychological Association Handbook of Industrial and Organizational Psychology*. Washington, DC: American Psychological Association.
- Hogan, R., & Hogan, J. (2001). *Hogan Development Survey Manual*. Tulsa, OK: Hogan Assessment Systems.
- Hogan, R., & Kaiser, R. B. (2005). What we know about leadership. *Review of General Psychology, 9*(2), 169-180.
- Hogan, R. T. (2000). The psychology of behaviour at work. *Journal of Occupational and Organizational Psychology, 73*, 383-384.
- Krueger, R. F., Derringer, J., Markon, K. E., Watson, D., & Skodol, A. E. (2012). Initial construction of a maladaptive personality trait model and inventory for DSM-5. *Psychological Medicine, 42*(9), 1879-1890.
- Mathieu, C., Hare, R. D., Jones, D. N., Babiak, P., & Neumann, C. S. (2013). Factor Structure of the B-Scan 360: A Measure of Corporate Psychopathy. *Psychological Assessment, 25*(1), 288-293.
- Miller, J. D., Bagby, R. M., Pilkonis, P. A., Reynolds, S. K., & Lynam, D. R. (2005). A simplified technique for scoring DSM-IV personality disorders with the five-factor model. *Assessment, 12*(4), 404-415.
- Parrigon, S., Woo, S. E., Tay, L., & Wang, T. W. (2016). CAPTION-ing the Situation: A Lexically-Derived Taxonomy of Psychological Situation Characteristics. *Journal of Personality and Social Psychology*.
- Paulhus, D. L., & Williams, K. M. (2002). The Dark Triad of personality: Narcissism, Machiavellianism, and psychopathy. *Journal of Research in Personality, 36*(6), 556-563.
- Rauthmann, J. F., Gallardo-Pujol, D., Guillaume, E. M., Todd, E., Nave, C. S., Sherman, R. A., et al. (2014). The Situational Eight DIAMONDS: A Taxonomy of Major Dimensions of Situation Characteristics. *Journal of Personality and Social Psychology, 107*(4), 677-718.
- Rolland, J. P., & De Fruyt, F. (2003). The validity of FFM personality dimensions and maladaptive traits to predict negative affects at work: A six month prospective study in a military sample. *European Journal of Personality, 17*, S101-S121.
- Rolland, J. P., & Pichot, P. (2007). *Manuel de l'inventaire de Tendances Dysfonctionnelles TD-12*. Paris: ECPA.
- Samuel, D. B., Simms, L. J., Clark, L. A., Livesley, W. J., & Widiger, T. A. (2010). An Item Response Theory Integration of Normal and Abnormal Personality Scales. *Personality Disorders-Theory Research and Treatment, 1*(1), 5-21.
- Samuel, D. B., & Widiger, T. A. (2008). A meta-analytic review of the relationships between the five-factor model and DSM-IV-TR personality disorders: A facet level analysis. *Clinical Psychology Review, 28*(8), 1326-1342.
- Suzuki, T., Samuel, D. B., Pahlen, S., & Krueger, R. F. (2015). DSM-5 Alternative Personality Disorder Model Traits as Maladaptive Extreme Variants of the Five-Factor Model: An Item-Response Theory Analysis. *Journal of Abnormal Psychology, 124*(2), 343-354.
- Tett, R. P., & Burnett, D. D. (2003). A personality trait-based interactionist model of job performance. *Journal of Applied Psychology, 88*(3), 500-517.

- Vergauwe, J., Wille, B., Feys, M., De Fruyt, F., & Anseel, F. (2015). Fear of Being Exposed: The Trait-Relatedness of the Impostor Phenomenon and its Relevance in the Work Context. *Journal of Business and Psychology, 30*(3), 565-581.
- Widiger, T. A., & Clark, L. A. (2000). Toward DSM-V and the classification of psychopathology. *Psychological Bulletin, 126*(6), 946-963.
- Widiger, T. A., Livesley, W. J., & Clark, L. A. (2009). An Integrative Dimensional Classification of Personality Disorder. *Psychological Assessment, 21*(3), 243-255.
- Widiger, T. A., & Mullins-Sweatt, S. N. (2009). Five-Factor Model of Personality Disorder: A Proposal for DSM-V. *Annual Review of Clinical Psychology, 5*, 197-220.
- Widiger, T. A., & Trull, T. J. (2007). Plate tectonics in the classification of personality disorder - Shifting to a dimensional model. *American Psychologist, 62*(2), 71-83.
- Widiger, T. A., Trull, T. J., Clarkin, J. F., Sanderson, C., & Costa, P. T. (2002). A description of the DSM-IV personality disorders with the five-factor model of personality. In P. T. Costa & T. A. Widiger (Eds.), *Personality Disorders and the Five-Factor Model of Personality* (Vol. 2nd edition, pp. 89-99). Washington D. C.: American Psychological Association.
- Wille, B., & de Fruyt, F. (2014). Fifty Shades of Personality: Integrating Five-Factor Model Bright and Dark Sides of Personality at Work. *Industrial and Organizational Psychology-Perspectives on Science and Practice, 7*(1).
- Wille, B., De Fruyt, F., & De Clercq, B. (2013). Expanding and Reconceptualizing Aberrant Personality at Work: Validity of Five-Factor Model Aberrant Personality Tendencies to Predict Career Outcomes. *Personnel Psychology, 66*(1), 173-223.
- Wu, J., & Lebreton, J. M. (2011). Reconsidering the dispositional basis of counterproductive work behavior: the role of aberrant personality. *Personnel Psychology, 64*(3), 593-626.

2

Global Health Systems: Micro, Meso and Macro Psychology Perspectives

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Abstract

Psychology has traditionally adopted a rather individualistic perspective on health, with less emphasis on groups or social structures. In this chapter we outline a different approach; addressing micro (within the individual), meso (group and intra-organisational relations), and macro (societal processes) perspectives. We illustrate this multi-layered approach to health systems by focusing on services for a specific client group – people with disabilities – and then by considering a broader systems issue – the availability and training of human resources for health. We illustrate how an integrated approach across levels develops a deeper understanding, enabling more impactful change and improved services. We also argue that for psychology to achieve its potential within and across these different perspectives, it needs to not only integrate but also to interlock its interventions, to support an effective and cohesive meta-system for health. Psychology is in a unique position to achieve this through developing and applying systems thinking across many overlapping domains.

Keywords: health systems, systems thinking, micropsychology, mesopsychology, macropsychology, meta-system, human resources for health, disability and rehabilitation.

Introduction

Psychology has primarily focused on 'understanding down'. It has done this by stripping-down complex behaviours into subcomponents. This occurs at the biological level through a focus on, for instance, genetics, neuroscience or psychophysiology. It occurs at the cognitive level through a focus on, for instance, distortions in cognitive processes or the use of defense mechanisms. And it occurs at the individual level in terms of self-esteem or motivation, which also reach into group processes. All of these approaches have contributed greatly to 'understanding down'. Our increased understanding of these factors is often framed as 'insight'. In this chapter we argue that to complement this downward perspective, psychology now needs more 'understanding up' and greater integration; addressing both how it can influence and be influenced by social systems and social structures. In so doing we seek to develop greater psychological 'outsight', so that the science of behavior takes in a broader realm of human behavior, including the behaviour of systems.

In this chapter we move from a micro (within the individual) perspective, to a meso (group and intra-organisational relations) perspective, and a macro (societal processes) perspective; to illustrate the multi-layered nature of health systems; although a similar argument could be applied to other types of human systems – education, justice, or employment, for instance. To focus our argument we take two perspectives, one focusing on services for a specific client group, namely disability and rehabilitation services, and the other focusing on a specific and necessary component for the delivery of all types of health services, namely the health professional or human resource. We draw from our research with colleagues, to provide examples which illustrate the relatedness between different levels, the contribution of psychology to each and the importance of an integrated approach that develops a deeper understanding, enabling more impactful change and improved services. We also argue that for psychology to achieve its potential within and across these different perspectives, it needs to not only integrate but also to interlock its interventions so that they are working towards the same goals. Psychology is one of the few disciplines – perhaps the only one – that has the potential to work in such an integrative and multi-leveled manner to support an effective and cohesive meta-system for health. But first we consider what is an important feature common to all levels but perhaps especially relevant to the macro level and to seeing how the levels can be fully integrated – systems thinking.

What is systems thinking?

Adams and Savignay (2009) have distinguished several characteristics of systems thinking. These include "Forest Thinking", which refers to the value of seeing the wider 'wood' rather than only focusing on the individual trees, but also wishing to address the relationships between them. "Dynamic Thinking" refers to how behaviours are arranged in patterns and how these patterns may change over time or across different contexts. "Loop Thinking" refers to the idea that cause and effect are not just one-off events but that they are related to each other, often in a continuous loop. The idea of "System-as-Cause Thinking" is that changes to one aspect of the system can have identifiable effects in other aspects of the system – i.e. changing the relational aspects can impact on its outcomes. These sorts of characteristics of a health system are therefore quite challenging for the discipline of psychology, which has traditionally been more concerned with simplifying, controlling and reducing the explanatory level.

Systems thinking has some other important attributes too: it cuts across disciplinary boundaries; yet is concerned with how people in different compartments of a system interact with one-and-other; it seeks to promote constructive patterns of interaction between people, groups and organisations – all intensely psychological phenomenon. Another way of seeing systems thinking is about conceptualizing the system as a Gestalt and identifying where the gaps or blockages are, which, if addressed, may help it function more effectively. However, even with such a Gestalt perspective, one of the key challenges for systems thinking is that systems – certainly the health system – is seen as 'open'; it is influenced by things outside it. For instance, health systems are influenced by economic booms and recessions; by policy and regulation changes beyond health, by emigration and immigration; by fear, by protectionism, by trade unions and multinationals. Such complexity can of course be overwhelming at times, but it can also be empowering. Systems thinking allows interventions at different points, in different places and utilising different methodologies to contribute to the same over-all goal because they are seen as related to each other. A change in professional protectionism regarding work practices, may for instance allow people in rural areas to access treatments that were previously unavailable to them; because now different modes

of delivery can be attempted – perhaps employing healthcare staff with more focused skill sets, using technology or engaging the expertise of communities to deliver interventions (Gilmore et al., 2013).

Table 1

Some features of micro, meso and macro perspectives within psychology.

Psychological Scale	Common Features (and representative themes)
<u>Micro Psychology Perspective</u> Within and about the individual	<i>Genetic</i> (inheritance, poly genetic, epigenetic) <i>Nervous System</i> (central & peripheral: brain and nerve functioning) <i>Bodily Functioning</i> (anatomy & physiology: endocrine, immune, cardiovascular, respiratory, etc., functioning) <i>Individual</i> (cognition, perception, motivation)
<u>Meso Psychology Perspective</u> Relations between people in groupings	<i>Group</i> (identity, prejudice, facilitation) <i>Organisation</i> (teamwork, achievement, identity) <i>Community</i> (empowerment, participation, advocacy)
<u>Macro Psychology Perspective</u> Societal processes within and between countries	<i>Systems</i> (interdependence, complexity, changing) <i>Structures</i> (institutions, political power, environment) <i>National</i> (laws, policies, governance) <i>Global</i> (declarations, alliances, treaties).

Disability and Rehabilitation at Different Psychological Levels

Table 1 summarises some of the distinguishing features of what we term micro, meso and macro perspectives within psychology. We illustrate how these perspectives each relate to an area where psychologists are strongly involved. First we explore how psychology can contribute to the challenge of disability at micro, meso and macro levels. To illustrate this we begin by considering the experience of those who have had an amputation.

Micropsychology

It is well established that amputation and the fitting of prosthetics limbs is associated with a range of different psychological factors (Desmond and MacLachlan, 2002). Research at the micro level on such experiences ranges from experimental manipulation of transitory bodily experience (MacLachlan, Desmond & Horgan, 2003), through to large-scale surveys of phantom limb pain experiences over 50 years (Desmond and MacLachlan, 2005) and individual’s attempts to cope with these. The neuromatrix theory (Melzack, 1990) also attempts to explain phantom experiences in terms of genetically inherited pre-wiring of the motor and sensory cortex, how amputation disrupts these and the associated neural plasticity that has been shown to occur (Flor et al., 1995). All of these types of studies have the individual as the focus, with some considering neurological level explanations of phantom limb experiences, while others focus more on the associated phenomenology. This area of research has considerably grown in popularity over the last couple of decades, as conditions associated with amputation – such as diabetes – have become more prevalent, as more people survive serious accidents and illnesses, and as an aging demographic experiences more disorders resulting in amputation, such as peripheral vascular disorder (Pell et al., 1993). This micropsychological focus on the individual has produced important insights and learning regarding how best to prescribe and use a prosthesis (Schaffalitzky et al., 2012) and how best to help individuals cope with the experience of amputation. Further research from this micro perspective is likely to yield important insights that can lead to the development of better services and the living of fuller lives for those with amputations.

The ICF model of disability (WHO, 2001), sees disability as being an experience, rather than a personal attribute. The experiential element comes from the interaction of a person who has some sort of bodily or mental impairment, with others in society. The extent to which someone with an impairment has activity limitations depends on their access to technologies and spaces that are design for all – universal design (Crews and Zavotka, 2006) – rather than spaces that are designed with the assumption

that, for instance, all people will climb steps, travel over rough surfaces, hear verbal announcements, or read written signs. Ensuring that people with impairment have minimal activity limitations is important; as the use of appropriate technology can allow them to remain living in their home (Cho et al., 2016); however, the inclusion of people with impairments in social activities is perhaps a stronger demonstration of their lack of disability; and ultimately their participation in the making of decisions that affect their lives is demonstration of their empowerment and ability. Thus experiences of disability at an individual level are a combination of impairment, activity restriction, exclusion and disempowerment from participation – these factors already point toward levels of influence beyond the individual.

Mesopsychology

At the meso psychology level of human interaction, within groups, organisations and the community, psychological factors that can promote or diminish wellbeing are also at work. Disability is often ‘othered’ (Mik-Meyer, 2016, p. 1357) where people with disability are seen as different (other) from ‘us’, and may even make some people feel uncomfortable who then seek to distance themselves. This is not just psychological but also physical. For instance Park, Faulkner and Schaller (2003) present an evolutionary model that argues that while humans have developed a disease-avoidance system, this system is overly inclusive such that “anomalous features that are not due to disease (e.g., limb amputation due to accident) may also activate it, contributing to prejudicial attitudes and behaviors directed toward people with disabilities” (p. 65). They present evidence to support this model including “... linking chronic and temporary concerns about disease to implicit negative attitudes toward and behavioral avoidance of disabled others” (p. 65). Such distancing is often associated with the stereotyping of those we therefore know less about (we are less familiar with their individual differences), and we place them in groups of similarity, and dissimilar to ‘us’. This can result in prejudice concerning their competence to learn, to work and even to live in the community setting (Bowman, 1986). Much research suggests that at the group, organizational and community level, the greatest barriers people with disabilities experience is that of stigma (MacLachlan and Swartz, 2009). Such views diminish the worth of others and devalue them, so that it becomes ‘normal’ to see them as citizens who are ‘less than’; citizens less equal. The ‘Social Model’ and related approaches, such as the capabilities approach, to disability sees disability resulting from such experiences and focuses on how social and cultural attitudes can be challenged to address these injustices (Nussbaum, 2006). The notion of justice is largely confined, within psychology, to the realm of organizational justice; where it has been shown that organisations that are believed to be run more fairly, also perform better (Furnham, 2012). Finally it is also important to note that while stigma towards disability often may arise from community of cultural constructions, community and cultural norms can also contribute to important strategic approaches to support and empowering people with disabilities (Mji et al., 2009).

Macropsychology

Psychology at the macro level has however done little to address bigger questions about how society should be run – what sort of society might be perceived as fairer and how might this affect wellbeing or quality of life? In fact, it is rather surprising that the ‘science of human behavior’ has shied away from broader human rights issues – from developing an evidence-base of what is right for humans! The macro level is concerned with the settings and conditions in which we live our lives. In giving this scant attention psychology could perhaps be judged guilty of committing one of its own well-established errors of judgment – the Fundamental Attribution Error (Harman, 1999). This refers to situations where those observing an individual in particular circumstances, tend to attribute to too great an extent the cause of the individual’s behavior being their own dispositions and decisions, and insufficiently to the context in which the individual find themselves. There is considerable evidence that contextual factors have a strong influence on individual’s behavior (Summers, 2012) and this is certainly also the case in the provision of services and opportunities for people with disabilities (McVeigh et al, 2016). Much of the work of social systems and structures is facilitated through policies which may be thought of as the ‘plumbing of society’, in that they express who should get what and why (MacLachlan, 2014). We have demonstrated that social policies, and especially health-related policies are often inequitable and that those who most need resources are often excluded from receiving them. For instance, we have developed an instrument for assessing the inclusion of vulnerable and marginalized groups in health policies (Amin et al., 2011; Mannan et al. 2012). EquiFrame is a standardized formulation and

measurement instrument to assist policy makers in developing and analysing public policies within a human rights framework. It is comprised of 21 Core Concepts of Human Rights and 12 Vulnerable Groups, identified through a series of consultation, United Nations declarations, and literature and research evidence relating to Human Rights and wellbeing (Ahmimed et al., 2014). The Core Concepts of Human Rights (Table 1) are concepts that relate “to principles underlying the provision of universal, equitable and accessible health services” (Mannan et al., 2011, p. 13).

EquiFrame has now been used in a range of processes, contexts and countries. For instance, Ivanova et al. (2015) used it to analyse inclusion the Sexual and Reproductive Health policies of Ukraine, Scotland, Moldova, and Spain. It has been used to assess regional policies on health priorities in Africa (Eide et al., 2013a); a variety of international health documents (Schneider et al., 2013); international donor policies (Eide et al., 2013b); European Policies on Disability and Development Cooperation (Andersen et al., 2012); India’s Disability Policy (O’Dowd et al., 2013) and three South African policies on Black economic empowerment, employment and cooperation (O’Donnell et al., 2008). It has also been applied to the United Nations Convention on the Rights of Persons with Disabilities (Mannan et al., 2012). It has been used to develop new, or revise existing policies in South Africa (disability and rehabilitation policies), Malawi (National Health Policy and National Health Research Policy), Sudan (to guide the future development of all health policies). In Laos Democratic Republic, EquiFrame has been used with Handicap International to support the process of developing a Policy/Strategy/Action Plan process on Disability. EquiFrame brings to the rather messy policy analysis process one of the key features of psychology; measurement on a Likert-type scale that allows the extent of inclusion or the extent of progress to be assessed, along with qualitative and evaluative assessments.

We are also aware that simply identifying inequity in ‘policy on the books’ will not produce a fairer society. EquiPP (Huss & MacLachlan, 2016) has been developed to foster and assess equity and inclusion in the process of policy development. EquiPP (Equity and Inclusion in Policy Processes) proposes 17 Key Actions to support the development, implementation and evaluation of inclusive policies. EquiPP is a framework for an inclusive policy process to support public policies promoting equity and inclusion. An inclusive policy process creates experiences of inclusion for vulnerable groups who usually remain marginalized in policy processes; it does this by according them a more central role in policy development, implementation and evaluation (Huss & MacLachlan, 2016).

Once again, the commitment to inclusive processes are measured on a Likert-type scale. EquiPP was developed in partnership with several United Nations agencies; and in particular the Knowledge Management Programme of the United Nations Partnerships on the Rights of Persons with Disabilities (KnowUNPRPD) (UNDP, 2016). Its evidence-based draws on a literature review of stakeholder approaches to equity and social inclusion; and several iterations of stakeholder consultations across more than twenty countries. EquiPP is currently being used in Ireland and with UNESCO and country partners in Malaysia, Panama, Thailand and Timor-Leste.

While a scientific psychology approach is the backbone for developing these policy instruments, the use of them also encounters the attitudinal problems described above. Hussey et al. (2017), for instance, found that a common barrier to implementation of the rehabilitation Articles of the United Nations Convention on the Rights of People with Disability, was negative attitudes among individual health service staff and civil servants (the micro level). MacLachlan et al. (2014) has reported on their use of group psychology consensus methods (the meso level) to try and enhance the effectiveness of civil society’s advocacy efforts to promote greater inclusion in national development policies. Thus even at the macro level of systems, policy and structures, factors at the meso and micro level are at play, and so it is apparent that these levels are not insulated from one another.

Human Resources for Health at Different Psychological Levels

We now consider the engine of health systems – the health professional or human resource. There is a global shortage of health professionals. A report published jointly by the World Health Organisation and the Global Health Workforce Alliance (WHO and GHWA, 2008), asserts that health goals such as the Millennium Development Goals (and now the health-related Sustainable Development Goals) are impossible to achieve without simultaneously addressing the 4.3 million health worker shortfall (WHO, 2006). The global challenge of reducing this shortfall allows us to demonstrate the role that psychology can play at the micro, meso and macro levels, through an exploration of some of the research we have been engaged in over the past decade.

Micropsychology

Firstly, taking the micro level, if we are to attract and retain health workers, we need to first understand the factors influencing individual health worker's motivation and retention. In a study of health workers in Malawi, participants completed measures of perceptions of work environment, burnout, job satisfaction and promotion (McAuliffe et al., 2009a). We found high levels of emotional exhaustion in over one-third of the sampled health workers across a range of health facilities. A range of correlations highlighted the salience of inadequate resources in the work environment and their relatedness to job dissatisfaction, dissatisfaction with one's profession, thinking about leaving one's job and, more worryingly, for some cadres making to active plans to seek other employment and leave their current jobs. These findings not only confirm the relationship between organizational attributes and job satisfaction and retention that has been found to exist in high-income countries, but also give a clear indication of the inadequacy of adopting a strategy of training and employing health professionals in the absence of strategies to strengthen and improve other aspects of the health environment. The study also provided us with the data and opportunity to adapt and validate an instrument to measure components of the work environment – the Health Professionals Work Index (HPWI) – which has subsequently been used to explore the links between the micro and meso-levels i.e. the health worker and the work environment. Another aspect of the study explored the link between perceptions of justice (intra-individual or micro level) and job satisfaction. Organisational justice was measured using Niehoff & Moorman's justice scale, a fivepoint likert-type scale that measures attitudes on distributive, procedural and interactional justice. Distributive justice measured perceptions about the fairness of different work outcomes, including pay, workload, work schedule and job responsibilities. Procedural justice measured the degree to which employees felt their opinion was considered when decisions were made, whilst interactional justice measured the degree to which employees felt their needs were considered and adequate explanations given for decisions. Principal components analysis found that one factor in these justice scales explained 45% of the variation in job satisfaction across the sample. This factor (comprising eight items) was “managerial consideration” and reflected a considerate, caring and respectful style of interaction between managers and others. (McAuliffe et al., 2009).

Mesopsychology

These findings point to the meso-level factors that may be influencing the human resource problem, i.e. the inter-individual dynamics such as organizational justice, teamwork, leadership and supervision. Further studies identified supervision as a critical component in motivating and retaining health workers (McAuliffe et al., 2013). This 3-country study conducted with approximately 2,000 health workers used multi-level modelling to link the micro level motivators with work place and relationship factors at the meso level to identify the strongest predictor and therefore most salient point for intervention i.e. supportive supervision systems and practices.

The next phase of work concentrated on designing and testing a supportive supervision intervention at the micro (individual supervisor) level and the meso (District health management teams) level improving managerial consideration and problem solving capability leading to improvements in job satisfaction. (Madede et al., under review).

Macropsychology

Applying psychology at the macro-level to address the global human resources challenges involved research at the systems and policy level. The limited capacity of health systems in low and middle-income countries to meet demand for services has led several countries to utilize mid-level cadres as a substitute to more extensively trained and more internationally mobile healthcare workers. Although this does provide greater capacity for service delivery, concern has been expressed about the performance and motivation of these workers. (Bradley et al., 2013; McAuliffe et al., 2013). A complex mapping project across 3 countries working closely with governments, health professional networks and advocacy organisations (Lobis et al., 2011) enabled us to profile the positive contribution of these cadres of health workers and influenced other countries in the region to fill the human resource gaps by utilizing similar cadres, requiring shorter periods of training.

Understanding health services delivery as a complex system, prompted us to consider the impact of introducing a new cadre of health worker into an existing system and the impact of this on the roles and

tasks of existing and new health professions as well as the implications for the quality of services. In a comprehensive study of mental health services in Ghana, some of these complex relationships and impacts were explored (Agyapong et al., 2015; 2016), much of this work providing compelling arguments for macro-level policy changes to the country's mental health services. In another macro-level study, we designed a discrete choice experiment to test the utility of existing policies on salary increases and top-ups (McAuliffe et al., 2016). The critical finding from this study was that opportunities for professional development and having functioning and supportive human resource management, had higher utility in health workers job choices than did increased pay levels, or indeed other factors such as urban or rural location, or the provision of subsidized housing. The clear implication for the governments in the study countries was that they needed to do more than simply increase salaries to attract health workers to positions. Career progression and professional development policies also needed to be in place, something which to that point was receiving little attention. Our earlier work at the micro-level also gave credence to these findings. For example in a previous study of obstetric care workers in Tanzania (McAuliffe et al., 2013) we found a critical link between poor HR policies/practices and high levels of burnout and low staff morale in this sector.

Psychology as an Interlocked Metasystem

Our focus on disability illustrates that while each of the micro, meso and macro perspectives have important psychological components, focusing on only one of them is insufficient if we want to change the system(s) that affect the extent to which people who have an impairment actually experience some degree of disability. Each of these perspectives in itself is therefore valuable, but insufficient. From each of the perspectives the challenge of impairment-disability looks different and suggests different actions and interventions. Only by combining these perspectives can an integrated – mutually reinforcing – approach be adopted.

In a similar way with our human resources example, we see that to attract and retain health workers their needs and preferences at an individual level must be considered, but meso-level change is necessary to achieve this, and in turn the meso-level change (i.e. professional development opportunities and supportive management) can only happen if at the macro-level the policies are in place to support this. This does not mean that individual psychologists – or other practitioners – need work across more than one of these perspectives, but it does mean that they should be aware of how their own work interfaces with addressing challenges at other levels; and that psychology has much to offer at each of these levels. Psychologists are well-prepared to contribute at all of these levels, both in terms of understanding systems thinking and complexity, but also in terms of their training in many of the qualitative and quantitative methodologies that are necessary to explore and connect what is happening at the different levels.

We have described three perspectives that can be adopted within a psychological paradigm; micro, meso and macro perspectives. Yet it is also apparent that these perspectives are porous. For instance, social exclusion may work at the micro level through lowering self-esteem, at the meso level by prejudicial attitudes towards an outgroup and at macro level by developing policies and institutions that reflect social dominance (Pratto et al., 2013): channeling a disproportionate amount of resources towards more influential and more mainstream sectors of society. These systems may therefore be considered as an interacting group of related systems; a meta-system.

Psychology is unique in being able to traverse the different levels described in the case of disability and human resources, but which may also be found in other domains. To traverse these levels intentionally and deliberately presents an opportunity for joining up initiatives both within systems at particular levels and across systems at different levels. This can of course be quite a complex network of activities and in some respects is similar to complexity of some large train networks. Train networks use the concept of 'interlocking'; which refers to connect or lock two or more things that might occur together. In train control systems, signals may be interlocked so they are not contradictory; resulting in a crash. People may interlock arms to express unity, both psychologically and physically; or well fitting gears in an engine are said to mesh together because they are interlocked. This meshing together of different actions in a metasystem is much needed to ensure that actions at different levels are complementary, not contradictory; not setting initiatives at different levels on a course of destructive collision.

In the context of health systems this could mean that any action being undertaken at one level should be considered in regard to how it might interact with other levels and how such actions at other levels can be locked into complementary and productive interaction or co-action (not necessarily 'touching' upon one another, but complementing nonetheless. These ideas therefore have something in

common with the working of ecosystems and of broader environmental awareness where an environmental audit will often be required to coincide with a planning initiative, for instance. In the same way action taken at one level to promote health – through a micro, meso or macro initiative – could require a meta-system audit, where the meshing together of the initiative with other existing or possible new initiatives at these other levels, could be evaluated to ensure that they gain the greatest possible traction across domains. This is simply trying to ensure that human behavior – for instance, in the case of impairment and inclusion described above – is as coherent as possible in the different realms in which it occurs: when individuals, groups and society are all moving towards the same pro-social goals there is a greater likelihood of them being achieved.

In conclusion, provision of quality healthcare for all is a global challenge and this is a dearth of organisation/system-wide research programmes and too few researchers engaged in systems research. Psychologists are well-equipped in terms of their theoretical knowledge and methodological expertise to adopt a systems approach. We need such research to generate a deeper understanding of accountability mechanisms, to find effective ways of engaging the public, patients and other stakeholders, to identify the best structures and organisational configurations, subjecting organisational and policy interventions to the same rigorous research designs that are required for clinical interventions. Health systems research is a rich environment for psychologist researchers.

References

- Agyapong, V., Farren, C., & McAuliffe, E. (2016). Improving Ghana's mental healthcare through task-shifting- psychiatrists and health policy directors perceptions about government's commitment and the role of community mental health workers. *Globalization and Health*, 12(57),
- Agyapong, V. I., Osei, A., Farren, C. K., & McAuliffe, E. (2015). Task shifting of mental health care services in Ghana: ease of referral, perception and concerns of stakeholders about quality of care. *Int J Qual Health Care*, 1-7, doi: 10.1093/intqhc/mzv058
- Ahmimed, C., MacLachlan, M., & Mannan, H. (Eds.) (2014). Policies & Processes for Social Inclusion: Volume I: Possibilities from South East Asia. Jakarta: UNESCO.
- Amin, M., MacLachlan, M., Mannan, H., El Tayeb, S., El Khatim, A., Swartz, L, Munthalim A., van Rooy, G., McVeigh, J., Eide, A., & Schneider, M. (2011). EquiFrame: A framework for analysis of the inclusion of human rights and vulnerable groups in health policies. *Health & Human Rights* 13(2), 1-20.
- Bowman, J.T., (1987). Attitudes toward disabled persons: social distance and work competence. *Journal of Rehabilitation*, 53 (1), p.41.
- Bradley, S., Kamwendo, F., Masanja, H., de Pinho, H, Waxman, R., Boostrom, C., & McAuliffe, E. (2013). An in-depth exploration of health worker supervision in Malawi and Tanzania. *BMC Human Resources for Health*, 11(43). doi:10.1186/1478-4491-11-43
- Carr, S.C., MacLachlan, M., & Furnham, A. (2012). *Humanitarian work psychology*. London: Palgrave Macmillan.
- Cho, H.Y., MacLachlan, M., Clarke, M., & Mannan, H. (2016). Accessible Home Environments for People with Functional Impairments: A Systematic Review. *International Journal of Environmental Research and Public Health*, 13, 826; doi: 10.3390/ijerph13080826
- Crews, D.E., & Zavotka, S., (2006). Aging, disability, and frailty: implications for universal design. *Journal of physiological anthropology*, 25(1), pp.113-118.
- Desmond, D., & MacLachlan, M., (2002). Psychosocial Issues in the Field of Prosthetics and Orthotics. *JPO: Journal of Prosthetics and Orthotics*, 14(1), pp.19-22.
- Desmond, D., & MacLachlan, M. (2005). Coping strategies as predictors of psychosocial adaptation in a sample of elderly veterans with acquired lower limb amputations. *Social Science & Medicine*, 62, 208-216.
- Eide, A.H., Amin, M., MacLachlan, M., Mannan, H., & Schneider, M. (2013a). Addressing equitable health of vulnerable groups in international health documents. *ALTER - European Journal of Disability Research/Revue Européenne de Recherche sur le Handicap*, 7(3): 153-162.
- Eide, A.H., Amin, M., MacLachlan, M., Mannan, H., & Schneider, M. (2013b). Human rights, social inclusion and health equity in international donors' policies. *Disability, CBR and Inclusive Development*, 23(4), 24-40.
- Flor, H., Elbert, T., Knecht, S., Wienbruch, C., Pantev, C., Birbaumer, N., Larbig, W., & Taub, E., (1995). Phantom-limb pain as a perceptual correlate of cortical reorganization following arm amputation. *Nature*, 375(6531), pp.482-484.

- Gallagher, P., Horgan, O., Franchignoni, F., Giordano, A., & MacLachlan, M., (2007). Body Image in People with Lower-Limb Amputation: A Rasch Analysis of the Amputee Body Image Scale. *American Journal of Physical Medicine & Rehabilitation*, 86(3), 205-215.
- Gilmore, B., & McAuliffe, E. (2013). Effectiveness of Community Health Workers Delivering Preventative Interventions for Maternal and Child Health in Low- and Middle-Income Countries: A Systematic Review: *BMC Public Health*, 13, 847. doi: 10.1186/1471-2458-13-847
- Harman, G., (1999). Moral philosophy meets social psychology: Virtue ethics and the fundamental attribution error. In *Proceedings of the Aristotelian society*, 99, 315-331. Aristotelian Society.
- Huss, T., & MacLachlan, M. (2016). *Equity and Inclusion in Policy Processes (EquIPP): A Framework to support Equity & Inclusion in the Process of Policy Development, Implementation and Evaluation*. Dublin: Global Health Press.
- Hussey, M., MacLachlan, M., & Mji, G. (2017). Barriers to the Implementation of the Health and Rehabilitation Articles of the United Nations Convention on the Rights of Persons with Disabilities in South Africa. *International Journal of Health Policy Management*, 6(4), 207-218. doi: 10.15171/ijhpm.2016.117
- Ivanova, O., Dræbel, T., & Tellier, S. (2015). Are sexual and reproductive health policies designed for all? Vulnerable groups in policy documents of four European countries and their involvement in policy development. *International Journal of Health Policy and Management*, 4(10), 663-671. doi: 10.15171/ijhpm.2015.148
- Lobis, S., Mbaruku, G., Kamwendo, F., McAuliffe, E., Austin, J., & de Pinho, H. (2011). Expected to deliver: Alignment of regulation, training and actual performance of emergency obstetric care providers in Malawi and Tanzania. *International Journal of Gynaecology & Obstetrics*, 115(3), 322-327.
- MacLachlan, M. (2014). Macropsychology, Policy & Global Health. *American Psychologist*, 69, 851-863.
- MacLachlan, M., Desmond, D., & Horgan, O., (2003). Psychological correlates of illusory body experiences. *Journal of rehabilitation research and development*, 40(1), p.59.
- MacLachlan, M., Mji, G., Chataika, T., Wazakili, M., Dube, A. K., Mulumba, M., Massah, B. O., Wakene, D., Kallon, F., & Maughan, M. (2014). Facilitating Disability Inclusion in Poverty Reduction Processes: Group Consensus Perspectives from Disability Stakeholders in Uganda, Malawi, Ethiopia, and Sierra Leone. *Disability & the Global South*, 1(1), 107-127.
- MacLachlan, M., & O'Connell, M., (2000). *Cultivating pluralism: psychological, social and cultural perspectives on a changing Ireland*. Dublin: Oak Tree Press.
- Madede, T., Sidat, S., McAuliffe, E., Patricio, S.R., Uduma, O., Galligan, M., Bradlet, S., & Cambe, I. (under review). Impact of a Supportive supervision intervention on Health Workers in Niassa, Mozambique: A Cluster-controlled trial. *Human Resources for Health*.
- Mannan, H., Amin, M., MacLachlan M., & the EquiFrame Consortium (2011). *The EquiFrame Manual: A tool for Evaluating and Promoting the Inclusion of Vulnerable Groups and Core Concepts of Human Rights in Health Policy Documents*. Dublin: Global Health Press.
- Mannan, H., El Tayab, S., MacLachlan, M., & Amin, M. (2012). Human Rights and Social Inclusion in the Disability and Rehabilitation Policies of Sudan, Malawi, Namibia and South Africa. *Journal of Disability Policy Studies*, 23(2), 67-81.
- McAuliffe, E., Bowie, C., Manafa, O., Maseko, F., MacLachlan, M., Hevey, D., Normand, C., & Chirwa, M., (2009a). Measuring and managing the work environment of the mid-level provider - the neglected human resource. *BMC Human Resources for Health*, 7, 13. doi: 10.1186/1478-4491-7-13
- McAuliffe E, Daly M, Kamwendo F, Masanja H, Sidat M & DePinho H. (2013). The critical role of supervision in retaining staff in Obstetric services: A three country study. *Plos One*, 8(3). doi: 10.1371/journal.pone.0058415
- McAuliffe, E., Galligan, G., Revill, P., Kamwendo, F., Sidat, M., Masanja, H., De Pinho, H., & Araujo, E. (2016). Factors influencing Job Preferences of Health workers providing Obstetric Care: Results from Discrete Choice Experiments in Malawi, Mozambique and Tanzania. *Globalization and Health*, 12(1), 86.
- McAuliffe, E., Manafa, O., Maseko, F., Bowie, C., & White, E. (2009b). Understanding job satisfaction amongst mid-level cadres in Malawi: the contribution of organisational justice. *Reproductive Health Matters*, 17, (33), 80-90.
- McVeigh, J., MacLachlan, M., Gilmore, B., McClean, C., Eide, A.H., Mannan, H., Geiser, P., Duttine, A., Mji, M., McAuliffe, E., Sprunt, B., Amin, M., & Normand, C. (2016). Promoting good policy for leadership and governance of health related rehabilitation: a realist synthesis. *Globalization & Health*, 12(49).
- Mji, G., MacLachlan, M., Melling-Williams, N., & Gcaza, S. (2009). Realising the Rights of Disabled People in Africa. *Disability & Rehabilitation*, 31, 1-6.

- Mik-Meyer, N., (2016). Othering, ableism and disability: A discursive analysis of co-workers' construction of colleagues with visible impairments. *Human Relations*, 69(6), 1341-1363.
- Melzack, R., (1990). Phantom limbs and the concept of a neuromatrix. *Trends in neurosciences*, 13(3), 88-92.
- Nussbaum, M.C. (2006). *Frontiers of Justice: Disabilities, Nationality, Species Membership*. Cambridge, MA: Harvard University Press.
- O'Dowd, J., Mannan, H., & McVeigh, J. (2013). India's Disability Policy—Analysis of Core Concepts of Human Rights. *Disability, CBR & Inclusive Development*, 24(4), 69-90.
- Park, J.H., Faulkner, J., & Schaller, M., (2003). Evolved disease-avoidance processes and contemporary anti-social behavior: Prejudicial attitudes and avoidance of people with physical disabilities. *Journal of Nonverbal Behavior*, 27(2), 65-87.
- Pell, J.P., Donnan, P.T., Fowkes, F.G.R., & Ruckley, C.V. (1993). Quality of life following lower limb amputation for peripheral arterial disease. *European Journal of Vascular Surgery*, 7(4), 448-451.
- Pratto, F., Stewart, A. L., & Zeineddine, F. B. (2013). When inequality fails: Power, group dominance, and societal change. *Journal of Social and Political Psychology*, 1(1), 132-160.
- Schaffalitzky, E., Gallagher, P., Maclachlan, M., & Ryall, N., (2011). Understanding the benefits of prosthetic prescription: exploring the experiences of practitioners and lower limb prosthetic users. *Disability and Rehabilitation*, 33(15-16): 10.3109/09638288.2010.529234
- Sommers, S., (2012). *Situations matter: Understanding how context transforms your world*. New York: Riverhead Books
- WHO (2001). *International Classification of Functioning, Disability and Health: ICF*. World Health Organization.
- WHO 2006. World Health Report (2006). In: ORGANIZATION, W. H. (ed.). Geneva: World Health Organization.
- WHO & GHWA (2008). *Scaling Up, Saving Lives*. Geneva: World Health Organization & Global Health Workforce Alliance.

3

Quality of life in psoriasis patients

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Abstract

Psoriasis is a chronic autoimmune systematic disease, which, besides skin, affects joints and numerous other organ systems. It is still an incurable disease which affects 2-3% of the world's population, and it makes psoriasis the most common chronic dermatological disease. Although not being life-threatening, psoriasis significantly affects the psychological status of the patient. Due to negative effects on their appearance, patients are often stigmatised and exposed to social isolation. Psoriasis patients have significantly diminished quality of life, psychological and social functioning and the quality of their life is perceived as low as that of cancer patients, heart attack survivors, and pulmonary patients. The aim of this research is to examine whether there is a difference in the quality of life between psoriasis patients and health controls and between patients with mild and severe psoriasis. The data was collected in the Clinical Hospital Centre Split, Clinic of Dermatology and Venerology. 144 participants were included, 82 of whom were psoriasis patients and 62 were healthy (with no diagnosed physical diseases). The questionnaire included socio-demographic data, the World Health Organisation Quality of Life (WHOQOL)-BREF and a physician determined the severity of psoriasis using the Psoriasis Area and Severity Index. A significant difference between the psoriasis patients and the healthy control group, in terms of overall life and health satisfaction, psychological, physical, and environmental domain was found. Also, patients with severe psoriasis perceived significantly lower overall health satisfaction and psychological domain of quality of life than patients with mild psoriasis. Therefore, during the psoriasis treatment, in addition to the usual symptoms relief, significant concern should be given to psychological support.

Keywords: psoriasis, control group, psoriasis severity, quality of life

Introduction

Psoriasis is a chronic autoimmune systemic disease, which, besides skin, affects joints and numerous other organ systems. It is the most common dermatological disease which affects 2-3% of the world's population (Raychaudhuri, & Farber, 2001) and 1.6% of the Croatian population (Barišić-Druško, Paljan, Kansky, & Vujasonović, 1989). The prevalence of psoriasis is similar both in men and women (Raychaudhuri, & Farber, 2001). It is characterised by localised or widespread thick scaling red plaques, and the patient's symptoms include pain, itching, burning, and dry skin. The origin of psoriasis is associated with genetic factors and can be triggered by environmental stressors. It is still an incurable disease, and medical treatment can only result in the remission of symptoms (de Korte et al., 2004).

There is a common stereotype that dermatological diseases, and psoriasis as one of them, are less serious than other somatic diseases. A reason for this misperception might be that psoriasis is not a life-threatening disease and even health workers and professionals dismiss its impact on patients' lives (Choi, & Koo, 2003). However, it is a chronic disease and it leaves a great impact on the psychological and social status of the patient, which is often underestimated. It also influences all spheres of the patient's life, so patients have problems with their daily activities, work (Wahl, Loge, Wiklund, & Hanestad, 2000), psychological well-being, social activities (e.g. Gupta, Gupta, & Watteel, 1998; Fortune et al., 1997), and finances (Feldman et al., 1997).

In other words, the psoriasis patient, despite physical symptoms often has a large number of other problems, such as psychological ones. Patients reported higher levels of frustration, anger, helplessness, embarrassment, and self-consciousness (Armstrong, Schupp, Wu, & Bebo, 2012). Also, previous research suggests that patients with psoriasis have higher levels of depression (Akay et al., 2002) and anxiety (Kilic et al., 2008). Furthermore, Fried et al. (1995) reported that approximately half of patients were depressed and anxious just due to having psoriasis. Furthermore, approximately 10% of patients have suicidal thoughts (Cotterill, & Counliffe, 1997; Gupta, Schork, Gupta, Kirkby, & Ellis, 1993), especially patients with higher levels of depression and those who think that they have severe psoriasis (Arruda, & Morraes, 2001). Psoriasis patients also have a higher proportion of work inability and longer periods of lost work; approximately 5 lost workdays in the last 12 months due to the disease (Augustin, Kruger, Radtke, Schwippl, & Reich, 2008).

Along with psychological problems, patients have problems in social functioning. When having psoriasis, stigmatisation and social rejection are very common experiences (Schmid-Ott, Kuensebeck, Jaeger, Ott, & Lamprecht, 1996). Patients have problems with their body image, self-esteem, feelings of stigma, shame, and embarrassment regarding their appearance (Fortune, Richards, & Griffiths, 2005). They also feel humiliated when they need to expose their bodies (e.g. during swimming, intimate relationships, etc.) (Ginsburg, & Link, 1993), and many of them feel the need to hide their disease (Weiss et al., 2002). They are often exposed to social rejection due to their appearance, because people think that are contagious (Richards et al., 2001) so they avoid social interactions or making new friendships (Schmid-Ott et al., 2003).

Objective measurements of the severity of disease, measured by a physician, are often not correlated with the patient's subjective assessment (Zachariae et al., 2002). Because of that, it is necessary to consider the patient's perception of the disease. Health related quality of life is a measure of the impact that the disease has on the patient's physical, mental, and social well-being. Measures of the quality of life became an important measure for investigating a patient's perspective about the impact of illness on daily activities (Anderson, & Rajagopalan, 1997). Also, it is widely acknowledged that health related quality of life assessments can provide better treatment strategies for each patient individually (Callen et al., 2003). Various measures have been used to assess quality of life in psoriasis patients, and these measures can be generic, dermatologically specific, or disease/psoriasis specific.

Psoriasis has a significantly negative impact on the patient's quality of life. There are many reasons why psoriasis is a disease with such a big burden on the patient's quality of life, and most of them are mentioned above. When compared with other diseases, such as dermatitis, arthritis, cancer, chronic lung disease, hypertension, heart attack, congestive heart failure, type 2 diabetes, and depression, patients with psoriasis have the lowest physical and mental component of quality of life (Rapp, Feldman, Exum, Fleischer, & Reboussin, 1999). Only patients with congestive heart failure had a lower physical domain of quality of life, and patients with chronic lung disease had lower scores on the mental component of quality of life. Also, Finlay, Khan, Luscombe, & Salek (1990) found that psoriasis had a worse impact on the quality of life than angina and hypertension. Patients who, besides psoriasis, had asthma, bronchitis, or diabetes, claimed that it was worse to have psoriasis than the latter mentioned diseases (Finlay, & Coles, 1995).

There is evidence in the literature that psoriasis has a negative impact on the patient's quality of life, although, to the author's best knowledge, no research has been done on a Croatian sample. It is

possible that the patient's subjective perception of illness and its effect on the quality of life are culturally-specific characteristics. The primary aim of the current study is to explore whether there is a difference in the quality of life between psoriasis patients and healthy controls. The second aim of this study is to examine the difference in the quality of life between patients with mild and severe psoriasis.

Method and Materials

Procedure and Participants

In this study, 144 participants were included. Out of these, 82 participants were diagnosed with psoriasis and 62 participants were healthy control with no dermatological disease or any other chronic and severe physical disease; 76 of them were male, and 68 were female. The initial sample comprised 179 participants, but 35 patients were excluded because they had some other chronic diseases in addition to psoriasis.

The final sample ranged in age from 18 to 87 years ($M = 44.90$, $SD = 12.95$). The majority of the sample had completed secondary level education and were married or lived with a partner (Table 1). The groups did not differ in male/female ratio, age or marital status. However, in the control group there was a significantly lower proportion of participants with the primary education level and a higher proportion of participants with a university degree than in the psoriasis group (Table 1).

Participants were recruited from the Dermatology and Venereology Clinic at the Clinical Hospital Centre of Split. Psoriasis patients came for a usual checkup, and the control group came to the hospital for a general medical examination. All participants provided their written informed consent. They were assured that their participation would be anonymous. First, a dermatologist determined the severity of psoriasis using the PASI score. After that, participants were administered the questionnaires, which they completed in the waiting room, and put the envelope in a collection box provided for that purpose. Data were collected from January 2014 to November 2015.

Instruments

We used a short questionnaire to collect the socio-demographic data from each participant, including their age, marital status, education, diagnosed dermatological diseases and comorbid diseases.

To measure the quality of life, we used the World Health Organisation's Quality of Life (WHOQOL)-BREF questionnaire. The questionnaire has been translated and validated for the use in the Croatian sample (Pibernik-Okanovic, Szabo, & Metelko, 1998). This is a short version of the questionnaire and it consists of 26 items and 4 domains: physical health (7 items), psychological health (6 items), social relationships (3 items), environmental health (8 items), the overall quality of life, and overall general health items. Physical health domain measures mobility, daily activities, pain, energy, sleep, medication, and work. Psychological domain measures positive and negative feelings, cognitions, self-esteem, body image, and spirituality. Social relationships domain includes personal relationships, social support, and sex. Environmental health domain measures finance, safety and security, home and physical environment, health and social care, information, leisure, and transport. Response ratings were made on a scale from 1 (not at all/very poor) to 5 (completely/extremely/an extreme amount) and the higher scores corresponded to a better quality of life. All scores were transformed to a scale from 4 to 20 for each domain. Cronbach's α was .61, .69, .75, .81 for social relationships, physical health, environmental health, and psychological health respectively (Skevington, Lofty, & O'Connell, 2004). In this sample, Cronbach's α for all items was .921. Cronbach's α was .69, .73, .76, and .83 for social relationships, psychological health, environment, and physical health respectively.

The Psoriasis Area and Severity Index (PASI; Fredriksson, & Pettersson, 1978) is the most widely used measure of psoriasis severity. It is assessed by a dermatologist who evaluates the area, erythema, scaliness, and thickness of the plaque. It is a gold standard assessment tool for psoriasis (Naldi et al., 2003) and it is the most validated objective measurement of psoriasis severity (Feldman, 2004). The PASI scores vary from 0 to 72 and a higher score indicates more severe conditions. Mild psoriasis is from 0 to 10, and severe psoriasis is from 11 to 72 (Fortune, Richards, Main, & Griffiths, 1998).

Statistical analyses

Reported data are cross-sectional. To assess differences in the domain of quality of life, a t-test was used. Homogeneity of variance was assessed with Leven's test. We used SPSS 20.0 for all data analyses. In all analyses, *p* values were set to < .05 or < .01.

Results

The demographic information of this sample is summarised in Table 1. The average psoriasis severity score was 17.00 meaning that patients had severe psoriasis measured by PASI index (Fortune, Richards, Main, & Griffiths, 1998). The majority of psoriasis patients (80.8%) does not have partners when compared with healthy participants ($\chi^2(1) = 7.346; p < .01$).

Table 1
Sample Characteristics for the Main Demographic Variables (N = 144)

Characteristics	Psoriasis patients (n = 82)		Control group (n = 62)		
	n	%	n	%	
Sex					
Male	44	53.7	32	51.6	$X^2(1) = 0.006$ $p > .05$
Female	38	46.3	30	48.4	
Education					
Primary school	16	19.5	2	3.2	$X^2(2) = 12.53$ $p < .01$
Secondary school	55	67.1	41	66.1	
University	11	13.4	19	30.6	
Marital status					
Married or living with partner	61	74.4	36	58.1	$X^2(1) = 3.57$ $p > .05$
Single, widowed, divorced	21	25.6	26	41.9	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Age (years)	46,5	16,4	42,8	5,4	$t(142) = 1.69$ $p > .05$

Descriptive data demonstrates that psoriasis patients are neither satisfied nor dissatisfied ($M = 3.57, SD = 0.83$) with their overall quality of life. Also, psoriasis patients related their overall health as neither poor nor good ($M = 3.32, SD = 0.58$). Differences between quality of life dimensions were estimated with the t-test for independent samples (Table 2). Equal variance was assumed for all measured variables. Psoriasis patients significantly differed from the control group in the perceived overall quality of life ($t(142) = -2.26; p = .025$) and overall health satisfaction ($t(142) = -6.08; p < .001$). Furthermore, psoriasis patients reported significantly different on their physical health ($t(142) = -8.65; p < .001$) and psychological health ($t(142) = -7.84; p < .001$) than the control group. These results suggest that psoriasis patients reported reduced quality of life, lower health satisfaction, and diminished physical and psychological health. However, significant difference regarding social relationships was not found ($t(142) = -2.19; p = .30$) and that suggests that psoriasis patients and the control group perceived their social relationships similarly. These two groups significantly differed in the reported satisfaction with the environmental domain of quality of life ($t(142) = -7.84; p = .011$).

In regard to the second aim of this study, we examined the differences in the quality of life between psoriasis patients with mild and severe psoriasis. All preconditions for the t-test in the independent samples were assumed. Patients with mild psoriasis statistically differed ($t(80) = 3.55; p < .001$) from patients with severe psoriasis in overall health satisfaction in a way that patients with mild psoriasis were more satisfied with their health. However, both groups of psoriasis patients similarly perceived their overall quality of life ($t(80) = 1.11; p = .27$). Patients with mild and severe psoriasis

significantly differed in the perception of their psychological health ($t(80) = 3.554; p = .001$), which means that patients with mild psoriasis were more satisfied with their psychological health. No significant differences were found between patients with mild and severe psoriasis in the satisfaction with their physical health ($t(80) = .58; p = .57$), social relationships ($t(80) = 1.65; p = .10$), and the environmental health domain ($t(80) = .934; p = .35$) of quality of life.

Table 2
Quality of life dimensions in psoriasis patients and control group ($N = 144$)

	min	max	Psoriasis patients ($n = 82$)		Control group ($n = 62$)		<i>t</i>
			<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Overall quality of life	2	5	3.57	0.83	3.84	1.05	-2.26*
Overall health satisfaction	1	5	3.32	0.58	4.31	0.90	-6.08***
Physical health	8	20	13.66	2.28	17.34	2.82	-8.65***
Psychological health	8	20	13.92	2.15	16.87	2.35	-7.84***
Social relationship	4	20	15.53	3.24	16.62	2.56	-2.19
Environment	7	20	14.71	2.33	15.69	2.19	-2.56*

Note. For each *t*, $df = 142$. * $p < .05$. ** $p < .01$. *** $p < .001$.

Furthermore, we examined whether there was any difference between the control group and the group of patients with mild psoriasis in the domain of quality of life. Patients with mild psoriasis significantly differed from the control group in overall health satisfaction ($t(93) = -4.655; p < .001$) and psychological health ($t(93) = -2.584; p = .011$). In other words, patients with mild psoriasis were less satisfied with their overall health ($M = 3.79, SD = .99$) and with their psychological health ($M = 14.57, SD = 2.19$).

Table 3
Quality of life dimensions in psoriasis patients with mild and severe psoriasis ($n = 82$)

	Mild psoriasis ($n = 33$)		Severe psoriasis ($n = 49$)		<i>t</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Overall quality of life	3.70	.77	3.49	.87	1.11
Overall health satisfaction	3.79	0.99	3.00	.98	3.55***
Physical health	13.84	1.89	13.54	2.51	.58
Psychological health	14.57	2.19	13.48	2.02	2.30*
Social relationship	16.24	3.29	15.05	3.15	1.65
Environment	15.00	2.56	14.51	2.16	.93

Note. For each *t*, $df = 80$. * $p < .05$. ** $p < .01$. *** $p < .001$.

Discussion

This study explored the quality of life in patients with psoriasis in a Croatian sample. The results show that patients with psoriasis were neither satisfied nor dissatisfied with their overall quality of life and health satisfaction. Additionally, they were moderately satisfied with the other domains of quality of life, such as psychological, physical health, social relationships, and environment. Patients with psoriasis were significantly less satisfied than the control group regarding the overall quality of life, overall life satisfaction, psychological health, physical health, and environment. However, both groups of participants were equally satisfied with their social relationships. Also, a difference between patients with mild and severe psoriasis was found in the overall health satisfaction and psychological health. In addition, patients with mild psoriasis were less satisfied with their overall health satisfaction and psychological health than the control group. This result suggests that even mild psoriasis negatively impacts on health satisfaction and psychological health.

In the current study, psoriasis patients had a lower overall quality of life, health satisfaction, psychological and physical health, and the environmental dimension of the quality of life. The reason why the social domain is intact might be found in the cultural specifics of the Croatian sample and its collectivistic culture, where social support is very important. Most of the psoriasis patients lived with a partner, so the partner's support may explain these results. However, it should be noted that social support from friends was not measured in the current study, but may explain these differences. Previous research is consistent with the fact that psoriasis impacts negatively on the quality of life, but is also inconsistent about which domains of quality of life are affected. Similar results were found in the study by Skevington, Bradshaw, Hepplewhite, Dawkes, & Lovell (2006) where psoriasis patients had worse psychological and physical health but not social relationships and environmental domain. However, previous research demonstrated that psoriasis had a great impact on the social dimension of a patient's life (e.g. Fortune, et al., 2005). Furthermore, research has shown that psoriasis patients had lower general health and social functioning (Weiss et al., 2002). In research on a Korean sample, patients with psoriasis showed lower quality of life in all domains, except in environmental domain (Ryu, Kim, Kim, & Kim, 2004). In addition, psoriasis patients had lower overall quality of life, general health, physical health, social relationships, and environmental domain than the healthy control group and patients with other dermatological disease (acne vulgaris, atopic dermatitis, fungal infection, and verruca vulgaris) (Lee, Park, Kwon, Kim, & Kim, 2010).

The second aim of this research was to examine if there was a difference between patients with mild and severe psoriasis due to the domains of quality of life. As mentioned above, a difference was found in health satisfaction and psychological health. Augustin et al. (2008) reported that patients with severe psoriasis more often showed a moderate or very large effect on the quality of life as measured by a dermatology specific questionnaire. Also, Gelfand et al. (2004) reported that patients with more severe psoriasis (with more plaques on their bodies) reported larger impairment in health-related quality of life, and even patients with relatively minimal psoriasis had a significant decrease in the quality of life when compared with patients with no psoriasis symptoms at the time of assessment. However, some studies showed that clinical severity of psoriasis measured by PASI was not associated with the impairment in quality of life (Fortune et al. 1997; Weiss et al. 2002). In one study there was no significant difference in the quality of life domains in the quartiles of PASI, except for physical functioning (Sampogna, 2006). Other studies showed that objective measure of psoriasis severity correlated poorly with the patient's quality of life (Weiss et al., 2002; Zachariae et al., 2002; Touw et al., 2001; Perrott, Murray, Lowe, & Mathieson, 2000).

There is a number of limitations that should be considered. First of all, the study is cross-sectional, correlational, which suggests that it does not provide causal conclusions. The second limitation, and probably the major one, is the sample itself because the sample was convenient and collected from one medical centre. Also, the measurement of quality of life can be a problem itself as there are numerous measures of quality of life. Although, the (WHOQOL)-BREF questionnaire is well established and with good psychometric properties, the psoriasis specific measures of quality of life are the most sensitive measures (Bhose, Kulkarni, Feldman, & Balkrishnan, 2006).

Future studies should consider these limitations and provide evidence in a large and representative sample. Also, for detailed conclusions, a longitudinal study should be conducted. Furthermore, longitudinal research should examine if there is improvement in the quality of life and psychological well-being after adequate psychological treatment and support. Additionally, future studies should include subjective measures of psoriasis severity along with the objective ones. Also, it is necessary to explore the reasons why there is no difference in this sample of patients with psoriasis and the control group in social relations when previous research suggests that social relations are disrupted. Future

research should investigate social support in psoriasis patients and their satisfaction with personal relations. Also, research of the psychological burden of psoriasis in the Croatian sample is needed. Despite the previously mentioned limitations, the present study yielded several positive contributions to the existing literature. First, the quality of life in the Croatian sample was examined. Although it is known that psoriasis negatively impacts on the quality of life, previous literature provides inconsistent findings about which domains are diminished. Also, studies yielded different findings about the correlations between the illness severity and quality of life. Finally, the results of this study have established that just having psoriasis impairs psychological health and health satisfaction.

Conclusion

Psoriasis is a chronic condition which has a strong, negative impact on the patient's life and their quality of life. Patients with psoriasis had lower results on the dimensions of quality of life, except for social relationships, than the control group. Besides, even patients with mild psoriasis had significantly lower health satisfaction and psychological health than healthy participants. In other words, just being diagnosed with psoriasis lowered the quality of life. These findings yielded important practical implications. While planning treatment for patients, in addition to reducing their physical symptoms, it is also necessary to reduce the psychological burden of the disease and improve the quality of life. Treatment should involve multidisciplinary planning and should consider the patient's subjective perception of the illness.

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References

- Akay, A., Pekcanlar, A., Bozdog, K. E., Altintas, L., & Karaman, A. (2002). Assessment of depression in subjects with psoriasis vulgaris and lichen planus. *Journal of the European Academy of Dermatology and Venerology*, *16*, 347-352.
- Anderson, R. T., & Rajagopalan, R. (1997). Development and validation of a quality of life instrument for cutaneous diseases. *Journal of American Academy of Dermatology*, *37*, 41-50.
- Armstrong, A. W., Schupp, C., Wu, J., & Bebo, B. (2012). Quality of Life and Work Productivity Impairment among Psoriasis Patients: Findings from the National Psoriasis Foundation Survey Data 2003–2011. *PLoS ONE*, *7*(12): e52935.
- Arruda, L. H. F., & Moraes, A. P. F. (2001). The impact of psoriasis on quality of life. *British Journal of Dermatology*, *144*, (Suppl. 58), 33-36.
- Augustin, M., Krüger, K., Radtke, M. A., Schwippel, I., & Reich, K. (2008). Disease Severity, Quality of Life and Health Care in Plaque-Type Psoriasis: A Multicenter Cross-Sectional Study in Germany. *Dermatology*, *216*, 366-372.
- Barišić-Druško V., Paljan, D., Kinsky, A., & Vujasonović, S. (1989). Prevalence of psoriasis in Croatia. *Acta Dermato-Venereologica. Supplement (Stockholm)*, *146*, 178-179.
- Bhose, M. J., Kulkarni, A., Feldman, S. R., & Balkrishnan, R. (2006). Quality of life in patients with psoriasis. *Health and Quality of Life Outcomes*, *4*, 35. doi: 10.1186/1477-7525-4-35.
- Callen, J. P. et al. (2003). AAD consensus statement on psoriasis therapies. *Journal of American Academy of Dermatology*, *49*, 897–899.
- Choi, J., & Koo, J. Y. M. (2003). Quality of life issues in psoriasis. *Journal of the American Academy of Dermatology*, *49*, 57-61.
- Cotterill, J. A., & Counliffe, W. J. (1997). Suicide in dermatology patients. *British Journal of Dermatology*, *137*, 246-250.
- de Korte, J., et al. (2004). Quality of Life in Patients with Psoriasis: A Systematic Literature Review. *Journal of Investigative Dermatology Symposium Proceedings*, *9*, 140-147.
- Feldman, S. R. (2004). A quantitative definition of severe psoriasis for use in clinical trials. *Journal of Dermatological Treatment*, *15*, 27–29.
- Feldman, S. R., Fleischer, A. B. Jr., Reboussin, D. M., Rapp, S. R., Bradham, D.D., Exum, M.L., & Clark, A. R. (1997). The economic impact of psoriasis increases with psoriasis severity. *Journal of American Academy of Dermatology*, *37*, 564-569.

- Finlay A. Y., Khan, G. K., Luscombe, D. K., & Salek, M. S. (1990). Validation of sickness impact profile and psoriasis disability index in psoriasis. *British Journal of Dermatology*, *123*, 751-756.
- Finlay, A. Y., & Coles, E. C. (1995). The effect of severe psoriasis on the quality of life of 369 patients. *British Journal of Dermatology*, *132*, 236-244.
- Fortune, D. G., Main, C. J., O'Sullivan, T. M., & Griffiths, C. E. M. (1997). Quality of life in patients with psoriasis: the contribution of clinical variables and psoriasis-specific stress. *British Journal of Dermatology*, *137*, 755-760.
- Fortune, D. F., Richards, H. L., Main, C. J., & Griffiths, C. E. M. (1998). What patients with psoriasis believe about their condition. *Journal of American Academy of Dermatology*, *39*, 196-201.
- Fortune, D. G., Richards, H. L., & Griffiths, C. E. (2005). Psychologic factors in psoriasis: consequences, mechanisms, and interventions. *Dermatologic Clinics*, *23*, 681-694.
- Fredriksson, T., & Pettersson U. (1978). Severe psoriasis-oral therapy with a new retinoid. *Dermatologica*, *157*, 238-244.
- Fried, R. G., Friedman, S., Paradis, C., Hatch, M., Lynfield, Y., Duncanson C, & Shalita, A. (1995). Trivial or terrible? The psychosocial impact of psoriasis. *International Journal of Dermatology*, *34*, 101-105.
- Gelfand, J. M., Feldman, S. R., Stern, R. S., Thomas, J., Rolstad, T., & Margolis, D. J. (2004). Determinants of quality of life in patients with psoriasis: A study from the US population. *Journal of American Academy of Dermatology*, *51*, 704-708.
- Ginsburg, I. H., & Link, B. G. (1993). Psychosocial consequences of rejection and stigma feelings in psoriasis patients. *International Journal of Dermatology*, *32*, 587-591.
- Gupta, M. A., Gupta, A. K., & Watteel, G. N. (1998). Perceived deprivation of social touch in psoriasis is associated with greater psychological morbidity: an index of the stigma experience in dermatologic disorders. *Cutis*, *61*, 339-42.
- Gupta, M. A., Schork, N. J., Gupta, A. K., Kirkby, S. & Ellis, C. N. (1993). Suicidal ideation in psoriasis. *International Journal of Dermatology*, *32*, 188-190.
- Kilic, A., Gulec, M. Y., Gul, U., Gulec, H. (2008). Temperament and character profile of patients with psoriasis. *Journal of the European Academy of Dermatology and Venerology*, *22*, 537-542.
- Lee, Y. W., Park, E. J., Kwon, I. H., Kim, K. H., & Kim, K. J. (2010). Impact of Psoriasis on Quality of Life: Relationship between Clinical Response to Therapy and Change in Health-related Quality of Life. *Annals of Dermatology*, *22*(4), 389-396.
- Naldi, L., et al. (2003). Randomized clinical trials for psoriasis 1977-2000: The EDEN survey. *Journal of Investigative Dermatology*, *120*, 738-741.
- Perrott, S. B., Murray, A. H., Lowe, J., & Mathieson, C. M. (2000). The psychosocial impact of psoriasis: physical severity, quality of life, and stigmatization. *Physiology & Behavior*, *70*, 57-571.
- Pibernik-Okanovic, M., Szabo, S., & Metelko, Z. (1998). Quality of life following change in diabetes therapy. *Pharmacoeconomics*, *14*(2).
- Rapp, S. R., Feldman, S. R., Exum, M. L., Fleischer, A. B., & Reboussin, D. M. (1999). Psoriasis causes as much disability as other major medical diseases. *Journal of American Academy of Dermatology*, *41*, 401-407.
- Raychaudhuri, S. P., & Farber, E. M. (2001). The prevalence of psoriasis in the world. *Journal of European Academy of Dermatology and Venereology*, *15*, 16-17.
- Richards, H. L., Fortune, D. G., Griffiths, C. E. M., & Main, C. J. (2001). The contribution of perception of stigmatisation to disability in patients with psoriasis. *Journal of Psychosomatic Research*, *50*, 11-15.
- Ryu, J. H., Kim, K. H., Kim, K. J., & Kim, S. J. (2004). Quality of life in patients with psoriasis. *Korean Journal of Dermatology*, *42*, 264-271.
- Sampogna, F., Tabolli, S., Söderfeldt, B., Axtelius, B., Aparo, U., & Abeni, D. (2005). Measuring quality of life of patients with different clinical types of psoriasis using the SF-36. *British Journal of Dermatology*, *154*, 884-849.
- Schmid-Ott, G., Burchard, R., Niederauer, H. H., Lamprecht, F., & Künsebeck, H. W. (2003). Stigmatization and quality of life of patients with psoriasis and atopic dermatitis. *Hautarzt*, *54*, 852-857.
- Schmid-Ott, G., Jaeger, B., Kuensebeck, H. W., Ott, R., & Lamprecht, F. (1996). Dimensions of stigmatization in patients with psoriasis in a "Questionnaire on Experience with Skin Complaints". *Dermatology*, *193*, 304-310.
- Skevington, S. M., Bradshaw, J., Hepplewhite, A., Dawkes, K., & Lovell, C. R. (2006). How does psoriasis affect quality of life? Assessing Ingram-regimen outpatient programme and validating WHOQOL-100. *British Journal of Dermatology*, *154*, 680-691.
- Skevington, S. M., Lofty, M., & O'Connell, K. A. (2004). The world Health Organization's WHOQOL-BREF quality of life assessment: Psychometric properties and results of the international field trial. A Report from the WHOQOL Group. *Quality of Life Research*, *13*, 299-310.

- Touw, C. R., Hakkaart-Van Roijen, L., Verboom, P., Paul, C., Rutten, F.F., & Finlay, A. W. (2001). Quality of life and clinical outcome in psoriasis patients using intermittent cyclosporine. *British Journal of Dermatology*, *144*, 967-972.
- Wahl, A., Loge, J. H., Wiklund, I., & Hanestad, B. R. (2000). The burden of psoriasis: a study concerning health-related quality of life among Norwegian adult patients with psoriasis compared with general population norms. *Journal of American Academy of Dermatology*, *43*, 803-808.
- Weiss, S. C., Kimball, A. B., Liewehr, D. J., Blauvelt, A., Turner, M. L., & Emanuel, E. J. (2002). Quantifying the harmful effects of psoriasis on health-related quality of life. *Journal of American Academy of Dermatology*, *4*, 512-518.
- Zachariae, R., Zachariae, H., Blomqvist, K., Davidsson, S., Molin, L., Mork, C., & Sigurgeirsson, B. (2002). Quality of life in 6497 Nordic patients with psoriasis. *British Journal of Dermatology*, *146*, 1006-1016.

4

Candidates' voice in political debates and the outcome of presidential elections

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Abstract

According to rational choice theory, a voting decision is based on the information about candidates and the political positions they hold. However, a large body of research has shown that voters do not know enough about politics and that they rely on cues that signal the quality of candidates. For example, they are more prone to vote for a candidate who shows signals of dominance, social influence, and masculinity. These characteristics were important in our evolutionary history and are related to testosterone levels. Vocal characteristics are also related to testosterone levels; those individuals with higher testosterone levels have a deeper voice. Experimental laboratory studies showed that voice pitch has an impact on voting decisions. To verify and expand these results we checked whether vocal characteristics of actual presidential candidates are related to election outcomes. Using recordings of presidential debates, we show that those candidates who have a deeper voice, greater pitch variability, higher minimal and lower maximal frequency have a higher probability of winning the election. These results offer an external validity of previous laboratory studies and are interpreted within the framework of evolutionary political psychology.

Keywords: voting, voice, pitch, presidential debate, presidential election

Voting is the most prominent way for citizens to participate in the political world. For representative democracy to work, voters should do so in a rational and informed way (Bobbio, 1987). When casting votes, they should know which parties (candidates) are relevant, which political issues are important to them, what are their preferences, what are candidates' competencies, etc., and then vote to maximize their well-being (Downs, 1957; McKelvey & Ordershook, 1986). However, vast research on voting behaviour has shown that most citizens have low levels of knowledge about politics (e.g. Converse, 1964; Henderson, 2013; Zaller, 1992). Also, they are influenced by information that could, from a normative point of view, be deemed irrational, such as candidate's facial features, clothing, pose, or vocal characteristics (Gregory & Gallagher, 2002; Rosenberg, Kahn, & Tran, 1991; Rosenberg & McCafferty, 1987; Surawski & Ossoff, 2006; Todorov, Mandisodza, Goren & Hall, 2005). Inferences based on these cues are made rapidly and automatically (e.g. Ballew & Todorov, 2007; Mattes et al., 2010).

These results are in concordance with System 1 processes of the dominant dual-processing models of decision making (Kahneman, 2011; Stanovich, 2004). System 1 processes are made during the first encounter with the person in question (on-line). In the context of voting, they should rationally be overridden by System 2 processes that consider relevant information, such as candidate's competencies, experience, stands on political issues etc. However, actual voting results can be, at least in part, predicted from cues used by System 1. From an evolutionary perspective, this might not be so surprising. Human political behavior emerged in evolutionary history as an adaptation to problems regarding coordination of group life (Petersen, 2015). From this point of view, when voters rely on cues used by System 1, they are choosing a leader with potentially better leadership qualities and abilities for successfully solving coordination problems.

Regarding the investigation of those cues, researchers usually use visual and/or audio stimuli of faces of political candidates and look for differences between them in perceived domination, competence, leadership etc. (e.g. Little et al., 2007; Todorov et al., 2005). Beside candidates' faces, some studies investigated the relationship between candidates' voice and election outcomes. For example, Gregory and Gallagher (2002) predicted voting patterns in US presidential elections from 1960 to 2000 based on the candidates' fundamental frequency of phonation (F_0), which is perceived as pitch. Voice pitch is correlated with testosterone levels (Puts, Apicella & Cardenas, 2012), meaning that men with a deeper voice have higher levels of testosterone. Moreover, this sex hormone is an indicator of dominance and social influence (Mazur & Booth, 1998). Thus, a deeper voice in men is related to perceived dominance, social status, attraction and reproductive success (Apicella, Feinberg, & Marlowe, 2007; Feinberg, DeBruine, Jones & Little, 2008; Feinberg, Jones, Little, Burt & Perrett, 2005; Puts, Gaulin, and Verdolini, 2006; Tigue, Borak, O'Connor, Schandl, and Feinberg, 2012). In most studies that focus on voting, participants are presented with candidates' voices with manipulated pitch. Results of these studies imply that candidates with lower voices gain more votes (Klofstad, Anderson & Peters, 2012; Tigue et al., 2012). To summarize previous findings, it seems that most studies were conducted within a laboratory setting. The question is then - can we predict election outcomes based on vocal characteristics of actual political candidates? Furthermore, previous studies focused almost exclusively on F_0 . However, other vocal characteristics could be important cues for voters. For example, the variability of voice pitch (F_{0SD}) could have an impact on the perception of dominance and/or masculinity. This characteristic is generally lower in male voices (Daly and Warren, 2001), while higher values of F_{0SD} are related to negative arousal (e.g. Banse & Scherer, 1996; Park et al., 2011). This means that lower F_{0SD} could increase the likelihood of winning the election. Besides F_{0SD} , minimum (F_{0MIN}) and maximum (F_{0MAX}) pitch could also be related to voting behaviour. Men have lower F_{0MIN} and F_{0MAX} (Fitch, 1997), and higher values of these characteristics are generally related to expression of fear (Abelin, 2008; Bänziger & Scherer, 2005), which implies that they could be important cues for signalling leadership quality. Thus, in the voting context, a candidate's lower F_{0MIN} and F_{0MAX} could increase the likelihood of winning the election.

Considering these observations, the aim of this research was to confirm and broaden previous findings that showed a connection between candidates' vocal characteristics and voting. We used data on actual political candidates and outcomes of presidential elections, thus creating a research design with high external validity. To ensure that voices of opposing presidential candidates were recorded in an identical setting, we used the recordings of presidential debates in the final election rounds. In this way, the opposing candidates were recorded in the same studio with the same surroundings.

In addition to F_0 , we examined the contribution of F_{0SD} , F_{0MIN} , and F_{0MAX} in predicting the election outcome. Based on previous studies, we hypothesised that these vocal characteristics would be negatively correlated with the probability of winning the presidential election, i.e., the probability of winning would increase with the decrease in the studied pitch features.

Method

Voice samples

We analysed the voice samples of presidential candidates, recorded during political debates in the final rounds of each presidential election. First, by using database at www.electionguide.org, we searched for presidential elections held across the world in a nine-year period, from January 2006 to May 2015. We wanted to ensure that the voters were presented with a choice between two candidates. Therefore, we considered only the final rounds of elections with two opposing candidates. Due to the different acoustic characteristics of male and female voice, as well as to the poor representation of female presidential candidates, we analysed elections featuring only male candidates. We also included only direct elections where president was elected by popular vote, and not by any other type of election.

After the list of elections was finalised, YouTube service was used to find recordings of presidential candidates' political debates in the final round (see Appendix A). We selected debates based on the criteria that they were recorded in a television studio to ensure adequate sound quality, and that there was no background music or other sounds. After the selection procedure, we identified 24 valid presidential election debates held in 22 different countries. Recorded videos of 48 different candidates were then converted to mp3 format at 128 kbps rate, using *Any video converter ultimate* freeware.

Acoustic analysis

Before the analysis, we cropped an uninterrupted voice sample of each candidate, which was around 10 seconds long (M duration = 9.98, SD=0.32 s). We wanted to capture the most natural sound of candidates' voice, and therefore selected their voice at the beginning of the speech. Hughes, Farley & Rhodes (2010) point out that the beginning of utterance is assumed to be the least influenced by conscious and unconscious voice modification, and that it would represent the most „natural“ part of the message. Acoustic characteristics F_0 , F_{0SD} , F_{0MIN} and F_{0MAX} values were obtained using *Praat* voice analysis software (version 5.4.09). In accordance with programmers' recommendation (Boersma & Weenik, 2009) for analysing male voice, pitch floor was 75 Hz and pitch ceiling was 300 Hz.

Results

We analysed 48 voice recordings of the presidential candidates. Descriptive values of their vocal characteristics are presented in Table 1, and correlations among voice parameters are presented in Table 2.

Table 1
Descriptive statistics of presidential candidates' vocal characteristics

	Election winner				Election loser			
	M	SD	SI	KI	M	SD	SI	KI
F_0	125.04	21.88	0.65	-0.44	128.36	25.13	0.44	-0.07
F_{0SD}	25.47	10.54	1.20	1.34	24.97	9.64	0.48	0.52
F_{0MIN}	75.59	8.79	2.00	3.99	76.58	5.75	1.29	4.01
F_{0MAX}	221.99	50.08	0.15	-1.22	238.86	54.90	-0.80	-0.04

SI- Skewness index, KI- Kurtosis index

Table 2
Correlations between voice parameters

	F_{0SD}	F_{0MIN}	F_{0MAX}
F_0	.708**	.351*	.669**
F_{0SD}	1	-.096	.782**
F_{0MIN}		1	.110
F_{0MAX}			1

** $p < 0.01$; * $p < 0.05$

Variance inflation factors (VIF) for all variables were less than 10, indicating no multicollinearity (Myers, 1990). Next, binary regression with enter method was used to assess the contribution of presidential candidates' vocal characteristics in the prediction of presidential elections outcome. Election losers were coded with 0 and winners with 1. We tested whether vocal characteristics could increase the likelihood of winning the election. Results are presented in Table 3.

Table 3

Binary logistic regression of presidential candidates' vocal characteristics predicting presidential elections outcome

	B	Wald χ^2	df	Odds ratio (B)	95% Confidence interval for odds ratio (B)	
					Lower	Upper
F ₀	-.05	2.96*	1	0.95	0.90	1.01
F _{0SD}	.22	5.51**	1	1.25	1.04	1.50
F _{0MIN}	.15	4.79**	1	1.16	1.02	1.32
F _{0MAX}	-.03	4.96**	1	0.97	0.95	1.00

B- Unstandardized regression coefficient, * $p < .10$; ** $p < .05$

The model was significant ($\chi^2=10.167$, $df=4$, $p<0.05$), and predicted the correct outcome in 70.8 % of cases. Cox & Snell (0.20) and Nagelkerke (0.27) R^2 values indicated large association of candidates' vocal characteristics and elections outcome.

Significant Wald χ^2 values indicated that every vocal characteristic was a significant predictor of the elections outcome, with F₀ being significant only at 6% alpha error rate. We decided to interpret this marginally significant finding since this result was in line with our expectations, previous findings and theoretical background. F₀ negatively predicted winning the election, meaning that a deeper voice was associated with a greater likelihood of becoming a president. Contrary to our initial assumption, F_{0SD} positively predicted the election outcome. This implied that it was more likely for a candidate with higher pitch variability to win the election. Finally, it was more likely for a candidate with higher F_{0MIN} and lower F_{0MAX} value to win the election.

To sum up the results, deeper voice, greater pitch variability, higher minimum and lower maximum pitch increased the likelihood of winning presidential election.

Discussion

This study focused on predicting presidential election outcomes around the world in the period 2006-2015 based on candidates' vocal characteristics. Results showed that the likelihood of winning the election increased with a deeper voice, higher pitch variability, higher minimum and lower maximum pitch values. The association between lower voice pitch and election outcome is in line with our initial assumption and previous findings that demonstrate that a lower pitch voice was perceived as more attractive (Feinberg et al., 2008; Feinberg et al. 2005), and was related to physical and social dominance (Puts et al., 2006). These features could be desirable characteristics of a national leader. However, it is noteworthy that this acoustic characteristic might be more important in attractiveness perception rather than dominance during intrasexual competition (Hodges-Simeon et al., 2010a; 2010b). Therefore, election outcome might depend more on voice attractiveness than on signalling dominance. Support for this interpretation comes from another important finding of this study. We proposed that lower F_{0SD} could be associated with masculinity and dominance, hence increasing the likelihood of winning the election. However, the results showed the opposite trend. A candidate with higher F_{0SD} had a greater probability of winning the election and becoming the president. We propose an additional explanation, based on the assumption that a lower F_{0SD} is associated with a flat monotone voice, which might sound dull and/or less enthusiastic. Also, as Hodges-Simeon et al. (2010b) pointed out, greater variation might be related to a friendly context and signal safety and affiliation, instead of dominance and intimidation. In this way, if voters put more value on these characteristics, a candidate with higher pitch variability might have an advantage. This finding is in line with our recently published result that revealed an interactive effect of pitch and its variability on election outcome (Pavela Banai, Banai, Bovan, 2017). Specifically, using a larger sample, but less controllable recording settings than in the present study, we found that lower pitch *and* higher pitch variability increase the likelihood of winning the election. This could be explained in terms of voters' tendency to vote for a masculine, yet friendly leader.

A positive association between minimum pitch and the likelihood of winning the election was unexpected because we assumed that lower pitch would be associated with masculinity and influential leadership. However, lower minimum pitch might be related to negative emotions that are low in activation, such as sadness or depression. Like the lower F_{0SD} values, low minimum pitch might be

perceived as non-energetic and signal a lack of enthusiasm, hence it could lower the likelihood of winning the leadership position.

According to the initial hypothesis, lower values of maximum pitch were expected to be related to higher probability of winning the elections, because lower maximum pitch might be perceived as more masculine. In addition, it might signal absence of negative emotions, such as fear (Bänziger & Scherer, 2005). However, higher minimum and lower maximum pitch increased the likelihood of winning the election in our study, which implies that candidates' voices with a smaller range of frequencies are preferred. It might sound counterintuitive that both values are significant predictors, alongside higher F_{0SD} . We interpret this finding in a way that voters prefer more variable voices, but with less extreme values.

Despite some unexpected results, we find these results to be an interesting finding that suggests that vocal characteristics could predict actual election outcome. Also, results of this study offer external validity for the evidence that candidates' voice is associated with the likelihood to get votes and they fit well into findings from the field of political cognition. Evaluating political candidates seems to be dominantly done via on-line processing, by which citizens immediately evaluate information about candidates as they are exposed to them, and include them in a *running tally* (or evaluation tab) of the candidate (e.g. Lodge, McGraw, & Stroh, 1989; Lodge, Steenbergen, & Brau, 1995; Kim, Taber, & Lodge, 2010). They dispose of the particularities of information and add the evaluative information to the summary counter for each candidate (see Lavine, 2002). To make these evaluations, citizens use cues from their environment, ranging from the argumentative or rhetorical strategies of candidates (Nagel, Maurer, & Reinemann, 2012), their facial appearance (Todorov et al., 2005), to, as this study shows, nonverbal vocal characteristics. Most of these evaluations seem to be a part of System 1 processes, which are evolutionary older, automatic, unconscious and require low cognitive effort (Evans, 2008). While the exact relationship between System 1 and System 2 processes and their impact on voters' decision is beyond the scope of this research, results clearly show that System 1 processes could have a role in electing a national leader, which is in concordance with the evolutionary importance of electing a good group leader.

This study was not conducted in a controlled environment nor in a laboratory setting, that seem to be necessary to investigate the interaction of System 1 and 2 processes in voting. For example, by controlling both the vocal characteristics, which should be cues used by System 1, and the political positions or messages the candidates promote, which are cues for System 2, we could explore the causal interaction between these two types of processes in voting or evaluating political candidates. Similar designs could be used to distinguish the relationship between different cues used by System 1, such as facial appearance, vocal characteristics, height etc. Thus, using this research design we cannot be certain about the particularities or the causal mechanism underlying the relationship between candidates' vocal characteristics and the election outcome.

Also, it is noteworthy that the video recordings were not made in standardized conditions across elections. Even though each pair of candidates was recorded in identical conditions, there is a great amount of heterogeneity among debates in different countries, especially considering surroundings, interviewers, debate moderators, and the size of the audience in the studio. Again, we would like to emphasise that every uncontrollable factor that might have influenced the recording quality was the same for two opposing candidates.

To conclude, results of this study confirmed that nonverbal vocal characteristics of presidential candidates are related to an election outcome. Additionally, by using data on actual presidential elections, this study offers external validity for previous research done in laboratory settings. Even though these results should be further studied, replicated and broadened, we feel that the field of evolutionary political psychology has important insights for understanding political behavior.

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References

- Abelin, Å. (2008). Anger or Fear? Crosscultural multimodal interpretations of emotional expressions. In: K. Izdebski (Ed.), *Emotions in the human voice, Volume 1 Foundations* (pp. 65–73). San Diego: Plural Publishing Inc.
- Anderson, R. C., & Klofstad, C. A. (2012). Preference for leaders with masculine voices holds in the case of feminine leadership roles. *PLoS One*, 7(12), e51216.
- Apicella, C. L., Feinberg, D. R., & Marlowe, F. W. (2007). Voice pitch predicts reproductive success in male hunter-gatherers. *Biology Letters*, 3(6), 682-684.
- Ballew, C. C., & Todorov, A. (2007). Predicting political elections from rapid and unreflective face judgments. *PNAS*, 104 (46), 17948-17953.
- Banse, R., & Scherer, K. R. (1996). Acoustic profiles in vocal emotion expression. *Journal of Personality and Social Psychology*, 70(3), 614-636.
- Bänziger, T. & Scherer, K. R. (2005). The role of intonation in emotional expressions. *Speech Communication*, 46, 252-267.
- Bobbio, N. (1987). *The Future of Democracy*. Boston: Polity Press.
- Boersma, P., & Weenick, D. (2010). Praat: Doing phonetics by computer, version 5.4.09. Retrieved from: <http://www.praat.org>.
- Converse, P. E. (1964). Assessing the Capacity of Mass Electorates. In: D. E. Apter (Ed.), *Ideology and discontent* (pp. 75-169). New York: The Free Press of Glencoe.
- Daly, N., & Warren, P. (2001). Pitching it differently in New Zealand English: Speaker sex and intonation patterns. *Journal of Sociolinguistics*, 5, 85–96.
- Downs, A. (1957). *An economic theory of democracy*. New York: Harper & Row.
- Evans, J. S. B. T. (2008). Dual-processing accounts of reasoning, judgment, and social cognition. *Annual Review of Psychology*, 59, 255–278.
- Feinberg, D. R., DeBruine, L. M., Jones, B. C., & Little, A. C. (2008). Correlated preferences for men's facial and vocal masculinity. *Evolution and Human Behavior*, 29(4), 233–241.
- Feinberg, D. R., Jones, B. C., Little, A. C., Burt, D. M., & Perrett, D. I. (2005). Manipulations of fundamental and formant frequencies affect the attractiveness of human male voices. *Animal Behaviour*, 69, 561–568.
- Fitch, W. T. (1997) Vocal tract length and formant frequency dispersion correlate with body size in rhesus macaques. *The Journal of Acoustical Society of America*, 102, 1213–1222.
- Gregory, S. W. Jr., & Gallagher, T. J. (2002). Spectral analysis of candidates' nonverbal vocal communication: Predicting U. S. presidential election outcomes. *Social Psychology Quarterly*, 65(3), 298-308.
- Henderson, M. (2013). Issue publics, campaigns, and political knowledge. *Political Behavior*, 36(3), 631-657.
- Hodges-Simeon, C. R., Gaulin, S. J. C., & Puts, D. A. (2010). Different vocal parameters predict perceptions of dominance and attractiveness. *Human Nature*, 21, 406–427.
- Hughes, S. M., Farley, S. D., & Rhodes, B. C. (2010). Vocal and physiological changes in response to the physical attractiveness of conversational partners. *Journal of Nonverbal Behaviour*, 34(3), 155–167.
- Kahneman, D. (2011). *Thinking fast and slow*. New York: Farrar, Straus, and Giroux.
- Kim, S., Taber, C. S., & Lodge, M. (2010). A computational model of the citizen as motivated reasoner: Modeling the dynamics of the 2000 presidential election. *Political Behavior*, 32(1), 1-28.
- Klofstad, C. A., Anderson, R. C., & Peters, S. (2012). Sounds like a winner: voice pitch influences perception of leadership capacity in both men and women. *Proceedings of the Royal Society B: Biological Sciences*, 279, 2698-2704.
- Lavine, H. (2002). On-line versus memory-based process models of political evaluation. In: K. R. Monroe (Ed.), *Political Psychology*, (pp. 225-248). Mahwah: Lawrence Erlbaum Associates.
- Little, A. C., Burriss, R. P., Jones, B. C., & Roberts, S. C. (2007). Facial appearance affects voting decisions. *Evolution and Human Behavior*, 28(1), 18-27.
- Lodge, M., McGraw, K. M., & Stroh, P. (1989). An impression-driven model of candidate evaluation. *The American Political Science Review*, 83(2), 399-419.
- Lodge, M., Steenbergen, M. R., & Brau, S. (1995). The Responsive Voter: Campaign information and the dynamics of candidate evaluation. *American Political Science Review*, 89(2), 309-326.
- Mattes, K., Spezio, M., Kim, H., Todorov, A., Adolphs, R., & Alvarez, R. M. (2010). Predicting election outcomes from positive and negative trait assessments of candidate images. *Political Psychology*, 31(1), 41-58.

- Mazur, A., & Booth, A. (1998). Testosterone and dominance in men. *Behavioral and Brain Sciences*, 21, 353–397.
- McKelvey, R. D., & Ordeshook, P. C. (1986). Information, electoral equilibria, and the democratic ideal. *The Journal of Politics*, 48(4), 909-937.
- Myers, R. (1990). *Classical and modern regression with applications*. Boston, MA: Duxbury.
- Nagel, F., Maurer, M., & Reinemann, C. (2012). Is there a visual dominance in political communication? How verbal, visual, and vocal communication shape viewers' impressions of political candidates. *Journal of Communication*, 62, 833-850.
- Park, C. K., Lee, S., Park, J. J., Baik, Y. S., Park, Y. B., & Park, Y. J. (2011). Autonomic function, voice, and mood states. *Clinical Autonomic Research*, 21, 103–110.
- Pavela Banai, I., Banai, B. & Bovan, K. (2017). Vocal characteristics of presidential candidates predict the outcome of actual elections. *Evolution and Human Behavior*, 38(3), 309-314.
- Puts, D. A., Apicella, C. L., & Cardenas, R. A. (2012). Masculine voices are honest signals of men's threat potential in foraging and industrial societies. *Proceedings of the Royal Society B: Biological Sciences*, 279, 601-609.
- Puts, D. A., Gaulin, S. J. C., & Verdolini, K. (2006). Dominance and the evolution of sexual dimorphism in human voice pitch. *Evolution and Human Behavior*, 27, 283–296.
- Petersen, M. B. (2015). Evolutionary political psychology: on the origin and structure of heuristics and biases in politics. *Advances in Political Psychology*, 36(1), 45–78.
- Rosenberg, S. W., Kahn, S., & Tran, T. (1991). Creating a Political Image: Shaping appearance and manipulating the vote. *Political Behavior*, 13(4), 345-367.
- Rosenberg, S. W., & McCafferty, P. (1987). The image and the vote: Manipulating voters' preferences. *Public Opinion Quarterly*, 51(1), 31–47.
- Stanovich, K. (2004). *The Robot's rebellion: Finding meaning in the age of Darwin*. Chicago: University of Chicago Press.
- Surawski, M. K., & Ossoff, E. P. (2006). The effects of physical and vocal attractiveness on impression formation of politicians. *Current Psychology*, 25(1), 15-27.
- Tigue, C. C., Borak, D. J., O'Connor, J. J., Schandl, C., & Feinberg, D. R. (2012). Voice pitch influences voting behavior. *Evolution and Human Behavior*, 33(3), 210-216.
- Todorov, A., Mandisodza, A. N., Goren, A., & Hall, C. C. (2005). Inferences of competence from faces predict election outcomes. *Science*, 308, 1623-1626.
- Zaller, J. R. (1992). *The nature and origins of mass opinion*. Cambridge: Cambridge University Press.

Appendix A- Elections included in the sample and debates' URLs

Country	Election date	YouTube URL
Brazil	October 29, 2006	https://www.youtube.com/watch?v=dg0Jbmc9rJg
Taiwan	March 22, 2008	https://www.youtube.com/watch?v=6_DsEhMtgyo&list=PLMUtR7G7G6EQoF1YyIkGGVo051fv4iFSi
Mongolia	May 24, 2009	https://www.youtube.com/watch?v=IgxZPn1Kv48
Romania	December 06, 2009	https://www.youtube.com/watch?v=h5okCWxj3ng
Croatia	January 10, 2010	https://www.youtube.com/watch?v=hVy6BZMpbOo
Chile	January 17, 2010	https://www.youtube.com/watch?v=TnHPSeu46S0
Poland	July 04, 2010	https://www.youtube.com/watch?v=TRl2Sb-qm_s
Finland	February 05, 2012	https://www.youtube.com/watch?v=8Q7mUDjq000
Senegal	March 25, 2012	https://www.youtube.com/watch?v=qGMGfpEyA2U
East Timor	April 16, 2012	https://www.youtube.com/watch?v=BwROZ_bCpM4
France	May 06, 2012	https://www.youtube.com/watch?v=Fhv1VVCrRjY
Serbia	May 20, 2012	https://www.youtube.com/watch?v=rNao0yprprM
Egypt	June 16, 2012	https://www.youtube.com/watch?v=MtTibiWLEjw
USA	November 06, 2012	https://www.youtube.com/watch?v=hx1mjT73xYE
Czech Republic	January 25, 2013	https://www.youtube.com/watch?v=sX4MG6_lX8w
Cyprus	February 24, 2013	https://www.youtube.com/watch?v=bVqQoDNFijM
Montenegro	April 07, 2013	https://www.youtube.com/watch?v=PNhHDWOGCQE
El Salvador	March 09, 2014	https://www.youtube.com/watch?v=Mpzb2xte5MM
Slovakia	March 29, 2014	https://www.youtube.com/watch?v=pu_yHsrM68Y
Afghanistan	June 14, 2014	https://www.youtube.com/watch?v=F_Erv6RFu38
Colombia	June 15, 2014	https://www.youtube.com/watch?v=6bsXKp6oppE
Indonesia	July 09, 2014	https://www.youtube.com/watch?v=PrRltCn0TqE
Romania	November 16, 2014	https://www.youtube.com/watch?v=FEmeXGAKt6o
Poland	May 24, 2015	https://www.youtube.com/watch?v=LvCIVjrEjGE

5

Young children's understanding of the well-being survey's questions – findings from cognitive interviews in Croatia

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Abstract

Cognitive interviewing is a methodological tool for pre-testing questionnaires that helps researchers to make decisions about whether and how to revise questions. In this paper, key findings from cognitive interviews in Croatia as part of the MYWEB EU FP7 project were presented. The main aim of this cognitive interview study within the MYWEB project was to examine how children understand, interpret and process questions and then to select a set of questions measuring well-being constructs that are age-appropriate. In Croatia, 36 children aged between 7 and 8 participated in this research. Over the course of three interview rounds, understanding and comprehension of 28 questions related to thirteen well-being constructs were tested. In cognitive interviews, the verbal probing method was used, encompassing a combination of predetermined and spontaneous probes. The study confirmed the importance of using simple, short questions with children as well as using every-day phrases explicitly related to children's experiences, activities and behaviour. Results show that specific time frames should be avoided in questions because children of this age were not able to estimate the frequency of their experiences in a predetermined time period. In addition, the simple frequency scales with general verbal response categories (e.g. always, sometimes, never) were the most appropriate response scales. Besides these general findings, the value of cognitive testing for detecting question formulations or phrases that are not characteristic of the Croatian language and/or culture were stressed.

Keywords: cognitive interviews, children, culturally appropriate questions

Cognitive interviewing

Cognitive interviewing is a methodological tool for pre-testing questionnaires that helps researchers to make decisions about whether and how to revise questions. After the respondent answers an interviewer's question, the interviewer asks for other, specific information relevant to the question, or to the specific answer given (Willis, 2005). The aim of cognitive interviewing is to provide evidence on whether the survey questions are meeting measurement objectives in the sense that respondents can provide meaningful answers (Beatty, 2004; Collins, 2003) and to understand the cognitive process that goes through participants' minds when answering certain questions or items (Willis, 2005). The cognitive interviewing technique builds upon cognitive theory and encompasses several cognitive processes (Tourangeau, 1984): (1) *comprehension* of the question (interpreting the item accurately); (2) *retrieval* from memory of relevant information (adopting the appropriate perspective for the item); (3) *judgement* processes (understanding the response continuum and the response options within the context of the item); and (4) *response* processes (reporting an answer and demonstrating an ability to provide a rationale for the answer). Two dominant techniques are used in cognitive interviewing: *think-aloud* and *verbal probing* (Forsyth & Lessler, 1991; Willis, 1999). In the think-aloud method respondents are explicitly instructed to think aloud and give free-form answers, in comparison to verbal probing in which the interviewer uses specific probes designed to elicit how the respondent went about answering the question.

Cognitive interviewing with children

The main goal of cognitive interviews with children is to test the developmental validity of questions in the applied instrument. Young children in comparison to adults have more limited reading skills, vocabulary, attention span, and cognitive capacity to mentally represent and manipulate constructs. Consequently, they have issues with word recognition, misunderstanding of the content, response option incongruence, and misapplying response options to content (Bowen, 2008). Thus, cognitive interviews serve as an important tool for designers of instruments for children. Until now, cognitive interviewing with young children for the purpose of questionnaire development has only been applied in a few national studies (e.g. Bowen, 2008; Irwin, Varni, Yeatts, & De Walt, 2009; Rebok et al., 2001) or international research projects (Ogan, Karakus, Kursun, Cagiltay, & Kasikci, 2012; Ogan, Karakuş, Kurşun, 2013). Generally, results show that cognitive interviews with children do serve as an adequate data-gathering tool to change and enhance the quality of instruments (Bell, 2007; Irwin et al., 2009; Ogan et al., 2012).

This study

Results from cognitive interviews (CI) with children aged between 7 and 8 conducted in Croatia were presented in this study as part of the MYWEB project (<http://fp7-myweb.eu/index.html>) that examined the feasibility of a European Longitudinal Study for Children and Young People. The main purpose of the whole CI study within the MYWEB project was to test how young children in six countries understand, interpret and process a set of well-being questions and to propose the questions that will be the most appropriate for young children. Specifically, the MYWEB CI study aims were to examine: (a) item reading, comprehension and appropriateness of items and exact wording; (b) recall and judgement in the given time frames; and (c) recall and judgement in using the given response formats of the selected set of well-being questions (Franc, Sučić, Babarović, Brajša-Žganec, Kaliterna-Lipovčan, Dević, 2016). The focus of this paper was on key findings from data collected in Croatia during three rounds of cognitive interviews, with specific emphasis on the cultural adaptation of questions in the well-being survey.

Method

Sample

The CI study consisted of three rounds. Children were selected and recruited from a rural and urban school in the town of Varaždin, Croatia. The schools were chosen because they were suitable and accessible but still represent a typical school from a smaller town. Permission to conduct this research was obtained from the Croatian Ministry of Science, Education and Sports and from the schools' head teachers. The interviews were conducted with a purposive sample of children, with the help of teachers and/or school psychologist/pedagogues who were instructed to choose respondents that represent a

heterogeneous pupil sample with regard to their socio-economic characteristics, school achievement, reading abilities, socio-cognitive functioning, level of literacy, cooperation and communication skills as well as membership in vulnerable groups (e.g. single-parent family, low-income family, ethnic minority, learning difficulties). Informed consent for interviewing and audiotaping children that participated in this study was obtained from children's parents/caregivers in written form as well as assent from children themselves (Spriggs, 2010). A total of 36 children were interviewed (see Table 1).

Table 1
Sample characteristics

Round of cognitive interviews	N	Grade		Age		Gender	
		7	8	7	8	Girls	Boys
R1	12	2	1	11	6	6	
R2	12	2	2	10	6	6	
R3	12	1	12	0	6	6	
Total	36		15	21	18	18	

Materials and procedure

The well-being questionnaire for the MYWEB project was developed in British English. To pilot its parts through cognitive interviewing, questions were translated into national languages using the TRAPD (*Translation, Review, Adjudication and Documentation*) system an agreed translation protocol (Dorer 2010; Harkness, 2003). The TRAPD system uses a structured approach to translation and assessment, which reduces the chances of subjective and idiosyncratic features since it requires documentation at each stage of the process in terms of the questions asked, the answer structure, explanatory notes as well as the coding issues. The idea was to translate questions respecting cultural and linguistic nuances and to prefer functional equivalence to direct translation techniques.

Testing was iterative in nature, in that the sequence of testing-and-modification is carried out through three rounds of cognitive interviewing (CI). Several well-being domains operationalized by 28 items were tested during the CIs initially attaining 15 questions, 2 recollection periods and 8 different response scales. Based on CI results in the preceding round(s), the number of items was reduced to 14 in the second round of cognitive interviews (R2) and to 13 in the third round (R3).

Concurrent verbal probing was used by employing a combination of scripted and spontaneous probes. After each question/item, the interviewer used scripted probes that were related to each testing objectives (Table 2). Conditional probes were asked if a child showed difficulties in understanding or answering a specific format, time frame or specific phrase or word in the previous question. In addition to these scripted probes, interviewers also used spontaneous probes in response to something that a respondent said or the interviewer's decision to clarify certain issues on their own initiative.

Table 2
Testing objective and probes

Testing objective - probes' purpose	Examples of probes used
To test understanding of the: - question, item, phrase or word - time frame (e.g. since you joined the class, last week) - context (e.g. school)	In your own words, what do you think this question is trying to find out? When answering this question, what did the phrase/ wordmean to you? If you want to ask a child in your class the same question, how would you ask it in your own words?
To test understanding of response scales: - smileys as scale points - Likert type scales - frequency scales	Why did you choose that particular answer? What does this chosen answer mean to you? What do you see as the difference, if any, between ... (different response scale categories)?
To test the attractiveness of: - the question - response format, and how it could be improved	How did you find answering this question? How did you feel when answering this question?

Two interviewers conducted each interview. One led the interview and asked questions and probes while the second took notes, recorded a child's answers and observed the whole interview process. In total, five experienced researchers who were trained in the cognitive interviewing process and materials conducted all the interviews. Interviews took place in rooms at schools, in which only the interviewers and the child were present, guaranteeing privacy and relative silence during the interviews. No interruptions were recorded during the interviews, which lasted up to 45 minutes (one school lesson). Each interviewed child received an age-appropriate gift after the interview.

Data organization and analysis

All the narratives for each question were collected and organised in the form of standardised protocols. By standardised protocols the child's answers to the tested questions and asked probes were coded systematically. Child's words and researchers' notes on the child's comprehension, collaboration, and comments were also recorded. Records were kept of when questions were understood by the children and when they were not, and were further analysed. The nature, description and interpretation of the detected problems children had with the response format and/or wording of the question were also recorded and analysed. In addition, the researcher coded the assumed sources of detected problems (e.g., too complex or inaccurate instructions; unknown terms; unfamiliarity with certain words; ambiguous concepts) for each question and for each respondent. Each interviewing round was followed by an analysis for insights into the type of detected problems and supposed causes of problems complemented by first-hand interviewers' observations and recommendations. Results and recommendations were summarised from all three rounds of cognitive interviews.

Results

Most of the children in this study behaved cooperatively and were attentive during the interviews. As none of the children needed a break during the interviews, the overall impression was that the interview was not too long (one school lesson) for children of this age. Approximately a fifth of the children had minor difficulties in reading and occasionally needed reading assistance (equally among 7 and 8-year-olds). There were no specific reactions to the audio recording and children seemed comfortable with the recording device. Most children suggested their first name as a code name as they did not really understand the idea of using a pseudonym during the interview indicating that they are not familiar with the concept of anonymity (Spriggs, 2010).

Table 3

Initially used set of well-being questions and response scales and recommendations after three rounds of cognitive interviews

Well-being domains/ constructs	1 st round of cognitive interviews		Recommendation after 3 rd round of interviews	
	Questions	Answering format	Questions (English and translation on Croatian)	Answering format
level of satisfaction with child's physical appearance as one domain of children's well-being	HOW HAPPY DO YOU FEEL WITH THE WAY YOU LOOK?	Smileys, 5 points (very sad – very happy face)	HOW OFTEN YOU FEEL HAPPY WITH THE WAY YOU LOOK (your face, hair)? <i>SVIĐA LI TI SE KAKO IZGLEDAŠ?</i>	Frequency scale, verbal response categories (3 points)
child's perceived level of autonomy	DO YOU AGREE OR DISAGREE ..THAT YOUR PARENTS ALLOW YOU TO BRING FRIENDS HOME AT THE WEEKEND?	Agreement, 4 points (1 agree a lot – I disagree a lot)	HOW OFTEN YOU CHOOSE WHAT YOU EAT AT HOME FOR BREAKFAST? <i>SMIJEŠ LI BIRATI ŠTO ĆEŠ JESTI KOD KUĆE ZA DORUČAK?</i>	Frequency scale, 3 points (always – never)
	CAN YOU DECIDE WHAT YOU DO WITH YOUR SPARE TIME?	Frequency, 3 points (always – never)		

respecting the voice of the child as an aspect of children's well-being	DO YOUR PARENTS LISTEN TO WHAT YOU THINK WHEN THEY MAKE A DECISION ABOUT YOU?	Frequency, 3 points (always – never)		
	DO TEACHERS AT YOUR SCHOOL LISTEN TOPUPILS' COMPLAINTS? DURING THE LAST WEEK (FROM MONDAY TO SUNDAY)* HOW OFTEN DID THE FOLLOWING THINGS HAPPEN...? ... MY PARENTS HUGGED ME OR KISSED ME ...MY PARENTS ASKED ME WHAT I WAS LEARNING IN SCHOOL ... MY PARENTS CHECKED IF I FINISHED MY HOMEWORK ... I TALKED ABOUT MY FRIENDS WITH MY PARENTS ...I TALKED ABOUT MY HOBBIES WITH MY PARENTS	Frequency, 4 points (every day, most days once or twice, never)	HOW OFTEN YOUR PARENTS HUG OR KISS YOU? <i>KOLIKO ČESTO TE RODITELJI ZAGRLE ILI POLJUBE?</i>	Frequency, 4 points (every day, most days, sometimes, never) – appropriate for 8 year olds; OR number of days within give time frame (in a week)
parent-child relationship, parenting styles, monitoring			HOW OFTEN YOU TALK TO PARENTS ABOUT THE THINGS YOU LIKE TO DO? <i>KOLIKO ČESTO S RODITELJIMA PRIČAŠ O STVARIMA KOJE VOLIŠ RADITI?</i>	
neglecting / absent parenting	WHEN YOU ARE AT HOME IS THERE AN ADULT WHO LOOKS AFTER YOU?	Frequency, 3 points (always – never)	New formulation needed	Frequency, 3 points (always – never)
worries with money and material possessions	DOES YOUR FAMILY NORMALLY HAVE ENOUGH MONEY?	Frequency, 3 points (always – never)	HOW OFTEN YOUR PARENTS HAVE (ENOUGH) MONEY TO BUY YOU FOOD? <i>IMAJU LI TVOJI RODITELJI DOVOLJNO NOVACA DA TI KUPE HRANU?</i>	
positive affect-frequency	DURING THE LAST WEEK (FROM MONDAY TO SUNDAY)*, HOW OFTEN DID YOU...? LAUGH	Frequency, 4 points (every day most days once or twice, never)	HOW OFTEN YOU LAUGH? <i>KOLIKO ČESTO SE SMIJEŠ?</i>	Frequency, 4 points (every day, most days, sometimes, never) – appropriate for 8-year-olds; OR number of days
positive affect - sources	CAN YOU PLEASE TELL ME ONE THING THAT MAKES YOU VERY HAPPY	Open ended	PLEASE WRITE DOWN WHAT MAKES YOU VERY HAPPY or closed ended question for seven year old children in first grade <i>NAPIŠI ŠTO TE ČINI JAKO SRETNIM.</i>	Keep if children are skilled enough in writing and if requires short and simple answer
negative affect - frequency	DURING THE LAST WEEK (FROM MONDAY TO SUNDAY)*, HOW OFTEN DID YOU...? 1.FEEL SCARED; 2.FEEL HAPPY; 3. GET WORRIED; 4. FEEL SAD 5. GET ANGRY	Frequency, 4 points (every day, most days once or twice, never)	HOW OFTEN YOU FEEL SCARED? <i>KOLIKO ČESTO SE OSJEČAŠ UPLAŠENO?</i>	Frequency, 4 points (every day, most days, sometimes, never) – appropriate for 8-year-olds;OR number of days
negative affect - sources	CAN YOU PLEASE TELL ME ONE THING THAT WORRIES YOU?	Open ended	PLEASE WRITE DOWN WHAT WORRIES YOU or closed ended question for seven year old children in first grade <i>NAPIŠI ŠTO TE ZABRINJAVA.</i>	Keep if children are skilled enough in writing and if requires short and simple answer

bullying	<p>SINCE YOU JOINED THIS CLASS, HOW OFTEN HAVE THE FOLLOWING THINGS HAPPENED TO YOU AT SCHOOL...?</p> <p>1. I WAS MADE FUN OF OR CALLED NAMES</p> <p>2. I WAS LEFT OUT OF GAMES OR ACTIVITIES BY OTHER CHILDREN</p> <p>3. SOMEONE TOLD LIES ABOUT ME</p> <p>4. SOMETHING WAS STOLEN FROM ME</p> <p>5. I WAS HIT OR HURT BY OTHER CHILDREN (FOR EXAMPLE, SHOVING, HITTING, KICKING)</p> <p>6. I WAS MADE TO DO THINGS I DIDN'T WANT TO DO BY OTHER CHILDREN</p>	<p>Frequency, 4 points (4 or more times, 2-3 times, once, never)</p>	<p>HOW OFTEN ARE YOU MADE FUN OF OR CALLED NAMES AT SCHOOL? <i>KOLIKO TE ČESTO U ŠKOLI ISMIJAVAJU ILI ZOVU RUŽNIM IMENIMA?</i></p> <p>HOW OFTEN ARE YOU LEFT OUT OF GAMES BY OTHER CHILDREN AT SCHOOL? <i>KOLIKO TE ČESTO DRUGA DJECA U ŠKOLI ISKLJUČUJU IZ IGRE?</i></p>	<p>Frequency, 4 points (every day, most days, sometimes, never) - appropriate for 8-year-olds; OR number of days</p>
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* time frame tested

In the first round of cognitive interviews, the majority of 8-year-olds in Croatia had difficulties comprehending figurative and more ambiguous terms. Questions that generally did not work well and were confusing for many 8-year-olds included:

1. *How happy do you feel with the way you look?* Children interpreted the question in a more general way “*How happy are you?*” due to confusion between: (1) the concept of happiness in the question and the rest of the question’s content. It is unusual in Croatian to use the term “happy” with the term “the way you look” in the same sentence (*Koliko se osjećaš sretnim zbog svog izgleda?*); (2) and the type of used response scale (emoticons). For R2, a more culturally appropriate translation, avoiding the word “happy” in the question (e.g. *How satisfied do you feel...?*), and simplification of the question were recommended. This resulted in a significantly improved understanding of the question in general and of the phrase “the way you look” in R2 and R3. To check if the smiley-scale is independent from the question’s content, this scale was used for answering an item that does not refer to emotions (*I have lots of friends*) in R2. However, the same trend was confirmed – scale content was again more relevant than the question’s content and again children in their answers indicated how happy they felt.
2. all questions starting with *Do you agree or disagree that...* Children had difficulties in answering these questions because the introductory phrase and presentation of the questions were in the form of a statement instead of a question format. It was especially confusing when the item was spread across two lines – with the introductory text on one line and the statement on the second line. Children were also puzzled with the formulation - it was written in the second person singular but was referring to the pupil who was reading the statement aloud. Rephrasing statements in the question format was recommended.
3. *Do your parents listen to what you think when they make a decision about you?* This question was too long and the majority of children ignored the last part of the question when answering. In addition, it was too complicated. Children interpreted the phrase “*listen to*” literally not comprehending that it includes a person’s reaction to child’s behaviour. Children concluded that when a person hears me and is paying attention to me - looking at me or nodding, this means that the person is listening to me. Thus, the phrase “*listen to*” should be omitted.
4. *Do teachers at your school listen to pupils’ complaints?* Again, pupils had problems with the term “*listen to*” and the term “*complaints*”. Most of them understood that this question described an everyday situation in which a pupil complained to a teacher about something or someone (e.g. “when I complain about another pupil who teases me”). For this reason, perhaps the term “*suggestions*” should be used instead of “*complaints*”.
5. *Do your parents allow you to bring friends home at the weekend?* The phrase “*allow you*” was sometimes ignored in their answers and children mainly reported if they brought friends home. Accordingly, it is better to use a term denoting permission “*can you*” (*smiješ li*) instead of term “*allow you*”. Likewise, sometimes permission to bring friends home was confused with children’s willingness to do so.
6. *Does your family normally have enough money?* The word “*normally*” clashed with proposed frequency response scale so omission of “*normally*” in the question was suggested.

7. *Can you please tell me one thing that worries you?* It was noted that the phrase “tell” confuses children since he/she had to write down the answer and not “tell” it out aloud. Moreover, children interpreted the phrase “thing” as only referring to objects (e.g., gift) and not including people, activities, and occasions. Consequently, these phrases should be omitted.

Cultural and linguistic specificities were recognised in the following terms:

1. *Hobby*. Children interpreted the term “hobby” as all the things and activities they like to do and which they are good at. Thus, replacement of the term “hobby” with the term “activities in free time” or “leisure activities” (*slobodne aktivnosti*) was suggested.
2. *Adult*. When asked about adults who take care of them, children usually referred to other adults not parents.
3. *Called names*. In the item “I was made fun of or called names”, the Croatian term *pogrdno* used in the translation was difficult to read and understand so it should be replaced by a similar term such as “ružno” (*govore ružno o meni*) (Eng. “ugly”; “says ugly things about me”).

With reference to response formats and point scales, 8-year-old children did not have difficulties using a 3-point scale of frequency (‘Always’, ‘Sometimes’, ‘Never’) or a 4-point scale of frequency (‘Always’, ‘Often’, ‘Rarely’, ‘Never’) and open-ended questions. However, the 4-point scales of frequency referring to a number of days (‘Every day’, ‘Most days’, ‘Once or twice’, ‘Never’) or to a number of times (‘Four or more times’, ‘Two or three times’, ‘Once’, ‘Never’) were not as suitable since there were problems in understanding and differentiating between the scale points. For example, “most days” when translated into Croatian (*većinu dana*) was sometimes confused with the frequency of the behaviour over one day (i.e., for most of the day). Similarly, the frequency category “once or twice” should be replaced with “sometimes”, because some children consider “once or twice” as rarely and similar to “never”. Likewise, when using these verbal responses in combination with “during last week” time frame, some meant that a thing happened once or twice on one day, and not in one week. Inconsistency over the scale points was another detected source of difficulty with this frequency scale. The first two scale points refer to days (every day; most days), while the other two refer to general frequency (one or twice; never). Linking each scale point descriptor to days (“one or two days”, “neither day”) was suggested. To be more specific and to fix the item more firmly to last week the following should be used: “every day in the week”, “most days in the week”, “one or two days in the week”, and “not one day in the week”. In general, agreement scales were more complex for children to use than the frequency scale.

Eight-year old children were capable of understanding a timeframe (*week*) and place (*school*) specified in questions. The majority readily spelled out all days in a week and understood their school as a place. However, they did not stick strictly to the default frames in their answers, but placed their answers into longer time periods or other contexts outside of school. In relation to the term “during this school year”, children thought of different time periods (e.g. current school year, beginning of their schooling - enrolment in first grade). Approximately a third of 8-year-olds could not articulate or give any explanation for the used time frame. Accordingly, the notion of “school year” seemed too abstract and long as a reference period for this age group. Use of the term “during this class” (*razred*), instead of “during this school year” (*školska godina*), only widened the previously mentioned comprehension problems in relation to use of this time frame among this age group in Croatia. By using “school year” as a time frame, scoring the results became largely scalable depending on the month when interview took place. In comparison, by using shorter time frames the prevalence of a particular behaviour (e.g., bullying) will become seriously underrepresented. Hence, a specific time frame was left out of the question in R2. Consequently, children used their own implicit time frame in R2, which resulted in different interpretations of the response categories.

In sum, based on the results from R1, recommendations regarding wording, phraseology and translation were suggested as well as changes regarding response format. All items were written in the form of questions, simple wording was used, and the response format was unified throughout the whole questionnaire (by circling answers and using open-ended questions) whenever possible. Unnecessary instructions, agreement scales, frequency scales that included a number of days, answering grids, figurative meanings of terms and conditional forms in questions were omitted from the questionnaire. For example, replacement of the term “allow you” with the term “can you” was well understood in R2. Adding a specific context to the question *Do your parents have (enough) money to buy you food or clothes?* resulted in some children expressing that their parents had enough money for one (e.g., food) but not for the other (e.g., clothes). Thus, a more specific question becomes a double barrelled question. In testing a child’s

perceived level of autonomy, it was concluded that simple and behaviour specific questions are more appropriate (e.g., *Can you choose what you will wear?*). Thus, it was suggested to completely reformulate questions in this well-being domain or to exclude them in R3. In addition, it was noted that children sometimes do not reflect on their general autonomy in meal choices when answering, but refer to a specific situation (e.g., “I can choose what to eat for supper, but not for lunch”). For this reason, emphasis on the location and/or type of meals was suggested in R3. In R2, comprehension and usage of behavioural frequencies (e.g., never, seldom, sometimes, often, always) in response scales were successful. Since children did not understand questions related to domain “*respecting the voice of the child*” and an adequately simple question was not found to test this domain, the whole domain was omitted in R3.

Questions which functioned well in R1 and R2 were tested in R3 with 7-year-old children. After R3, it was also recommended to avoid complexity and long questions even when the addition of a context contributed to more uniform question interpretation. E.g., to omit the term “*and other activities*” from the question “*Were you left out of games or other activities by other children?*”. Omission of time frames in the questions did not pose any problems for 7-year-old children when answering questions and using the frequency scale. Difficulties in understanding the differences between ‘Rarely’ and ‘Often’ in a simple general 4-point frequency scale were observed among 7-year-old children. For this reason, a 3-point frequency scale should be used with younger children whenever possible.

Overall, children disliked questions that included socially disapproved behaviour (e.g., *hitting, calling names*), or those that denoted unpleasant experiences (e.g., *what worries you*). Several recommendations related to the appropriateness of different question formats, layout, and response format were also obtained based on children’s responses in these cognitive interviews. It was observed that items should be: formulated as questions (not statements), printed in capitals and that a single question should appear separately on each page. Grid formats should be avoided when answering questions. Instructions about how to answer questions should appear before the question. Circling should be the preferred method of giving answers over check marks. Underlying or printing words in boldface should be avoided since children do not recognise this as an accentuation of these words. In addition, question order effect should be carefully considered to avoid transmission of the content/tone (e.g., *bullying*) of the preceding question to the subsequent question (e.g., *what worries you*).

Discussion

Results of cognitive interviews with children in Croatia mostly resemble the results of other similar studies with children of the same age. It was confirmed that seven and eight-year-old children are capable of self-reports about their well-being in a reliable and valid manner if the questions are short, simple (in terms of vocabulary and structure) and as concrete as possible (Bowen, 2008; Varni, et al., 2007; Stewart, Lynn & Mishel, 2005). Most problems were noted with ambiguous and abstract words as well as concepts and phrases that are not age-appropriate (Ogan et al., 2013; Irwin et al., 2009). It was clearly confirmed that questions for children should always refer to concrete behaviours, their personal experiences and characteristics (Lippman, et al., 2014).

Regarding response scales, it was confirmed that a limited number of response categories causes the least problems and misunderstandings in children (Borgers, Hox, & Sikkel, 2004; Bowen, 2008; Hershey and Hill, 1976). Children mostly associate emoticons to a general feeling and happiness regardless of the question content.

Finally, we support Bowen’s (2008) recommendation that time references should be avoided or used with caution, contrary to the findings of Irwin et al. (2009) and Rebok et al. (2001) who found that eight-year-old children were able to report accurate information using specific recall periods (7 day or 4-week, respectively). Children in this study did not understand and did not uniformly use the concept of a specific time period when answering questions. However, lack of time frames lead to different recall periods when answering the same questions. Therefore, general formulations or short time frames such (e.g., yesterday, today) should be used. When there is a need to use longer time periods (e.g., last week), the time frame reference should be explained in detail and consistently throughout the questionnaire.

Although cognitive interviews are generally used with convenience samples, such sampling cannot directly determine the extent of problems related to a questionnaire in a particular population, but can identify question characteristics that are believed to pose problems with some unspecified frequency (Bowen, 2008). There is an overall concern that the sample selection process was biased towards more talented students (e.g., their parents were most willing to return consent forms) in this study. Thus, in the

interpretations of the CI results it is very important to consider not only the improvement/simplification of the questionnaire over the CI rounds but also the fact that there was a bias in the selection of pupils towards more capable students not belonging to vulnerable/disadvantaged groups, especially in the last round.

Overall, the results and experience of applying cognitive interviewing, as a tool for pre-testing questionnaires for children, improved our understanding of sources of measurement errors in quantitative surveys (Collins, 2003) and convinced us that the method of cognitive interviewing is of great benefit to researchers for the development of more valid questions and survey instruments for children.

Conclusions

Findings from cognitive interviews (CI) with children, in line with findings in other countries within the MYWEB project (Franc et al., 2016) highlight the importance of using simple and short questions, with common everyday expressions and phrases that are directly related to children's experiences, concrete activities and behaviours. Seven and eight-year-old children were not entirely capable of recalling their experiences in an exact time or placing it entirely in a given space. Hence, time and space references in questions should be avoided or should refer to a very short and specific recall period. Simple frequency scales with general verbal responses with a limited number of response categories ('Always', 'Sometimes', 'Never') are recommended as the most applicable and suitable for this age group. Moreover, the testing of Croatian translations demonstrated the value of cognitive testing for the detection of question formulations or phrases that are not characteristic in the Croatian language and/or culture.

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References

- Beatty, P. (2004). The dynamics of cognitive interviewing. In S. Presser, J. M. Rothgeb, M.P. Couper, J.T. Lessler, E. Martin, J. Martin, & E. Singer (Eds.), *Methods for testing and evaluating survey questionnaires*. Hoboken, NJ: John Wiley and Sons.
- Bell, A. (2007). Designing and testing questionnaires for children. *Journal of Research in Nursing*, 12(5), 461-469.
- Borgers, N., Hox, J., & Sikkel, D. (2004). Response effects in surveys on children and adolescents: the effect of number of response options, negative wording, and neutral midpoint. *Quality & Quantity*, 38, 17-33.
- Bowen, N. K. (2008). Cognitive testing and the validity of child-report data from the elementary school success profile. *Social Work Research*, 32(1), 1-17.
- Collins, D. (2003). Pretesting survey instruments: an overview of cognitive methods. *Quality of Life Research*, 12, 219-227.
- Dorer, B. (2011). Advance translation in the 5th round of the European Social Survey (ESS). *FORS Working Paper Series*, paper 2011-4. Lausanne: FORS.
- Franc, R., Sučić, I., Babarović, T., Brajša-Žganec, A., Kaliterna-Lipovčan, L.J., & Dević, I. (2016) *Report on the cognitive testing of new well-being questions for seven year olds. WP7: Cognitive interviews with children*. MYWEB project Deliverable report 7.1. Zagreb: Institute of Social Sciences Ivo Pilar.
- Forsyth, B. H., & Lessler, J.T. (1991). Cognitive laboratory methods: a taxonomy. In P. Biemer, R. Groves, L. Lyberg, et al. (Eds.), *Measurement errors in surveys*, pp. 393-418. New York: Wiley.
- Harkness, J. A. (2003). Questionnaire translation. *Cross-cultural survey methods*, 325, 35.
- Hershey, M., & Hill, D. (1976). Positional response set in pre-adult socialization surveys. *Social Science Quarterly*, 56, 707-714.
- Irwin, D. E, Varni, J. W., Yeatts, K., & De Walt, D. A. (2009). Cognitive interviewing methodology in the development of a pediatric item bank: a patient reported outcomes measurement information system (PROMIS) study. *Health and Quality of Life Outcomes*, 7(3), 1-10.
- Lippman, L. H., Moore, K. A., Guzman, L., Ryberg, R., McIntosh, H., Ramos, M. F., Caal, S., Carle, A., & Kuhfeld, M. (2014). *Flourishing children. Defining and testing indicators of positive development*. New York: Springer.
- MyWeb – Measuring youth well-being (2016). <http://fp7-myweb.eu/index.html>/Accessed10.10.16.

- Ogan, C., Karakus, T., Kursun, E., Cagiltay, K., & Kasikci, D. (2012). Cognitive interviewing and responses to EU Kids Online survey questions. In S. Livingstone, L. Haddon, & A. Gorzig (Eds.), *Children, risk and safety on the internet* (pp. 33–43). Bristol: The Policy Press.
- Ogan, C., Karakus, T., & Kursun, E. (2013). Methodological issues in a survey of children's online risk-taking and other behaviours in Europe. *Journal of Children and Media*, 7(1), 133-150.
- Rebok, G., Riley, A., Forrest, C., Starfield, B., Green, B., Robertson, J., & Tambor, E. (2001). Elementary school-aged children's reports of their health: A cognitive interview study. *Quality of Life Research*, 10(1), 59-70.
- Spriggs, M. (2010). *Understanding consent in research involving children: the ethical issues a handbook for human research ethics committees and researchers*. Melbourne: Children's Bioethics Centre, The Royal Children's Hospital, Melbourne.
- Stewart J. L., Lynn M. R., & Mishel, M. H. (2005). Evaluating content validity for children's self-report instruments using children as content experts. *Nursing Research*. 54(6), 414–418.
- Tourangeau, R. (1984). Cognitive science and survey methods: a cognitive perspective, in T. Jabine, M. Straf, J. Tanur, & R. Tourangeau (Eds.), *Cognitive aspects of survey methodology: building a bridge between disciplines*. Washington, DC: National Academy Press.
- Varni, J. W., Limbers, C. A., & Burwinkle, T. M. (2007). Parent proxy-report of their children's health-related quality of life: an analysis of 13,878 parents' reliability and validity across age subgroups using the PedsQL (TM) 4.0 Generic Core Scales. *Health Quality Life Outcomes*, 5(2). <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1769359/> Accessed 30-09-16.
- Willis, G. B. (1999). *Cognitive interviewing: a "How To" guide*. Research Triangle Park, NC: Research Triangle Institute.
- Willis, G. B. (2005). *Cognitive interviewing: a tool for improving questionnaire design*. Thousand Oaks, CA: Sage.

6

Early family experiences and wellbeing in emerging adulthood: Investigating the role of sensory processing sensitivity and adult attachment

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Abstract

Early family experiences can have long-term effects on one's life, e.g. on forming attachment styles even in adulthood, as well as on mental health and personal wellbeing later in life. Moreover, personal wellbeing is influenced by individual characteristics such as personality/temperamental traits. One of such traits is Sensory processing sensitivity (SPS), conceptualized as being highly susceptible to a variety of stimuli in our environment and easily overwhelmed by subtle stimuli. Recent research has shown that individuals who score high on SPS are more vulnerable to negative early experiences, but can also profit more from positive experiences, such as social support in a close relationship. In line with this, our goal was to examine if the relationship between early risky family experiences and an individual's wellbeing is mediated by the level of anxiety and avoidance one perceives in a current close relationship, and if SPS moderated this relationship. Three hundred and forty-eight university students (294 female, $M_{age} = 21.57$, $SD = 2.91$) participated in an online survey, which included The Highly Sensitive Person Scale, The Risky Families Questionnaire, modified Experiences in Close Relationships Inventory and Personal Wellbeing Index. Path analyses did not confirm hypothesized mediation and moderation effects; early risky family experiences and SPS traits predicted both an individual's wellbeing and anxiety and avoidance in a current close relationship, while adult attachment styles were not related to the current wellbeing.

Keywords: early family experiences, sensory processing sensitivity, adult attachment, wellbeing

Introduction

Early experiences, such as growing up in a particular family environment and the relationships that an individual forms with his or her parents, produce long-term effects on mental health and personal wellbeing. One path through which it happens is the attachment style one forms from early childhood experiences that he or she brings into adult relationships, and the importance of adult attachment for one's wellbeing has been well established (Lopez, Mauricio, Gormley, Simko, & Berger, 2001; Lussier, Sabourin, & Turgeon, 1997; Mikulincer & Florian, 1998; Solomon, Ginzburg, Mikulincer, Neria, & Ohry, 1998). Attachment style can be conceptualized as a generalization of internal working models formed in early childhood (Ainsworth, Blehar, Waters, & Wall, 1978; Bowlby, 1982). These internal models are believed to organize the development of personality and serve as a guide to subsequent social behavior (Hazan & Shaver, 1987; for a review, see Pietromonaco & Feldman Barrett, 2000). Ainsworth et al. (1978) have identified three primary attachment styles: anxious-ambivalent (characteristic of children who interchange attachment behaviors with open expressions of protest and anger when distressed), avoidant (characteristic of children who avoid caregivers and express signs of detachment when distressed), and secure (characteristic of children who successfully use the caregiver as a secure base when distressed). These styles have also been documented in adults (Freene & Noller, 1996). Namely, people with secure attachment styles tend to develop internal models of themselves as being friendly, likable and good-natured, and of significant others as generally well-intended, reliable and trustworthy. Those with anxious attachment styles develop internal models of themselves as being misunderstood, unconfident and underappreciated, and of significant others as being usually unreliable and unwilling/unable to commit to permanent relationships. Finally, those with avoidant style tend to develop models of themselves as being suspicious, aloof and skeptical, while they perceive significant others as being unreliable or too eager to commit to relationships. Based on these attachment styles, individuals may vary in the extent to which they are anxious and avoidant in their relationships with others, and findings suggested that there are two fundamental dimensions with respect to adult attachment patterns (Brennan, Clark, & Shaver, 1998). Attachment-related anxiety reflects the fear of rejection or abandonment, while attachment-related avoidance refers to the experience of discomfort caused by closeness and addiction to others.

"Risky families" can be described as families that exhibit much conflict/aggression, lack of warmth, lack of affection, or neglect in a place that should be a warm and nurturing environment (Taylor, Lerner, Sage, Lehman, & Seeman, 2004). This type of negative environment can have a lasting impact on the individual later in life, for example, lower relationship satisfaction in adulthood, more physical health problems, increased psychopathology, negative influence on the development of social skills, response to stress, and the ability to control and regulate emotions, all of which are important when interacting with others in interpersonal relationships (Repetti, Taylor, & Seeman, 2002; Taylor et al., 2004).

Apart from early family experiences and the quality of close relationships (Feene & Noller, 1996), mental health and wellbeing are also influenced by individual characteristics such as personality/temperamental traits. Recently there has been an increased interest in the trait of sensory processing sensitivity (SPS), which is conceptualized as being highly susceptible to a variety of environmental stimuli and easily overwhelmed by subtle stimuli (Aron & Aron, 1997). It has been found to have a three-component structure which consists of Ease of Excitation (EOE), Low Sensory Threshold (LST) and Aesthetic Sensitivity (AES) (Smolewska, McCabe, & Woody, 2006). Recent research has shown that individuals who score high on SPS are more vulnerable to negative early experiences, but they can also profit more from positive experiences, such as support in a close relationship (Booth, Standage, & Fox, 2015), which is explained by differential susceptibility hypothesis. Differential susceptibility hypothesis (Belsky, 1997) claims that there are some inherent characteristics that make individuals more responsive to their environment, be that positive or negative. Namely, in combination with negative stressful experiences, individuals who possess these characteristics are likely to become overwhelmed and display poor outcomes, whereas they are likely to flourish under positive and enriching experiences. For example, it was shown that only in the context of negative early family experiences highly sensitive people experience psychological distress (e.g. Aron & Aron, 1997; Aron, Aron, & Davies, 2005), experience higher levels of depression and anxiety (Liss, Timmel, Baxley, & Killingsworth, 2005), and show lower levels of adult life satisfaction (Booth et al., 2015). However, no differential effects under positive childhood experiences were found for high and low SPS individuals (Booth et al., 2015).

There have been suggestions that temperamental variables may also influence one's attachment style (Kagan & Snidman, 2004). Individuals who are oversensitive emotionally and physiologically may be at a greater risk of experiencing anxiety in relationships, which was confirmed in the research by Jerome and Liss (2005), where sensory processing sensitivity was related to relationship anxiety. Moreover, the

relationship between sensory avoidance and relationship avoidance supported their hypothesis that individuals who avoid sensory stimulation also tend to be avoidant in relationships.

Given the importance of early childhood experiences for adult attachment and consequences they generally have for personal wellbeing, it seems particularly interesting to investigate the possibility that SPS represents a risk factor for individuals with early negative experiences. Therefore, the aim of this study was to examine the relationship of early risky family experiences and SPS with adult attachment and wellbeing. Moreover, we wanted to examine if the relationship between early risky family experiences and individual wellbeing is mediated by the adult attachment (level of anxiety and avoidance one perceives in a current close relationship), and if SPS moderated this relationship (Figure 1). More specifically, in the hypothesized model the negative effect of early risky family experiences on wellbeing was expected to be mediated by higher levels of anxious and/or avoidance attachment styles. Furthermore, it was expected that SPS would moderate the predictive effect of early family experiences on wellbeing in the way that it would be stronger for the individuals higher on SPS. However, for the three SPS traits we did not have specific hypotheses regarding their moderation effects, so this part of analyses was exploratory.

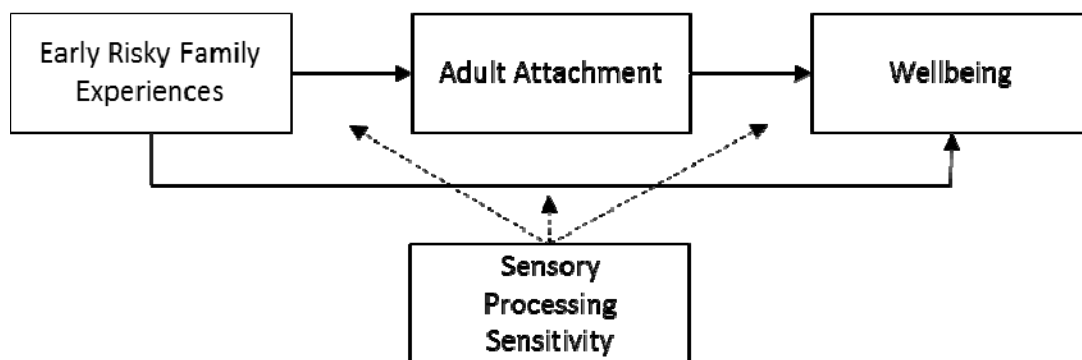


Figure 1. Hypothesized model of the relationship of early risky family experiences and SPS with adult attachment and wellbeing

Methods

Participants and procedure

Three hundred and forty eight students (54 male, 294 female), with the mean age of 22 years (age range 18 - 46, $C = 21$, $M = 21.57$, $SD = 2.91$) were recruited from various universities in Croatia, mainly from the University of Zagreb (91.5%), to participate in a larger on-line survey. The invitation to participate in the study together with the link to the questionnaire was sent to the students via student mailing lists and social networks. Participants responded to the survey once they ticked the consent box. The approval of the ethical review board was obtained for all aspects of the study.

Instruments

The Risky Families Questionnaire (RFQ; Taylor et al., 2004) consists of 11 items that measure childhood experiences in the household where the person was growing up (e.g. "How often did a parent or other adult in the household swear at you, insult you, put you down, or act in a way that made you feel threatened?"). The items are scored on a 5-point Likert scale ranging from 1 = *not at all* to 5 = *very often/much*. The total score is calculated as a mean of all answers after reversing 3 items, so the higher score indicates riskier family experiences. The Cronbach's alpha in this study was .89.

The Highly Sensitive Person Scale (HSPS; Aron & Aron, 1997) assesses sensory processing sensitivity with 27 items on which participants are asked to rate their agreement on a Likert scale ranging from 1 = *not at all* to 7 = *extremely*. It consists of 3 subscales: Ease of Excitation (EOE, 12 items, e.g. "Do you find it unpleasant to have a lot going on at once?", $\alpha = .84$), Low Sensory Threshold (LST, 7 items, e.g. "Are you easily overwhelmed by strong sensory input?", $\alpha = .78$) and Aesthetic Sensitivity (AES, 7 items, e.g. "Are you deeply moved by the arts or music?", $\alpha = .60$). The results on each subscale are formed as the mean of the responses, with higher scores indicating a higher respective SPS trait.

Experiences in Close Relationships Inventory, modified Croatian version (Kamenov & Jelić, 2003) is a modification of Brennan's *Experiences in Close Relationship Inventory* (Brennan et al., 1998). It consists of

2 subscales: Avoidance (9 items, e.g. “I try to avoid getting too close to that person”, $\alpha = .89$) and Anxiety (9 items, e.g. “I worry that that person won’t care about me as much as I care about them”, $\alpha = .81$). The participants are asked to rate their agreement with each of the items on a 7-point Likert scale ranging from 1 = *completely disagree* to 7 = *completely agree*. The result on each of the subscales is formed as the mean of the responses after reversing 3 items, so the higher score indicates a more highly pronounced respective dimension.

Personal Wellbeing Index (subscale of the *International Wellbeing Index*; International Wellbeing Group, 2013), Croatian version (Kaliterna-Lipovčan, Prizmić-Larsen & Brkljačić, 2011), consists of seven items assessing participants’ satisfaction with seven life domains (standard of living, health, achievement in life, relationships, safety, community-connectedness, and future security). Participants are asked to rate how satisfied they feel in each domain, on a scale from 0 = *no satisfaction at all* to 10 = *completely satisfied*. The total score representing the participant’s subjective wellbeing is calculated as the mean of all responses. The Cronbach’s alpha in this study was .92.

Statistical analyses

The relationships between study variables were explored using path analyses, performed in Mplus 7 (Muthén & Muthén, 1998-2015). First, we tested the hypothesized mediation model and then multi-group path analyses were conducted to examine the moderating effect of the SPS and the three SPS traits. The parameter estimates were obtained using the robust maximum likelihood method. The model fit was evaluated using recommended absolute, comparative and parsimonious fit indices: χ^2 , RMSEA (Root Mean Square Error of Approximation), CFI (Comparative Fit Index), TLI (Tucker Lewis index) and SRMR (Standardized Root Mean Square Residual). Insignificant χ^2 , values of RMSEA < .06, CFI & TLI > .95, and SRMR < .05 were used as indicators of good model fit (Hu & Bentler 1999). Multi-group testing involved comparing two nested models: a baseline model with no constraints and a model with all paths constrained to be equal between the groups. Comparison of nested models was done using the Satorra-Bentler scaled chi-square difference test.

Results

Correlation matrix shows that wellbeing is negatively related to early risky family experiences, as well as to both dimensions of attachment. Moreover, both attachment avoidance and attachment anxiety are positively related to early risky family experiences, providing the basis for investigating the possible mediational role of attachment in the relationship between early risky family experiences and current wellbeing.

Table 1
Correlations and descriptive statistics of all measured variables

	Wellbeing	Attachment Anxiety	Attachment Avoidance	Ease of Excitation	Low Sensory Threshold	Aesthetic Sensitivity	Early risky family experiences
Attachment Anxiety	-.11*						
Attachment Avoidance	-.11*	.24**					
Ease of Excitation	-.21**	.33**	.13*				
Low Sensory Threshold	-.08	.21**	.08	.55**			
Aesthetic Sensitivity	.13*	-.08	-.20**	.13*	.19**		
Early risky family experiences	-.31**	.16**	.26**	.13*	.12*	.01	
<i>M</i>	6.48	2.84	1.91	4.23	3.39	5.22	2.04
<i>SD</i>	2.05	1.11	1.05	1.04	1.15	0.76	0.76

* $p < .05$, ** $p < .01$

The hypothesized mediation model was tested using path analysis. We tested both partial and full mediation models and compared their model fit. After removing insignificant paths, the partial mediation model fitted the data significantly better than the full mediation model ($T = 36.58$, $\Delta df = 1$, $p < .00$), and showed good fit to the data ($\chi^2 (2) = 1.46$, $p = .48$, RMSEA = 0.00, CFI = 1.00, TLI = 1.02, SRMR = 0.02). In this model early risky family experiences positively predicted both anxiety and avoidance one perceives in his or her current close relationship, and also directly negatively predicted one's personal wellbeing. However, perceived anxiety and avoidance in a current close relationship (i.e. adult attachment) did not predict individual's wellbeing, therefore the hypothesis regarding its mediating role was not confirmed.

Since approximately 25% of the population is assumed to be highly sensitive and sensory processing sensitivity is considered to be a dichotomous, rather than a continuous variable (Aron & Aron, 1997), we split our sample by 75th percentile to those low and high on all three HSPS subscales and a total HSPS score, to check for the moderating effect of the SPS and SPS traits. In the multi-group path analyses two nested models for SPS and each SPS trait were compared: a baseline model with no constraints and a model with all paths constrained to be equal between the groups. As there was no significant drop in the model fitness after constraining paths to be equal across the two groups for each tested moderation, it was concluded that neither SPS nor any of the SPS traits were significant moderators of the relationship between early risky family experiences, adult attachment and wellbeing (Table 2).

Table 2
Summary of multi-group moderation tests for SPS and SPS traits in the hypothesized mediation model

Model	χ^2	<i>df</i>	RMSEA	CFI	TLI	SRMR	T	Δdf	<i>p</i>
SPS unconstrained	1.41	4	0.00	1.00	1.13	0.02			
SPS constrained	2.31	7	0.00	1.00	1.13	0.02	0.91	3	.82
EOE unconstrained	4.71	4	0.03	.99	.97	0.03			
EOE constrained	5.69	7	0.00	1.00	1.03	0.03	0.87	3	.83
LST unconstrained	3.56	4	0.00	1.00	1.02	0.03			
LST constrained	4.90	7	0.00	1.00	1.05	0.03	1.45	3	.69
AES unconstrained	1.51	4	0.00	1.00	1.12	0.02			
AES constrained	2.77	7	0.00	1.00	1.10	0.03	1.24	3	.74

Note. SPS – Sensory processing sensitivity, EOE – Ease of Excitation, LST – Low Sensory Threshold, AES – Aesthetic Sensitivity, *T* = the Satorra-Bentler scaled chi-square difference test

Although the hypothesized moderating role of the SPS was not confirmed, our data showed that at least some SPS traits are related to adult attachment and wellbeing (Table 1). For that reason, we decided to examine SPS traits as predictors of adult attachment and wellbeing, along with the early risky family experiences. This final model showed good fit to the data ($\chi^2 (6) = 1.29$, $p = .97$, RMSEA = 0.00, CFI = 1.00, TLI = 1.06, SRMR = 0.01) and it is presented in Figure 2.

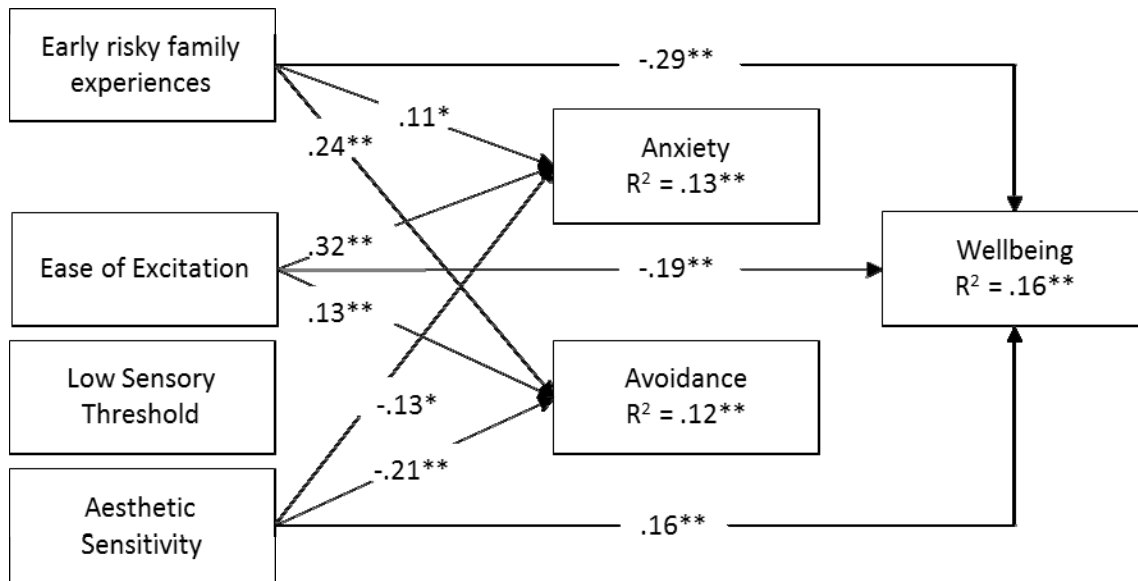


Figure 2. Final model of the relationship of early risky family experiences and SPS with adult attachment and wellbeing. Note: Standardized parameter estimates of the significant effects are presented. $*p < .05$, $**p < .01$.

The results showed that early risky family experiences together with two out of three SPS traits (ease of excitation and aesthetic sensitivity) predicted perceived anxiety and avoidance in a current close relationship and individual wellbeing. While higher ease of excitation predicted higher levels of anxiety and avoidance in a current relationship and lower wellbeing, aesthetic sensitivity predicted lower relationship anxiety and avoidance and higher wellbeing.

Discussion

The purpose of this study was to further explore the relationship between early risky family experiences, SPS, adult attachment and wellbeing, and to test the hypothesized model with adult attachment as the mediator and SPS as a moderator in the relationship between early risky family experiences and current wellbeing. The results showed that negative early family experiences predicted higher anxiety and avoidance in a current close relationship and lower wellbeing, regardless of the individual's SPS level. This finding confirms the long-term importance of early family experiences but indicates that sensory processing sensitivity does not represent a risk factor in this relationship. However, in the final model, SPS traits had a direct effect on both adult attachment and wellbeing. More specifically, individuals high on ease of excitation reported higher levels of anxiety and avoidance in a current close relationship, as well as lower wellbeing, while individuals high on aesthetic sensitivity reported lower levels of anxiety and avoidance in a current close relationship and higher wellbeing. These findings are in line with observations that individuals high in aesthetic sensitivity appear to benefit from their increased level of sensitivity and insight, while ease of excitation and low sensory threshold appear to represent the negative aspects of sensory processing sensitivity, related to anxiety and depression (Liss, Mailloux, & Erchull, 2008). Moreover, the relations between SPS factors and basic personality traits show that ease of excitation is most strongly related to neuroticism and negative emotionality, which constantly show negative links with wellbeing (Diener, Suh, Lucas, & Smith, 1999) while aesthetic sensitivity is related to Openness to experiences (Smolewska et al., 2006).

Surprisingly, the perceived anxiety and avoidance in a current close relationship did not predict personal wellbeing of the participants. One possible explanation could lie in the content of the measure of wellbeing used in this study which consists of seven specific life domains, only one of which is satisfaction with personal relationships. It seems that some other variables are more important for the participants' estimation of their subjective wellbeing measured by the Personal Wellbeing Index (i.e. satisfaction with their standard of living, relationships, personal health, achievement in life, personal safety, community-connectedness and future security). Furthermore, it could be more informative to use attachment style

categories instead of dimensions, as there is evidence that only secure attachment has a direct link to wellbeing (Karreman & Vingerhoets, 2012). Finally, some research shows that the relationship between adult attachment styles and wellbeing might be indirect, for example, mediated by coping strategies (e.g. Lopez et al., 2001; Lussier et al., 1997).

The most important predictor of wellbeing in this study was early negative family experiences, which together with ease of excitation and aesthetic sensitivity explained 16% of the wellbeing's variance. Although this is a significant proportion, it is rather small, indicating again that there are also some other variables which contribute to subjective wellbeing ratings.

As expected, early risky family experiences were also important for predicting attachment styles one has in a current close relationship, especially for one's attachment-related avoidance. On the other hand, SPS traits seem to be more important for attachment anxiety in a current close relationship. This is in line with the distinction between the two attachment dimensions (Bartholomew, 1990), where attachment anxiety represents a model of self, therefore has antecedents in temperamental variables, and attachment avoidance represents a model of the partner, depending to a greater extent on early family experiences. Different patterns of the relationship of the three SPS traits with other observed variables point to the need of studying them separately in future studies, as predictors and/or moderators of other environmental factors-outcome relationships.

The results of this study provided some deeper insights into the relations between early risky family experiences, SPS, adult attachment and wellbeing. However, there are some limitations that should be taken into account. First, the participants in our study were mostly female, so the possibilities of generalizations are limited to female emerging adults. Regarding the measures that were used, it should be noted that early risky family experiences were evaluated retrospectively, while all the other measures were assessed in the present. It would be very beneficial to explore the relations of the early experiences, attachment, SPS and wellbeing in a longitudinal design, which would enable a more detailed assessment of the processes and mechanisms that link early experiences and later development. Finally, since the measure of wellbeing used in this study was a composite of satisfaction with several life domains, future studies should put more emphasis on the fact that some variables differentially relate to different components of subjective wellbeing (i.e. life satisfaction, positive and negative affect, satisfaction with specific life domains) (Diener et al., 1999), as the observed relationships could differ based on the chosen outcome.

Conclusions

The results of this study did not confirm the hypothesized mediational role of adult attachment in the relationship between early family experiences and current wellbeing, nor the moderation effects of the SPS traits in this relationship. However, the results showed that both the perceived anxiety and avoidance in a current close relationship and an individual's wellbeing can be predicted by early risky family experiences, and SPS traits of ease of excitation and aesthetic sensitivity (but not a low sensory threshold). While higher levels of ease of excitation predicted higher levels of anxiety and avoidance in a current relationship and lower wellbeing, higher levels of aesthetic sensitivity predicted lower relationship anxiety and avoidance and higher wellbeing. Finally, negative early experience predicted higher anxiety and avoidance in the current close relationship and lower wellbeing regardless of the individual's SPS level, indicating that sensory processing sensitivity does not represent a risk factor in the relationship between early family experiences and wellbeing.

References

- Ainsworth, M. D., Blehar, M. C., Waters, E., & Wall, S. (1978). *Patterns of attachment: A psychological study of the strange situation*. Hillsdale, NJ: Erlbaum.
- Aron, E. N., & Aron, A. (1997). Sensory-processing sensitivity and its relation to introversion and emotionality. *Journal of Personality and Social Psychology*, 73(2), 345–368.
- Aron, E. N., Aron, A., & Davies, K. (2005). Adult shyness: The interaction of temperamental sensitivity and an adverse childhood environment. *Personality and Social Psychology Bulletin*, 31(2), 181–197.
- Bartholomew, K. (1990). Avoidance of intimacy: An attachment perspective. *Journal of Social and Personal Relationships*, 7, 147–178.
- Belsky, J. (1997). Variation in susceptibility to environmental influence: An evolutionary argument. *Psychological Inquiry*, 8, 182–186.

- Booth, C., Standage, H., & Fox, E. (2015). Sensory-processing sensitivity moderates the association between childhood experiences and adult life satisfaction. *Personality and Individual Differences, 87*, 24–29.
- Bowlby, J. (1982). *Attachment and loss: Attachment*. New York: Basic Books.
- Brennan, K. A., Clark, C. L., & Shaver, P. R. (1998). Self-report measurement of adult attachment: An integrative overview. In J. A. Simpson & W.S. Rholes (Eds.), *Attachment theory and close relationships* (pp. 46–76). New York: Guilford.
- Diener, E., Suh, E. M., Lucas, R. E., & Smith, H. E. (1999). Subjective well-being: Three decades of progress. *Psychological Bulletin, 125*(2), 276–302.
- Feeney, J. A., & Noller, P. (1996). *Adult attachment*. Thousand Oaks, CA: Sage.
- Hazan, C., & Shaver, P. R. (1987). Romantic love conceptualized as an attachment process. *Journal of Personality and Social Psychology, 52*, 511–524.
- Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal, 6*(1), 1–55.
- International Wellbeing Group (2013). *Personal Wellbeing Index: 5th Edition*. Melbourne: Australian Centre on Quality of Life, Deakin University.
- Jerome, E. M., & Liss, M. (2005). Relationships between sensory processing style, adult attachment, and coping. *Personality and Individual Differences, 38*, 1341–1352.
- Kagan, J., & Snidman, N. (2004). *The long shadow of temperament*. Cambridge, MA: Harvard University Press.
- Kaliterna-Lipovčan, Lj., Prizmić-Larsen, Z., & Brkljačić, T. (2011). International Wellbeing Index –Croatia [Međunarodni indeks dobrobiti - podaci za Hrvatsku]. In G. Vuletić (Ed.), *Kvaliteta života i zdravlje* (pp 41–51). Osijek: Sveučilište J. J. Strossmayera u Osijeku.
- Kamenov, Ž., & Jelić, M. (2003). Validacija instrumenta za mjerenje privrženosti u različitim vrstama bliskih odnosa: Modifikacija Brennanova Inventara iskustava u bliskim vezama [Validation of adult attachment measure in various types of close relationships: Modification of Brennan's Experiences in Close Relationship Inventory]. *Suvremena psihologija, 6*(1), 73–91.
- Karreman, A., & Vingerhoets, A. J. J. M. (2012). Attachment and well-being: The mediating role of emotion regulation and resilience. *Personality and Individual Differences, 53*(7), 821–826.
- Lopez, F. G., Mauricio, A. M., Gormley, B., Simko, T., & Berger, E. (2001). Adult attachment orientations and college student distress: The mediating role of problem coping styles. *Journal of Counseling and Development, 79*, 459–464.
- Liss, M., Mailloux, J., & Erchull, M. J. (2008). The relationships between sensory processing sensitivity, alexithymia, autism, depression, and anxiety. *Personality and Individual Differences, 45*, 255–259.
- Liss, M., Timmel, L., Baxley, K., & Killingsworth, P. (2005). Sensory processing sensitivity and its relation to parental bonding, anxiety, and depression. *Personality and Individual Differences, 39*, 1429–1439.
- Lussier, Y., Sabourin, S., & Turgeon, C. (1997). Coping strategies as moderators of the relationship between attachment and marital adjustment. *Journal of Social and Personal Relationships, 14*, 777–791.
- Mikulincer, M., & Florian, V. (1998). The relationship between adult attachment styles and emotional and cognitive reactions to stressful events. In Simpson, J., & Rholes, S. (Eds.), *Attachment theory and close relationships* (pp. 143–165). New York: Guilford.
- Muthén, L. K., & Muthén, B. O. (1998–2015). *Mplus user's guide. Seventh edition*. Los Angeles, CA: Muthén & Muthén.
- Pietromonaco, P. R., & Feldman Barrett, L. (2000). The internal working models concept: What do we really know about the self in relation to others? *Review of General Psychology, 4*, 155–175.
- Repetti, R. L., Taylor, S. E., & Seeman, T. E. (2002). Risky families: Family social environments and the mental and physical health of offspring. *Psychological Bulletin, 128*(2), 330.
- Smolewska, K. A., McCabe, S. B., & Woody, E. Z. (2006). A psychometric evaluation of the highly sensitive person scale: The components of sensory-processing sensitivity and their relation to the BIS/BAS and “Big Five”. *Personality and Individual Differences, 40*, 1269–1279.
- Solomon, Z., Ginzburg, K., Mikulincer, M., Neria, Y., & Ohry, A. (1998). The role of attachment in coping with war captivity. *European Journal of Personality, 12*, 271–285.
- Taylor, S. E., Lerner, J. S., Sage, R.M., Lehman, B. J., & Seeman, T. E. (2004). Early environment, emotions, responses to stress, and health. *Journal of Personality, 72*(6), 1365–1394.

7

Mother's parental behaviour in the context of perception of child's temperament and adult attachment to own mother

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Abstract

Parental behaviour can be influenced by various factors related to the characteristics of the child, the parent and the context. It can be assumed that a combination of child's temperament and quality of mother's adult attachment to the own mother can, to a certain extent, contribute to explaining parental behaviours. Therefore, the aim of this study was to examine whether mother's perception of child's temperamental dimensions and mother's adult attachment to the own mother can predict mother's parental behaviour. 203 mothers of preschool-aged children participated in this study. EAS Temperament Questionnaire (Buss & Plomin, 1984) was used to examine mother's perception of child's temperament in terms of child's emotionality, activity, and sociability. Mother's adult attachment to the own mother was assessed by Modified Experiences in Close Relationship Inventory (Kamenov & Jelić, 2003) measuring anxiety and avoidance in the relationship with their own mother. Parental behaviour was assessed by Parental Behaviour Questionnaire (Keresteš, Brković, Kuterovac Jagodić & Greblo, 2012). Results indicated that the perception of a higher level of child's emotionality as well as a higher level of anxiety in attachment to the own mother contribute to lower parental support. Further, the perception of a higher level of child's emotionality also contributes to a higher level of mother's restrictive control. Finally, mothers whose adult attachment to the own mother is characterized by a higher level of anxiety are more likely to be permissive to their own child. Results obtained in this study are in line with some previous studies implying that the perception of child's temperamental dimensions and adult attachment to the own mother can predict mother's parental behaviour.

Key words: mother's parental behaviour, child's temperament, mother's attachment to own mother, adult attachment

Numerous studies are focused on parental styles, behaviours and rearing practices as important factors influencing the emotional climate of the child-parent interaction and developmental outcomes. Most commonly used model for describing various parental practices and parental styles is the one proposed by Baumrind describing authoritative, authoritarian and permissive parenting style. Parenting style, according to Darling and Steinberg (1993) can be best described as “a contextual variable that moderates the relationship between specific parenting practices and specific developmental outcomes” (Darling & Steinberg, 1993, p. 493). These specific parenting practices or behaviours have also been the focus of numerous studies aimed at examining their relationship with specific developmental outcomes. Different authors propose various but still rather similar dimensions or classifications of these behaviours. For example, Schaefer (1965; as cited in Čudina-Obradović & Obradović, 2006) proposed a three-dimensional classification of parental behaviour: Acceptance/Rejection, Firm control/Lax control, and Psychological control/Psychological autonomy. On the other side, Barber, Maughan, and Olsen (2005) introduce Parental support as a dimension including acceptance and warmth, and also propose a distinction between Behavioural control and Psychological control. Parental behaviour can be influenced by various factors - individual, as well as contextual and cultural, and can also vary depending on child's age. Having in mind potential cultural differences, Keresteš, Brković, Kuterovac Jagodić and Greblo (2012) conducted research on a sample of Croatian parents and children and described parental behaviour through three global dimensions: Parental support (referring to warmth, autonomy, knowledge and inductive reasoning), Restrictive control (referring to punishment and intrusiveness) and Permissiveness. In spite of certain intraindividual variations, studies indicate that the general structure of parental behaviour is stable regardless of the developmental level of the child (Keresteš et al., 2012). The parental general tendency to be authoritative, authoritarian or permissive can reflect in their specific behaviours in everyday interactions with children. As already mentioned, specific parental behaviour can be affected by various individual and contextual characteristics, as proposed by a process model of parenting (Belsky, 1984). For example, parental beliefs about the nature of development and possibility of influencing the course of development and developmental outcomes can significantly affect parental behaviour. Further, experiences with own parents as models of behaviour can also shape parental behaviour in adulthood, as well as cultural expectations regarding parental role. Individual characteristics of children are also among factors influencing parental behaviour. Among various factors affecting parental behaviour, this study is focused on the mother's perception of child's temperament and mother's adult attachment to the own mother.

Early emotional experiences certainly play a significant role in the emotional development and well-being in childhood and in adulthood as well. Parents shape emotional climate, but emotional development is also related to child's temperament as one of the determinants of child's emotional development. Temperamental characteristics can be observed very early in life: variations regarding, for example, arousal, alertness or reactions to discomfort, can be noticed even among infants, and temperament can display stability through one's lifetime, but can also undergo changes and modifications in interaction with environmental factors (Buss & Plomin, 2014). New York Longitudinal Study conducted by Thomas, Chess and colleagues (1986), as well as Bell's conceptualization of socialization as an interactive process of child and parent/caregiver have made a significant contribution to comprehending that children play an active role in shaping their social interactions (Putnam, Sanson & Rothbart, 2002). This perspective provided an impetus for studying this interaction in relation to developmental outcomes. A substantial number of studies has been focused on child's temperament and its role in child-environment interaction and developmental outcomes, especially in relation to behavioural problems (Mathiesen & Tambs, 1999; De Pauw, Mervielde & Van Leeuwen, 2009). Approaches to temperament and operationalization of temperamental dimensions can vary. One of the most commonly used perspectives in temperament research is the Buss and Plomin's EAS model referring to relatively stable individual differences whose origin is in heritage (Zentner & Shiner, 2012). EAS model includes temperamental dimensions Emotionality, Activity, and Sociability. Emotionality is described by the level of emotional reactions and emotional arousal (from no reactions to extreme reactions). Activity refers to the level of overall energy in child's behaviour, while Sociability is defined as the tendency to be in the presence of others (Zentner & Shiner, 2012). Along with these traits, studies have also focused on Shyness (as a trait appearing in interactions with strangers), however, some results indicated that this trait is hard to separate from Sociability for the younger age groups (Buss & Plomin, 2014). Longitudinal studies have confirmed the stability of these traits; hence temperament in childhood can be one of the predictors of later developmental outcomes (Bould, Joinson, Sterne & Araya, 2013). Some studies have also established interaction between child's temperament and parental behaviour, indicating that more sociable children elicit more responsive parenting and more demanding children elicit parental withdrawal (Putnam, Sanson & Rothbart, 2002) as well as more coercive and highly controlling parenting, especially mothering

(Laukkanen, Ojansuu, Tolvanen, Alatupa & Aunola, 2014). On the other side, some studies did not confirm these results, implying that some other variables may intervene in this relationship, for example child's age and gender, or various characteristics of parents.

Within the context of this study, one of the important factors related to characteristics of the parents is certainly the relationship with own parents; a relationship important over the life course (Umberson, 1992; Mikulincer & Shaver, 2007) with the attachment to parents/caretakers being the most important emotional relationship in childhood. Although manifestations of attachment in childhood differ from those in adulthood, own parents can still provide the feeling of a secure base in adulthood as well, but this feeling is built from the earliest age. Mental representations formed in childhood affect the scope of emotional reactions and related behaviours in adulthood (Bowlby, 1973). More specifically, emotional relationship and attachment that were built from the earliest age can shape self-concept and beliefs about the social world (Collins & Read, 1990) and as such can affect different close (emotional) relationships in adulthood as well (Colin, 1996; Kamenov & Jelić, 2003; Mikulincer & Shaver, 2007). Studies have demonstrated the relationship between parental behaviour and adult attachment (Adam, Gunnar & Tanaka, 2004). Adults who are securely attached more often describe their parents as being accepting than adults who are anxious or avoidant (Collins & Read, 1990). van IJzendoorn (1995) indicates that "individual differences in the parents' mental representations of attachment are thought to determine their responsiveness to the child's attachment signals and, therefore, to direct the child's socioemotional development" (van IJzendoorn, 1995, p. 387). Jones, Cassidy, and Shaver (2015) also emphasise the importance of parents' own attachment within the context of appropriate parental responsiveness to child's needs and the balance between the child and parent. With respect to this, parental responsiveness to child's signals and needs can be observed through the perspective of parental beliefs and rearing practices. Namely, it can be assumed that parents' mental representation of attachment affects the quality of their adult attachment (not only in the relationship with a partner but with their own parents as well), which further affects their interaction with the child and reflects through rearing practices and parental behaviour. Additionally, attachment styles can also be related to the level of parental stress and personal meaning of parenting in general (Rholes, Simpson & Friedman, 2006), as well as to parental self-efficacy (Kohlhoff & Barnett, 2013). Carpenter (2001) indicates that the interest in attachment in adulthood is increasing and leading to an extended body of knowledge based on the research on attachment in childhood. Jones, Cassidy, and Shaver (2015) in their review of studies relating general attachment styles and parental behaviour point out the association between less supportive parenting and attachment-related avoidance, and also note that the findings related to anxiety dimension are less consistent.

However, studies relating to attachment and parenting usually use either estimations of attachment to own parents based on autobiographical memories (of childhood) or estimations of attachment in the context of an adult romantic relationship, while there is a lack of studies exploring this relationship from the perspective of (current) adult attachment to own parents. Therefore, this study is focused on certain factors assuming to be related to parental behaviour. More specifically, the aim of this study is to examine whether mothers' perception of child's temperamental dimensions (emotionality, activity, and sociability) and dimensions of adult attachment to the own mother (anxiety and avoidance) can predict mothers' parental behaviour. Based on the previous findings, it was assumed that child's emotionality and mother's adult attachment-related avoidance to the own mother would negatively predict mother's parental support and positively predict mother's restrictive control. Further, it was hypothesised that attachment-related anxiety negatively predicts mother's parental support and positively predicts mother's permissiveness.

Method

Sample

The sample consisted of 203 mothers of preschool children (the average age of mothers was $M=35.7$ years, $SD=5.01$). Somewhat more than two-thirds of mothers (69%) have a higher level of education (a university degree), and 31% of them have a secondary school qualification. Most of them (91.6%) are employed. Nearly half of mothers (46.8%) have two children, 37.9% have one child and 15.3% have three or more children. The proportion of single-mothers in the sample is 4.5%. Participation in the research was anonymous and on a voluntary basis.

Procedure and instruments

The research was carried out in four kindergartens in Zagreb. Questionnaires (with an accompanying envelope) were distributed by kindergarten teachers to mothers who were asked to return

the completed questionnaires in a sealed envelope and to put them in the closed box prepared for that purpose. The boxes were collected from the kindergartens by the researcher. Mothers who had more than one child of preschool-age were instructed to give their ratings regarding temperament and parental behaviour in relation to one child only. Instruments measuring mother's parental behaviour, mother's adult attachment to the own mother and the perception of child's temperament are used with the consent from the authors.

Data on mother's parental behaviour was collected by the "Parental Behaviour Questionnaire" (Keresteš et al., 2012), an instrument validated in the Croatian context. The questionnaire originally consists of 29 items referring to various parental behaviours and the mothers were asked to rate the extent to which these behaviours referred to them (on a four-point scale from 1 - not at all like me, to 4 - completely like me), whereby two original items were not included due to the age of children (items related to school obligations and allowance). This questionnaire measures seven aspects of parental behaviour grouped into three broader dimensions: Parental support (for example *I enjoy doing something together with my child*; this dimension includes Warmth, which refers to emotional affection and acceptance, Autonomy referring to respecting child's psychological independence, Knowledge of child's activities, and Inductive reasoning i.e. achieving discipline by using clear explanations and arguments), Restrictive control (for example *When my child is disobedient, I send him/her to another room*; this dimension includes Punishment which refers to harsh discipline and Intrusiveness which includes criticism and attempts to control child's thoughts) and Permissiveness (for example *When my child opposes my request, I comply*). Total scores on each dimension are calculated as an average score of associated items. Cronbach's alpha for the Parental support was .81, for the Restrictive control .69, and for the Permissiveness .73.

Mother's attachment to the own mother as one aspect of adult attachment was assessed by the "Modified Experiences in Close Relationship Inventory", originally constructed by Brennan, Clark and Shaver (1998) and modified by Kamenov and Jelić (2003), whereby the modification presents a shorter version adapted for measuring adult attachment in other close relationships as well (apart from romantic ones); in this case measuring adult attachment to the own mother. The modified inventory consists of 18 items measuring two attachment dimensions – Avoidance (uncomfortableness being close to mother; for example *I don't feel comfortable opening up to my mother*) and Anxiety (fear of rejection or abandonment; for example *I worry that my mother won't care about me as much as I care about her*). Mothers were asked to rate to which extent they experienced certain feelings in the relationship with their own mother. Ratings were given on a seven-point rating scale (1 - completely disagree, to 7 - completely agree) and total scores on each dimension are calculated as an average score of associated items. Based on the combination of results on each dimension, it is possible to categorise participants' attachment style. However, Kamenov, Jelić and Lotar Rihtarić (2014) as well as Jones, Cassidy and Shaver (2015) emphasise that most authors agree that adult attachment should be approached in terms of dimensions rather than categories. Therefore, in this study mothers' results on this scale will be approached in terms of dimensions. Cronbach's alpha for the Avoidance and Anxiety scales were .85 and .77 respectively.

Data on child's temperament was collected by "The EAS Temperament Questionnaire" (Buss & Plomin, 1984; Buss & Plomin, 2014). This instrument consists of 15 items in total and comprises parental ratings of three dimensions of child's temperament appearing early in life – Emotionality which describes the tendency to get emotionally distressed easily (5 items; for example *He/She gets upset easily*), Activity which refers to the intensity and frequency of child's actions and energy (5 items; for example *He/She is always on the go*) and Sociability which is described by the child's preference for being in company of others instead of being alone (5 items; for example, *He/She makes friends easily*). Ratings were given on a five-point rating scale (1 - not characteristic of my child at all, to 5 - very characteristic of my child) and total scores on each temperamental dimension are calculated as an average score of associated items. Cronbach's alpha was .71 for the Emotionality, .71 for the Activity and .74 for the Sociability.

Results

A brief overview of the descriptive indicators presented in Table 1 generally reveals that the mothers who participated in this study described their parental behaviour as being dominantly characterised by Parental Support, and to a lesser extent by Restrictive control and Permissiveness. Further, they perceived their children relatively high on Sociability and Activity, and somewhat lower on Emotionality. Finally, mothers' adult attachment to their own mothers was characterised by a rather low level of Avoidance and an even lower level of Anxiety.

Table 1

Descriptive statistics for parental behaviour, child's temperament and mother's attachment to own mother

	<i>N</i> of items	α	<i>M</i>	<i>SD</i>	<i>min</i>	<i>max</i>
<i>Parental behaviour</i>						
Parental support	15	.81	3.58	0.319	2.43	4.00
Restrictive control	9	.69	2.33	0.437	1.30	3.40
Permissiveness	3	.73	2.31	0.642	1.00	4.00
<i>Child's temperament</i>						
Emotionality	5	.71	2.43	0.655	1.00	4.00
Activity	5	.71	3.31	0.726	1.20	5.00
Sociability	5	.74	3.59	0.559	1.80	4.80
<i>Mother's attachment to own mother</i>						
Avoidance	9	.85	2.68	1.150	1.00	6.33
Anxiety	9	.77	1.95	0.884	1.00	5.67

Since the perception of child's temperament as well as parental behaviour can differ depending on child's gender (Leaper, 2002), it was examined whether this variable is relevant in this study. Therefore, prior to the analyses related to the aim of this study, mothers' ratings of child's temperamental dimensions for girls and boys were compared. Results indicated that there were no statistically significant differences in mothers' perception of children's temperament with regard to gender ($t_{\text{emotionality}}=-1.20$, $t_{\text{activity}}=.91$; $t_{\text{sociability}}=-0.80$), hence gender was not included as a variable in further analyses. According to Buss and Plomin (2014) potential differences between girls and boys in Activity before the age of four are not common, and the average age of assessed children in this study was 4.04, thus no differences between ratings for girls and boys were expected. Further, it was examined whether the mothers differed in their parental behaviour with regard to child's gender and obtained results indicated no significant differences as well ($t_{\text{parental support}}=1.61$, $t_{\text{restrictive control}}=.66$; $t_{\text{permissiveness}}=-1.58$) which is in line with some previous findings indicating that mothers' (unlike fathers') parental behaviour does not differ with regard to child's gender (Kosterman, Haggerty, Spoth & Redmond, 2004; Macuka, 2010).

To examine whether mother's perception of child's temperament and her attachment to the own mother (in terms of attachment-related avoidance and anxiety) predict dimensions of mother's parental behaviour, regression analyses were calculated with the same set of predictors for each dimension of mother's parental behaviour.

Table 2

Results of regression analyses for Parental Support, Restrictive Control and Permissiveness as criterion variables and child/s temperamental traits and mother's attachment to own mother as predictors

Predictors	Parental support ¹		Restrictive control ²		Permissiveness ³	
	β	<i>t</i>	β	<i>t</i>	β	<i>t</i>
<i>Child's temperament</i>						
Emotionality	-.20	-2.40*	.25	2.75**	.05	0.65
Activity	.03	0.40	.12	1.25	.15	1.93
Sociability	.04	0.44	.03	0.35	-.02	-0.28
<i>Mother's attachment to own mother</i>						
Avoidance	-.06	-0.70	-.03	-0.33	-.06	-0.72
Anxiety	-.18	-2.21*	.04	0.40	.26	3.23**

Notes:

¹-regression on Parental support: $R=.30$; $R^2=.09$; $F=2.77^*$

²-regression on Restrictive control: $R=.30$; $R^2=.09$; $F=2.33^*$

³-regression on Permissiveness: $R=.31$; $R^2=.10$; $F=3.31^{**}$

*- $p<.05$; **- $p<.01$

Results presented in Table 2 indicate that significant predictors of mother's Parental support are the perception of child's Emotionality and Anxiety as a dimension of adult attachment to own mother. More specifically, the fewer mothers perceive emotionality in their children and the less anxious they are in relation to own mothers, the more parental support they provide to their children.

Further, results also indicate that Restrictive control is predicted only by the perception of child's Emotionality while other predictors are not significant for this dimension of mother's parental behaviour. Hence, the more Emotionality children express, the more restrictive and controlling their mothers are. Mother's attachment to the own mother did not have a significant role in explaining mother's Restrictive control.

Finally, results displayed in Table 2 reveal that a significant predictor of mother's Permissiveness is the level of Anxiety as a dimension of attachment to own mother. More specifically, the more anxious mothers are about the relationship with own mothers, their parenting is more likely to be permissive. Child's temperamental dimensions were not significant predictors of mother's Permissiveness. Additionally, attachment-related avoidance was not related to mother's parental behaviour.

Discussion

Contribution of child's temperament in explaining parental behaviour

Obtained results confirmed certain expectations based on what was previously known from the studies relating parental behaviour and child's temperament. Mothers who perceive that their children express more emotionality tend to display less parental support compared to those who perceive a lower level of emotionality in their children. These results are not surprising since everyday interactions with children who express higher emotionality (which usually includes irritability, demandingness and more extreme and negative emotional reactions) probably include more challenging and boundary-testing situations and, according to previous research, these children are more prone to externalizing behaviours (De Pauw, Mervielde & Van Leeuwen, 2009), especially when mothers are harsh (Miner & Clarke-Stewart, 2008). In such situations, patience and reasoning with children are harder to apply, and these children are also more challenging in terms of comforting, soothing, guiding and controlling (Putnam, Sanson & Rothbart, 2002). The same authors say that in spite of often ambiguous results relating parenting and child's temperament, various studies allow general conclusion that parents are warmer and more responsive with more adaptable children, and less warm and responsive with more irritable and demanding children, hence the results obtained in this study are in line with this general conclusion and also imply that these children are potentially more vulnerable to effects of less optimal parenting (Kiff, Lengua & Zalewski, 2011). In addition, the possibility of mother's distorted perception of own competence should also be taken into consideration when discussing the obtained results. Namely, child's temperament is one of the factors affecting parental sense of competence (Čudina-Obradović & Obradović, 2006; Kohlhoff & Barnett, 2013) and it can be assumed that some mothers whose children tend to be more prone to negative emotionality evaluate the level of own supportiveness lower because their children, in spite of the efforts, still seem unsatisfied, and as such diminish mother's sense of competence. As expected, the obtained results also indicated that child's emotionality positively predicts the level of mother's restrictive control. In line with the afore-mentioned, it seems that, in addition to eliciting less parental warmth and support, children who express a higher level of irritability, demandingness and negative emotionality also elicit more restrictive and controlling parenting. Similar results were obtained in the study conducted by Laukkanen et al. (2014), where child's negative emotionality was positively related to mother's behavioural and psychological control. On the other side, child's level of sociability and activity did not predict dimensions of parental behaviour. According to Buss and Plomin (2014) assessing sociability of younger children could be difficult, in general, since parents are those who control the child's social context and exposure, although there are studies which obtained a relationship between child's sociability and maternal sensitivity (Selcuk, Günaydin, Sumer, Harma, Salman, Hazan, Dogruyol & Ozturk, 2010). As far as child's activity is concerned, it can be assumed that mothers expect the higher level of activity with regard to their children's age, thus not perceiving that as a problem, unlike negative emotionality which is perceived as a difficulty. The obtained results imply that child's negative emotionality could be the "hardest" for mothers to cope with, thus reflecting on her parenting.

According to the results, child's temperamental dimensions are not significant predictors of mothers Permissiveness. This result can be interpreted from the perspective of previous results, which indicated that regarding child's temperament emotionality is the only dimension related to the other two dimensions of parental behaviour. In the light of these results, it can be concluded that mothers who

participated in this study cope with the child's negative emotionality by reducing warmth and/or by increasing the level of control and restrictiveness.

Contribution of mother's attachment to own mother in explaining parental behaviour

The contribution of mother's attachment to the own mother, more specific mother's attachment-related anxiety in explaining mother's parental behaviour is, as expected, obtained in the case of parental support and permissiveness, while restrictive control was not predicted by this dimension. The results indicate that the lower level of mother's anxiety in attachment to own mother facilitates supportive parental behaviours and less permissiveness. In line with the literature, it can be hypothesised that the quality of mother's adult attachment to own mother indirectly affects her parental behaviour. Namely, mother's internal working models of emotional relationships and attachment are built from the childhood and can demonstrate cross-age continuity (Collins & Read, 1990; Hautamäki, Hautamäki, Neuvonen & Maliniemi-Piispanen, 2010). These internal working models include beliefs about responsiveness and supportiveness. It can be assumed that attachment-related anxiety in attachment to own mother, resulting from the lack of support in childhood, may lead to decreased provision of parental support to own child, as obtained in this study. Both categorical and dimensional approaches to attachment measures indicate the relationship between the quality of parental attachment and parental responsiveness. Accordingly, insecurely attached mothers (compared to securely attached) are less attuned to their infants and display lack of consistency in responding to child's affect states (Haft & Slade, 1989), and insecure parental attachment style is also characterized by less parental involvement and more negative parental behaviour (Adam, Gunnar & Tanaka, 2004; Coyl, Newland & Freeman, 2010; La Valley & Guerrero, 2012; Millings, Walsh, Hepper & O'Brian, 2013), and experiences in childhood can be related to parental behaviour in adulthood. Goldberg, MacKay-Soroka and Rochester (1994) obtained that when interacting with their children, mothers of secure infants pay attention to both positive and negative emotions while mothers of insecure infants either focus on negative affect or rarely comment feelings at all implying the relationship between maternal behaviour and the quality of child's attachment. At preschool age secure children and their mothers discussed emotions more often, and they demonstrated a better understanding of emotions. This effect of parental behaviour on emotional development can be considered as an underlying mechanism of trans-generational transmission of parental behaviour. Similar conclusions regarding adult attachment and parenting can be drawn from studies using dimensional approach to attachment which indicate the association between attachment-related avoidance and less supportive parenting (Selcuk et al., 2010; Berlin, Whiteside-Mansell, Roggman, Green, Robinson & Spieker, 2011) and attachment-related anxiety and maternal sensitivity (Selcuk et al., 2010). The results obtained in this study also imply the importance of early attachment's quality for parental behaviour and for the quality of adult attachment with parents as well. Namely, it seems justified to assume that mothers who participated in this study and whose attachment-related anxiety is higher are also an example which confirms that demonstrating certain supportive parental behaviours seems to be a problem for them, making their parenting less optimal.

Mother's anxiety in attachment to own mothers, besides from being a negative predictor of parental support, also is a predictor of mother's permissiveness, but in a positive way. Anxious mothers seem to be more prone to be indulgent and to comply with child's desires. Although Jones, Cassidy, and Shaver (2015) report on inconsistency with regard to findings relating attachment anxiety, under the assumption that mother's anxiety in attachment to own mother is a result of experiencing inconsistent parenting during childhood, it was hypothesised that mothers could transfer this inconsistency in their own rearing practices. On one side, this inconsistency may lead to reduced responsiveness to the child in terms of warmth and supportiveness, but on the other side, can also lead to insecurity regarding how to behave in relation to child's demands and how to provide the structure. It is possible that these mothers may also experience anxiety in interaction with own child related to the fear of losing child's affection if they do not comply with the child's every desire. As Shaver and Mikulincer (2002) indicate, anxiety can lead to hyper activation of attachment system, and it is possible that these mothers perceive indulgence as a way to develop closeness with the child, instead of using supportive behaviours. However, further studies are needed to clarify these results.

Although, in the context of trans-generational transmission, it could be expected that (apart from anxiety) a higher level of avoidance in attachment to own mothers would also be related to mothers' parental behaviour, more specifically to lower parental support due to an assumed lower level of experienced responsiveness in own childhood and its relation to avoidant attachment tendencies (Rholes, Simpson & Friedman, 2006; Jones, Cassidy & Shaver, 2015), results did not confirm this relationship. Avoidance is, in this study, positively correlated with anxiety ($r=.30$; $p<.001$), implying that mothers who are more anxious are at the same time more avoidant in the relationship to own mothers. However, this

dimension, unlike anxiety, did not contribute to explaining either parental support or restrictive control. Hence, expectations regarding generally lower warmth and supportiveness for both dimensions of adult attachment to own mother are only partially confirmed. One possibility is that mother's attachment-related avoidance is, unlike anxiety, less relevant in this stage of child's life than it is in adolescence when adolescents are prone to turning away from parents in the search for autonomy. Additionally, it is also possible that the lack of security in mother's adult attachment to own mother is partly compensated with a secure adult attachment to the partner since, according to Kamenov, Jelić and Lotar Rihtarić (2014) some findings from the literature imply that people have the tendency to realize secure attachment in at least one close relationship. However, this assumption is beyond the scope of this study and further studies are needed to explore this possibility.

Conclusion

Parental behaviour can be affected by numerous factors, from individual characteristics of parents and children, to various contextual factors. This study indicated that perception of child's temperamental traits as well as characteristics of mother's adult attachment to the own mother can, to a certain level, contribute to explaining parental behaviour. More specifically, child's emotionality, on the one hand, can contribute to mother's less supportive and more controlling behaviours, while mother's attachment-related anxiety as a dimension of adult attachment to the own mother, on the other, can facilitate or hinder supportive parental behaviours as well as permissiveness. In the context of obtained results, it should be emphasised that supportive and responsive parenting becomes even more important in the case of children prone to negative emotionality since it can lead to positive developmental outcomes by suppressing "difficult" side of child's temperament. Namely, difficult temperament is not a problem *per se*; it can become a problem when combined with inadequate parenting. The combination of "difficult" child and over controlling mother who lacks parental supportiveness and warmth could be considered as potentially high-risk dyad that can lead to undesired developmental outcomes. Belsky and Barends (2002) emphasise that parents can be responsive and supportive if they feel secure in their own lives and if they possess maturity, which contributes to staying supportive and firm even when child's behaviour is frustrating. In this context, quality of attachment to own parents can significantly contribute to developing the feeling of security in own life.

Some limitations of this study should also be addressed, and bearing in mind numerous factors potentially affecting parental behaviour, caution in drawing conclusions is necessary. The average age of children that ratings in this study relate to is four years; hence future studies should include school-aged children and adolescents as well. Since child's age is one of the factors related to parental behaviour, it seems plausible that the relationship between mothers' parental behaviour and dimensions of adult attachment to the own mother can vary depending on child's age, especially in adolescence. Further, mothers who participated in this study displayed a relatively low level of attachment-related avoidance and anxiety, and present a relatively small and homogenous sample with regard to education and employment status (most of the mothers have a higher level of education and are employed), thus it would be useful to conduct similar research on a more heterogeneous and larger sample, and to include adult attachment to fathers as well. Additionally, the level of emotional and instrumental support obtained from the partner (or other significant people in mother's life), as well as attachment to the partner should also be included in further studies since these variables can intervene in the relationship between mother's parental behaviour, attachment to the own mother and child's temperament.

References

- Adam, E.K., Gunnar, M.R., & Tanaka, A. (2004). Adult Attachment, Parent Emotion, and Observed Parenting Behavior: Mediator and Moderator Models. *Child Development, 75*(1), 110–122.
- Barber, B.K., Maughan, S.L., & Olsen, J.A. (2005). Patterns of parenting across adolescence. *New Directions for Child and Adolescent Development, 108*, 5-16.
- Belsky, J. (1984). The determinants of parenting: A process model. *Child Development, 55*, 83-96.
- Belsky, J., & Barends, N. (2002). Personality and parenting. In M.H. Bornstein (Ed.), *Handbook of Parenting. Volume 3. Being and Becoming a Parent*. (pp. 415-438). Mahwah: Lawrence Erlbaum Associates.
- Belsky, J., Jaffee, S.R., Sligo, J., Woodward, L., & Silva, P.A. (2005). Intergenerational Transmission of Warm-Sensitive-Stimulating Parenting: A Prospective Study of Mothers and Fathers of 3-Year-Olds. *Child Development, 76*(2), 384–396.

- Berlin, L.J., Whiteside-Mansell, L., Roggman, L.A., Green, B.L., Robinson, J., & Spieker, S. (2011). Testing maternal depression and attachment style as moderators of Early Head Start's effects on parenting. *Attachment and Human Development, 13*(1), 49-67.
- Bould, H., Joinson, C., Sterne, J., & Araya, R. (2013). The Emotionality Activity Sociability Temperament survey: factor analysis and temporal stability in a longitudinal cohort. *Personality and Individual Differences, 54*(5), 628-633.
- Bowlby, J. (1973). *Attachment and loss: Vol. 2. Separation*. New York: Basic Books.
- Buss, A.H., & Plomin, R. (2014). *Temperament. Early developing personality traits*. London and New York: Psychology Press. Taylor & Francis Group.
- Carpenter, B.D. (2001). Attachment bonds between adult daughters and their older mothers: associations with contemporary caregiving. *Journal of Gerontology: Psychological Sciences, 56*(5), 257-266.
- Colin, V.L. (1996). *Human Attachment*. New York: McGraw-Hill.
- Collins, N.L., & Read, S.J. (1990). Adult attachment, working models, and relationship quality in dating couples. *Journal of Personality and Social Psychology, 58*(4), 644-663.
- Coyl, D.D., Newland, L.A., & Freeman, H. (2010). Predicting pre-schoolers' attachment security from parenting behaviours, parents' attachment relationships and their use of social support. *Early Childhood Development and Care, 180*(4), 499-512.
- Čudina-Obradović M., & Obradović J. (2006). *Psihologija braka i obitelji* Psychology of marriage and family. Zagreb: Golden marketing - Tehnička knjiga.
- Darling, N., & Steinberg, L. (1993). Parenting style as a context: an integrative model. *Psychological Bulletin, 113*(3), 487-496.
- De Pauw, S.S.W., Mervielde I., & Van Leeuwen, K.G. (2009). How are traits related to problem behavior in pre-schoolers? Similarities and contrasts between temperament and personality. *Journal of Abnormal Child Psychology, 37*(3), 309-325.
- Goldberg, S., MacKay-Soroka, S., & Rochester, M. (1994). Affect, attachment and maternal responsiveness. *Infant Behavior and Development, 17*(3), 335-339.
- Haft, W.L., & Slade, A. (1989). Affect attunement and maternal attachment: A pilot study. *Infant Mental Health Journal, 10*(3), 157-172.
- Halpenny, A.M., Nixon, E., & Watson, D. (2010). *Parents' perspectives on parenting styles and disciplining children*. Dublin: Office of the Minister for Children and Youth Affairs.
- Hautamäki, A., Hautamäki, L., Neuvonen, L., & Maliniemi-Piispanen, S. (2010). Transmission of attachment across three generations: Continuity and reversal. *Clinical Child Psychology and Psychiatry, 15*(3), 347-354.
- Jones, J.D., Cassidy, J., & Shaver, P.R. (2015). Parents' self-reported attachment styles: A review of links with parenting behaviors, emotions, and cognitions. *Personality and Social Psychology Review, 19*(1), 44-76.
- Kamenov, Ž., Jelić, M., & Lotar Rihtarić, M. (2014). Uloga privrženosti u bliskim odnosima tijekom adolescencije i odrasle dobi The role of attachment in close relationships in adolescence and adulthood. In A. Brajša-Žganec, J. Lopižić and Z. Penezić (Eds.), *Psihološki aspekti suvremene obitelji, braka i partnerstva* Psychological aspects of contemporary family, marriage and partnership (pp. 203-238). Zagreb, Jastrebarsko: Hrvatsko psihološko društvo i Naklada Slap.
- Kamenov, Ž. & Jelić, M. (2003). Validacija instrumenta za mjerenje privrženosti u različitim vrstama bliskih odnosa: Modifikacija Brennanovog inventara iskustva u bliskim vezama Validation of adult attachment measure in various types of close relationships: Modification of Brennan's Experiences in Close Relationship Inventory. *Suvremena psihologija, 6*(1), 73-91.
- Keresteš, G., Brković, I., Kuterovac Jagodić, G., & Greblo, Z. (2012). Razvoj i validacija Upitnika roditeljskog ponašanja Development and validation of Parental Behavior Questionnaire. *Suvremena psihologija, 15*, 23-42.
- Kiff, C.J., Lengua, L.J., & Zalewski, M. (2011). Nature and nurturing: Parenting in the context of child temperament. *Clinical Child and Family Psychology Review, 14*(3), 251.
- Kohlhoff, J., & Barnett, B. (2013). Parenting self-efficacy: Links with maternal depression, infant behaviour and adult attachment. *Early Human Development, 83*, 249-256.
- Kosterman, R., Haggerty, K.P., Spoth, R., & Redmond, C. (2004). Unique influence of mothers and fathers on their children's antisocial behavior. *Journal of Marriage and Family, 66*(3), 762-778.
- Laukkanen, J., Ojansuu, U., Tolvanen, A., Alatupa, S., & Aunola, K. (2014). Child's difficult temperament and mothers' parenting styles. *Journal of Child and Family Studies, 23*(2), 312-323.
- La Valley, A.G., & Guerrero, L.K. (2012). Perceptions of conflict behavior and relational satisfaction in adult parent-child relationship: A dyadic analysis from an attachment perspective. *Communication Research, 39*(1), 48-78.

- Leaper, C. (2002). Parenting Girls and Boys. In M.H. Bornstein (Ed.), *Handbook of Parenting. Volume 1. Children and Parenting*. (pp. 189-227). Mahwah: Lawrence Earlbaum Associates.
- Macuka, I. (2010). Osobne i kontekstualne odrednice roditeljskog ponašanja. *Suvremena psihologija*, 13(1), 63-81.
- Mathiesen, K.S., & Thambis, K. (1999). The EAS Temperament Questionnaire – factor structure, age, trends, reliability and stability in a Norwegian sample. *Journal of Child Psychology and Psychiatry*, 40(3), 431-439.
- Mikulincer, M., & Shaver, P.R. (2007). *Attachment in Adulthood. Structure, Dynamics, and Change*. New York: The Guilford Press.
- Millings, A., Walsh, J., Hepper, J., & O'Brian, M. (2013). Good partner, good parent: Responsiveness mediates the link between romantic attachment and parenting style. *Personality and Social Psychology Bulletin*, 39(2), 170-180.
- Miner, J.L., & Clarke-Stewart, K.A. (2008). Trajectories of externalizing behavior from age 2 to age 9: Relations with gender, temperament, ethnicity, parenting, and rater. *Developmental Psychology*, 44(3), 771-786.
- Putnam, S.P., Sanson, A.V., & Rothbart, M.K. (2002). Child temperament and parenting. In M.H. Bornstein (Ed.), *Handbook of Parenting. Volume 1. Children and Parenting* (pp. 255-278). Mahwah: Lawrence Earlbaum Associates.
- Rholes, W.S., Simpson, J.A., & Friedman, M. (2006). Avoidant attachment and the experience of parenting. *Personality and Social Psychology Bulletin*, 32(3), 275-285.
- Selcuk, E., Günaydin, G., Sumer, N., Harma, M., Salman, S., Hazan, C., Dogruyol, B., & Ozturk, A. (2010). Self-reported romantic attachment style predicts everyday maternal caregiving behavior at home. *Journal of Research in Personality*, 44, 544-549.
- Shaver, P.R., & Mikulincer, M. (2002). Attachment-related psychodynamics. *Attachment & Human Development*, 4, 133-161.
- Umberson, D. (1992). Relationship between adult children and their parents: psychological consequences for both generations. *Journal of Marriage and Family*, 54(3), 664-674.
- van Ijzendoorn, M.H. (1995). Adult attachment representations, parental responsiveness, and infant attachment: a meta-analysis on the predictive validity of the Adult Attachment Interview. *Psychological Bulletin*, 117(3), 387-403.
- Zentner, M., & Shiner, R.L. (2012). *Handbook of temperament*. New York: The Guilford Press.

8

Croatian expert's opinion about measuring well-being of children and young people – results of the Delphi survey

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Abstract

The aim of this study was to examine the opinion of Croatian experts about the feasibility and desirability of conducting a longitudinal study of the well-being of children and young people (CYP) using the Delphi method. Participants were 30 Croatian experts who in different ways professionally deal with CYP. They completed three different questionnaires in two rounds from October 2014 to February 2015. The first questionnaire included questions that may be of relevance for conducting a longitudinal study of well-being with CYP. The second and third questionnaires were focused on the evaluation of options and the assessment of criteria against which options were assessed. Delphi procedure has been shown to be valuable for achieving a consensus among experts. Results of Delphi study clearly showed that Croatian experts associated well-being with mental and physical health, financial security and employment, social/personal network and family, material conditions and happiness. The majority of experts thought that a longitudinal study should focus on the entire life-course of a young person, from birth to the age of 25. Half of them would prefer the use of both subjective and objective measures of well-being. They preferred an accelerated cohort design with an interval of 3 years between waves and a total length of the study between 10 and 15 years. The large majority of experts indicated that a cross-European longitudinal study of well-being of CYP is desirable and that evidence from such a study would contribute to improving the well-being of CYP.

Keywords: Well-being, Delphi method, Longitudinal study, Children, and youth, Measuring Well-being

Over the last 30 years, there has been a considerable growth in the research on well-being that has greatly contributed to our understanding of optimal human functioning (Diener, 2012; Huppert, 2009). Well-being is in contemporary literature used as an over-arching concept describing how an individual evaluates his or her life (Diener, 2006; Rees, Bradshaw, Goswami, & Keung, 2010). These evaluations include cognitive judgments about life satisfaction, affective reactions to life events, interest and engagement, and satisfaction with specific domains such as relationships, health, recreation, and meaning and purpose (Diener, Oishi & Ryan, 2013). In defining the concept of well-being, a distinction is made between the hedonic and eudaimonic approaches (Ryan & Deci, 2001). The first of these reflects the view that well-being consists of pleasure versus displeasure, or happiness (Diener & Lucas, 1999), while the second view is that well-being lies in the actualization of human potentials and defines well-being in terms of the degree to which a person is fully functioning (Ryan & Deci, 2001). The recent literature suggests that well-being is probably best conceived as a multidimensional phenomenon that includes aspects of both the hedonic and eudaimonic concepts of well-being (Biswas-Diener, Kashdan, & King, 2009; Proctor, Tweed, & Morris, 2014).

When it comes to measuring well-being a distinction is made between 'objective' and 'subjective' measures. Objective measures are considered to be independent of personal evaluations, while subjective ones express subjective states such as perceptions and preferences (Noll, 2013). Although objective measures can provide useful information on well-being, there are many criticisms to be taken into account when using such measures (McGillivray, 2007; Pollard & Lee, 2003). Hicks (2011) argues that the most dangerous situation in using objective well-being measures is that what is measured becomes what matters, rather than what matters being measured. He explains that when using objective well-being measures we unduly assume that certain things are good or bad for well-being. On the other hand, the subjective well-being measures offer people the chance to report on the quality of their own lives, reflecting their own histories, personalities, and preferences. In this light, the subjectivity is to be seen as a strength rather than weakness (Helliwell, Layard & Sachs, 2013).

In line with the research on general population, there is an increased interest in the study of the well-being of children and youth, with the aim to explore what are the best policies and approaches to effectively promote the well-being of children and young people (CYP). Although there are numerous indicators of children's well-being collected by different countries, the systematic measurement of CYP's well-being is a relatively new area of research (UNICEF, 2013). Goswami, Fox and Pollock (2016) reviewed three different approaches used in existing studies of CYP's well-being: (1) the wider social indicator movement which focuses on measurements of well-being using primarily available indicators such as child poverty rates, injuries, educational attainment etc., (2) measuring child well-being through self-report surveys, and (3) approach focused on developing concepts and frameworks which incorporate children's perspectives. Each of these approaches has its advantages and disadvantages, but authors believe that the third one should be further developed since, in addition to being "children and young people- centric", this approach focuses on the subjective measures in well-being research and reflects a major paradigm shift in child well-being research (Goswami et al., 2016; Mason & Danby, 2011).

Methodological approach and/or indicators to be used to measure CYP's well-being are still a matter of debates, despite the fact that several longitudinal studies have been conducted so far (Ciarrochi, Heaven, & Davies, 2007; Luoma et al., 2001; Olsson, McGee, Nada-Raja, Williams, & Olsen, 2013; Shek, 1998). In order to fulfil the gap in the literature considering the methodological approach to measure CYP's well-being, the European project involving 14 partner organisations in 11 EU countries was conducted from 2014 to 2016. The goal of the MYWEB project (Measuring Youth Well-being), funded by the European Commission, was to assess the availability of existing data, to assess the priorities of public policies aimed at the CYP's well-being, and to develop methodological challenges for the implementation of future longitudinal studies in the EU. One of the specific aims of the projects was to examine the opinions of national experts about the feasibility and desirability of conducting a longitudinal study of CYP's well-being using the Delphi method. In this paper, we shall present the opinions of Croatian experts in that matter.

Delphi method is based on the process of gathering knowledge of a group of experts through a structured process that uses a series of questionnaires or "rounds" to gather information. Rounds are held until group consensus is reached (Green, Jones, Huges, & Williams, 1999). Questionnaires completed by experts are combined with controlled opinion feedback so that the technique provides a reliable and creative expression of ideas (Adler & Ziglio, 1996). The Delphi process facilitates creative and informed decision-making in such circumstances. The Delphi technique begins with the development of a set of open-ended questions on a specific issue, which are then distributed to various experts. The responses to these questions are summarised and serve as a basis to formulate the second and third set of questions that seek to clarify areas of agreement and disagreement. The new questionnaires are then distributed to

the same group of experts. The main advantage of this method is that it is useful when time and cost considerations make it impractical to bring together a wide range of geographically dispersed experts for a series of meetings. Further, it is conducted in writing and does not require face-to-face meetings, responses can be made at the convenience of the participant, and it is relatively free of social pressure and personality influence. Iteration enables participants to review, re-evaluate and revise all their previous statements in light of comments made by their peers. (Adler & Ziglio, 1996; Delbecq, Van de Ven, & Gustafson, 1975; Donohoe, Stellefson & Tennant, 2001). Possible disadvantages of Delphi technique are that information comes from a selected group of people and may not be representative, extreme positions may be eliminated, and participation requires skills in written communication, adequate time and participant commitment (Adler & Ziglio, 1996; Green, Jones, Huges, & Williams, 1999).

Delphi technique has been widely used since the late 1970s mainly for the purposes of strategic management, planning and development in industry (Benson, Hill & Hoffmann, 1982; Loo, 2002), and in healthcare sectors (Grimes & Moseley 1976; Starkweather, Gelwicks & Newcomer, 1975; Boulkedid, Abdoul, Loustau, Sibony & Albert, 2011). In a systematic review of Delphi method used for selecting healthcare quality indicators, 1241 articles were retrieved, most of which published in the last decade (Boulkedid et al., 2011). As the main advantage of the technique authors emphasise its value for achieving a consensus about issues where none existed previously. The search of Croatian databases of scientific literature (CROSBI; Hrčak) revealed several studies using Delphi technique in the field of tourism (Kaynak & Čavlek, 2007), market research (Galetić & Prester, 2006; Renko et al., 2013), education (Ljubetić, Visković & Slunjski, 2014; Visković, 2016), psychosocial care provision (Bisson et al., 2010; Pears et al., 2012) and healthcare management (Sičaja, Romić, & Prka, 2006; Vrcić Keglević, Kovačić, & Pavleković, 2014). To the best of our knowledge, the Delphi technique has not previously been used in the field of children's well-being.

The present study was conducted with the aim to examine the opinion of Croatian experts who in different ways professionally deal with children and young people, the concepts and indicators of well-being, as well as the feasibility, methodological challenges and desirability of conducting a longitudinal study of children and young people's well-being in Europe. The experts' opinions on these matters are especially valuable in determining a suitable strategy to collect and use data on CYP's well-being. Therefore, the participants were carefully chosen to cover expertise in those fields/sectors that are expected to benefit from using data of a potentially new longitudinal study (government, local/regional authorities, NGOs, academia and practice).

Method and material

Subjects

Participants were 30 Croatian experts who in different ways professionally deal with children and young people (CYP). They were selected to ensure the coverage of relevant issues and included policy-makers, experts, academics and researchers with an interest in CYP. Delphi respondents worked in research/academia (n=11, 37%), national or local government agencies (n=6, 20%), non-governmental organisations (n=3, 10%), private sector organisations (n=1, 3%) and other types of organisations (n=9, 30%). Their expertise covered the fields of social care, education, health, economics, justice and research in children/family issues. Three questionnaires were issued to all participants in two distinct phases (N₁ (1st round) = 30, N₂ (2nd round) = 28, N₃ (2nd round) = 28) with questions about the methodological challenges in researching the well-being of CYP. Response rates were satisfying, 90.9% in the first questionnaire, 84.8% in the second and 84.8% in the third questionnaire. The anonymity of all participants was guaranteed.

Instruments

Questionnaires to be used in the study were designed by an international group of researchers after a systematic review of scientific literature in the field, a review of relevant EU policies, and interviews and focus groups with CYP (MYWEB, 2017a). Review of scientific literature included 121 articles on well-being and 75 on survey methodology. Mapping of existing policies included 256 EU policies and 827 sources of data. Interviews and focus groups with CYP included 440 CYP in eleven EU countries, including Croatia (MYWEB, 2017a). After systematic analyses of these data, the questionnaires to be used in Delphi were designed.

The first questionnaire included questions about key issues about the well-being of CYP and all additional information that may be of relevance for conducting a longitudinal study of well-being. Different options for implementation of the longitudinal study were offered. Experts were asked to critically examine the questions and suggestions and to add the information considered relevant.

The second and third questionnaires included questions to evaluate the data collected from experts in the first phase and were focused on refining the long-list of options and the long list of assessment criteria against which options were assessed. The questionnaires included different types of questions, dichotomous, multiple choice, scaled and open-ended questions which were used for qualitative analyses.

Procedure

Delphi survey was conducted between October 2014 and February 2015. Three questionnaires were issued to participants in two distinct phases: exploratory phase (first questionnaire) and evaluation phase (second and third questionnaires). An invitation letter was sent via email to all participants for every series of questionnaires with a link to the questionnaire. Interviews were conducted on-line in the English language. Croatian research team was responsible for selecting experts in a national survey and for distributing the questionnaires. Consent was obtained from participants each time of collecting data. Participation was voluntary and therefore participants could withdraw their consent anytime. Access to personal data, including interviews, is given only to members of research team and is kept confidentially. The average time for completing a questionnaire was between 20 and 40 minutes depending on the depth of the input participants wanted to provide.

Results

The objective of the study was to assess the feasibility and desirability of conducting a longitudinal study of the well-being of children and young people using the Delphi procedure. In the analyses we focused on five aspects: the concept of well-being, indicators of well-being, defining the sample for the future survey, possible CYP participation, survey methodology, sustainability and technical feasibility. The descriptive statistics and some qualitative data analyses are presented.

The concept of well-being

Before going into the discussion of methodological possibilities for conducting a longitudinal study, experts were asked to cite five keywords or phrases they associate with well-being. The words/phrases the most often cited (Figure 1) were related to mental and physical health, financial security and employment, social/personal network and family, material conditions and happiness. Although categories of financial security and material conditions seem to belong to the same category, by the wording of experts these categories form quite distinct concepts. The category “financial security and employment” was associated with actual and future security of household’s income, while the category “material conditions” was associated with wealth and material things people own or are deprived of. Therefore, we thought it would be important to make a difference between these two categories.

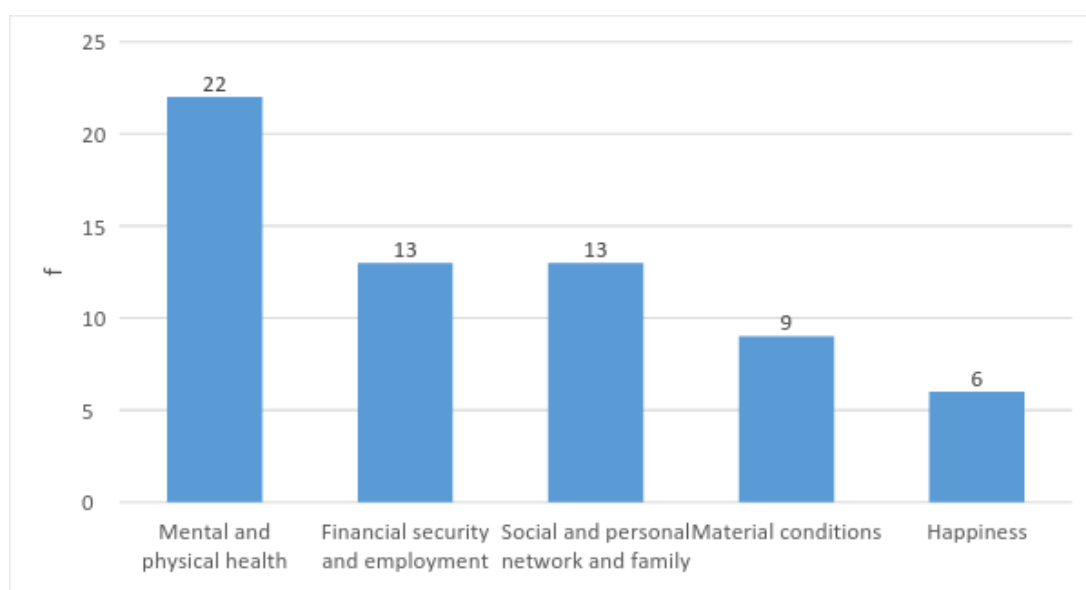


Figure 1. Five most important keywords or phrases associated with well-being

The OECD (OECD, 2013) distinguishes between three indicators of well-being (three pillars of well-being): material conditions, sustainability of quality of life and the quality of life. All three indicators were by Croatian experts considered important (answers important or very important): the most important being quality of life (100%) and its sustainability (90%). It is interesting to note that when considering what is very important for the well-being the majority of respondents (86.7%) agreed that it was quality of life, while only 20% thought that material conditions were very important.

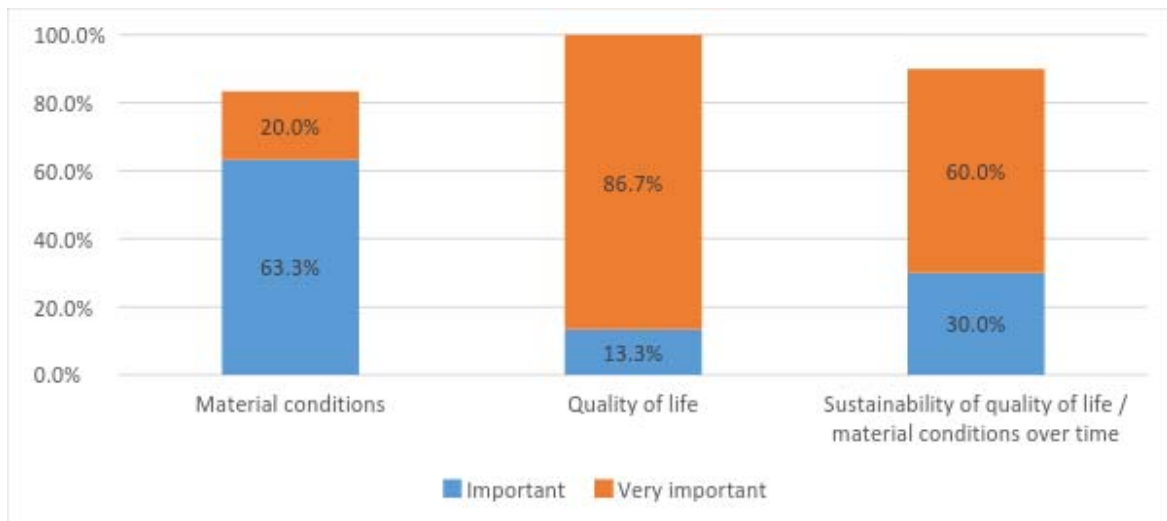


Figure 2. Importance of OECD pillars of well-being

As an illustration of typical opinion one respondent working in a research institution said: *"Quality of life is a subjective measure and therefore important for well-being. It is a perception of life that is important, rather than "objective" material conditions, as one with material wealth doesn't have to perceive his life as good."*

When asked about the types of indicators to be used in a future longitudinal study half of the respondents (50%) indicated that both objective and subjective measures of well-being should be taken into account with equal weight to both types.

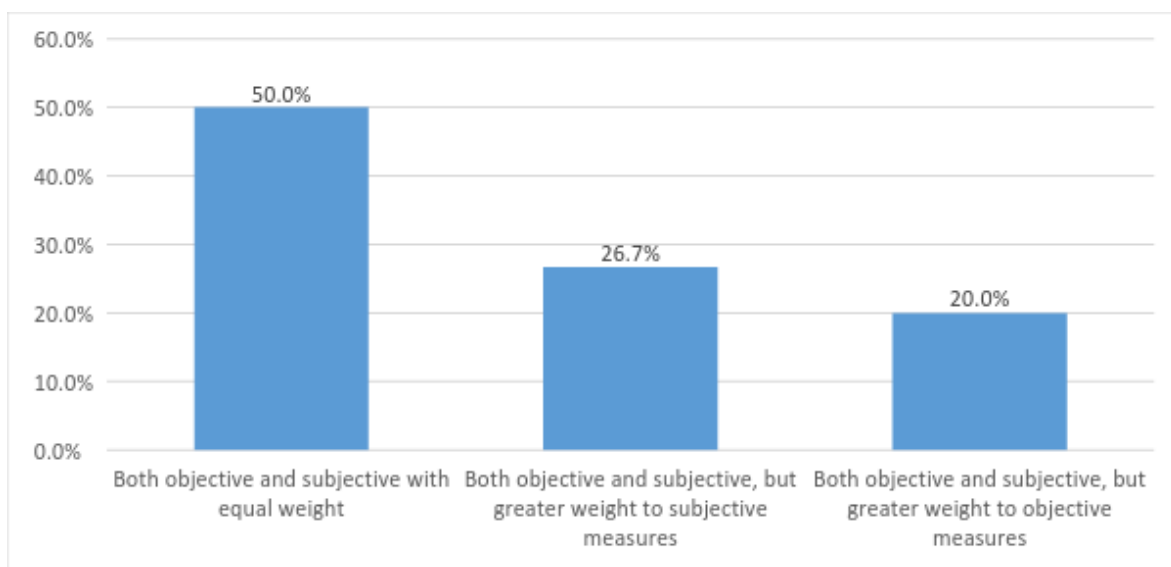


Figure 3. Preferred option for longitudinal survey (objective vs subjective measures)

Opinion from a respondent working in an NGO: *“Generally, I think that both dimensions have to be incorporated in any type of longitudinal study if we are to grasp such a rich and complex concept as well-being. Putting more emphasis on either of the measures (objective vs. subjective) has its advantage only if it is justified by specific research objectives.”*

Defining the sample

Goswami et al. (2016) pointed out that the age of children that a future longitudinal survey wishes to recruit as respondents will have a major impact on the chosen methods and design of research tools. They argue that the decision about the recruited age group also has an impact on the length and content of the survey questionnaire. It is clear that research about the well-being of CYP involves significant methodological challenges, but if we want to conduct a methodologically robust study, what age group should we focus on? The majority of Croatian respondents (73.3%) agreed that a longitudinal study should focus on the entire life-course of a young person, from birth to the age of 25.

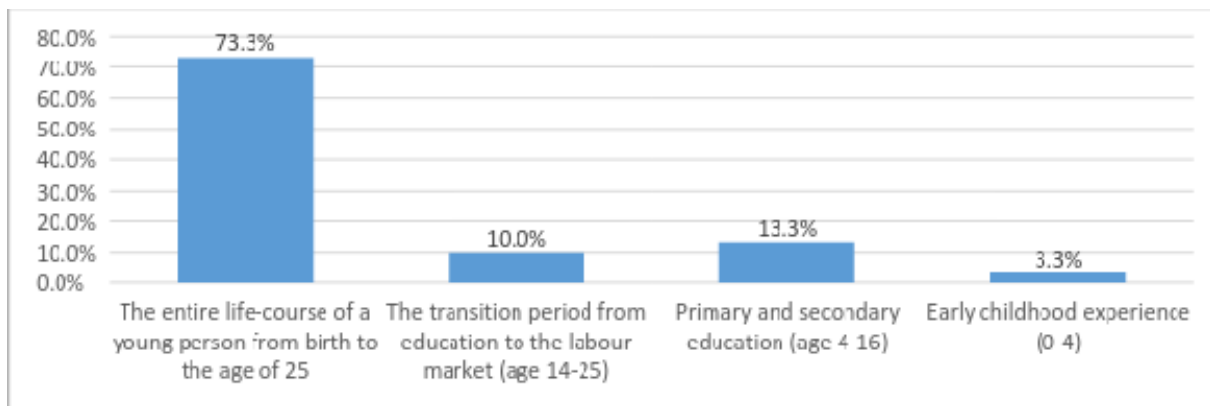


Figure 4. Age group survey focus

A respondent from NGO children’s rights institution said: *“If the target group are children and young people than the answer is 0-25. The life-course from 0 to 18 corresponds to the definition of the child in the Convention of the children’s rights. Young people are persons from 18 to the age of 25.”*

Defining indicators of well-being

The concept of well-being is a multidimensional construct. Some of the most surveyed dimensions when considering well-being are personal well-being, relationships with peers, family and home, health, time use, community and neighborhood, money and possessions, personal appearance, education and skills, competence, autonomy, purpose in life and amount of choice. Experts were asked to rate for each of the mentioned dimensions whether it could be better captured through standardised European measures or through nationally specific measures. Most of the Croatian experts (76.7%) agreed that it would be necessary to complement the European measures of well-being with issues specific to different countries. These opinions were in detail elaborated in round 2 of the Delphi study. As a result, the majority of experts believed that standardised European measures would be appropriate for capturing all of the domains of well-being, except “community and neighbourhood”, which would be better captured by country-specific measures. It is interesting to note the ranking of the measures to be captured by standardised European vs. country-specific measures. By experts opinion the domains of education and skills, health, competence and personal well-being reached a consensus of more than 70% of experts that would be better captured by standardised European measures. On the other hand, domains of family and home, purpose in life, and especially community and neighbourhood were not so strongly agreed whether to be better captured by European or country-specific measures.

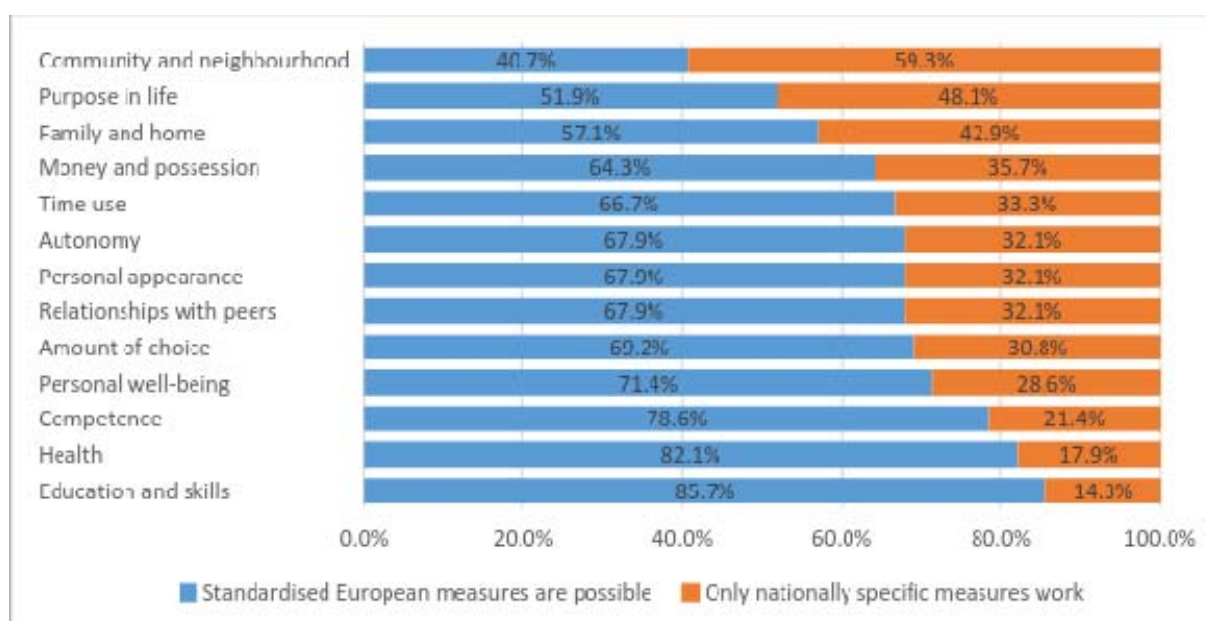


Figure 5. Different domains of well-being captured through standardized European measures or country specific measures

With the aim to elaborate in more detail the question on country specific measures to be used in future surveys, experts were asked about this topic again in round 3 of Delphi survey. The majority of Croatian experts (90.9%) thought that it would be necessary to develop a classification of neighbourhoods taking into account different contextual variables such as marital status, household composition, accommodation type, size of households, educational attainment of household's members etc. which would measure community and neighbourhood as a part of children's well-being.

Children and young people's participation

Children and young people could be involved in research in different ways: as respondents, consultants, collaborators or as owners of the research data (Shaw, Brady & Davey, 2011). Respondents in our study were asked if indicators of well-being should be defined in cooperation with CYP. Most of the Croatian experts agreed that the children (90%) and young people (90.2%) should be included into designing the research instrument.

A respondent from an NGO: *"Adults often think that they know everything about children. Children are not miniature adults, they have their own world and their needs, therefore, we should ask them about it."*

Nevertheless, some experts (10%) hold that it could be difficult to include very young children in this process. (An NGO respondent: *"With children at a younger age it is not easy to find ways and methods for their direct participation in designing the research instrument."*).

Another important question considering the design of a longitudinal study was whether complementary qualitative interviews and incentives should be used. Most of the experts (85.7%) agreed that measuring the well-being of CYP should include additional qualitative interviews in which participants can express their views. Most of the experts (71.4%) also agreed that incentives should be used to enhance participation.

An important question in designing a longitudinal study with CYP is whether views from parents and primary carers should also be included. Half (50%) of the respondents agreed that evidence measuring CYP's well-being should always include views from parents and primary carers, especially when participants are children of preschool age. There were, however, several experts who were skeptical about including parents and primary carers as a source of information about CYP's well-being (A respondent from academic/research institution: *"Not all parents/carers are aware of their children's needs, views, etc. So, children's active role is very important"*).

Study methodology

Next important aspect in designing a longitudinal study measuring the well-being of CYP is studying methodology. In the first Delphi round experts were choosing between two different study designs for the longitudinal study. There is no strong agreement on the most suitable design, about half of the Croatian experts indicated that most suitable design would be a household panel design which is based on a sample of individuals/households, and seeks to discover what happens/has happened to the same people/households over a certain period of time. About 40% of experts indicated that the most suitable design would be a cohort design which is the aggregate of individuals who experience the same life event within the same time interval. Another 10% thought that the study should be a combination of panel and cohort design.

Respondents' comments show indecision among the Croatian experts regarding the study design. A respondent from academic/research institution said: *"Although cohort design is more economic, I would prefer panel design, because it is methodologically stronger*, while a respondent from NGO thought that *"Cohort design is easier to be sustainable"*. A respondent from public employment service: *"Combination - cohort design including households of targeted persons"*.

To clarify the preferred study design and to get a good methodological solution, in the second round of Delphi survey respondents had to rate on a 5-point scale (1= not at all; 5=very desirable) the desirability of the following options: (a) a narrow age sample which traces a single age cohort as they grow up, (b) a wide age sample which traces a series of age cohorts as they grow up and c) an accelerated cohort design. In a single longitudinal cohort design a group of individuals at the same initial age is followed over time, while in an accelerated longitudinal cohort design multiple single cohorts, each one starting at a different age, are followed (Galbraith, Bowden & Mander, 2014). Authors argue that the main advantage of an accelerated longitudinal cohort design is its ability to span the age range of interest in a shorter period of time than it would be possible with a single cohort design, and therefore it should be less affected by dropout. The potential disadvantage is the possible existence of a cohort effect, a systematic difference between people born at different times (Galbraith et al., 2014).

Croatian experts preferred the accelerated cohort design ahead of a wide age sample which does not differentiate specific age cohorts and/or a narrow age based study which traces a single age cohort as they grow up.

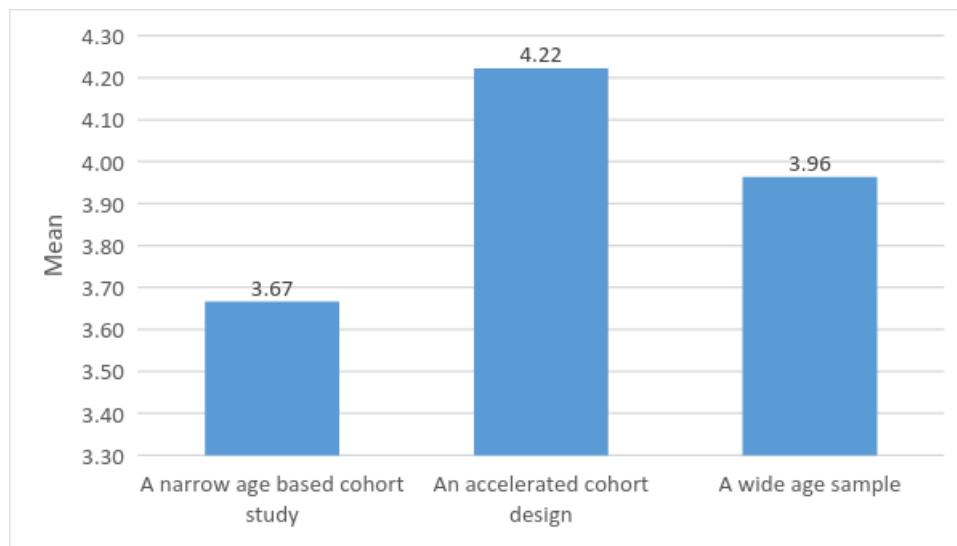


Figure 6. Study design options rated for desirability

The next important aspect in designing a longitudinal study is the interval between two data collections. If the interval is too long, important changes can be missed, but if the interval is too short unnecessary cost can occur. Almost a third of respondents (29.6%) indicated that the study should take place every 3 years, while about a quarter of them (25.9%) indicated that 5 years would be the preferable interval. The least preferable interval to the Croatian experts was once a year.

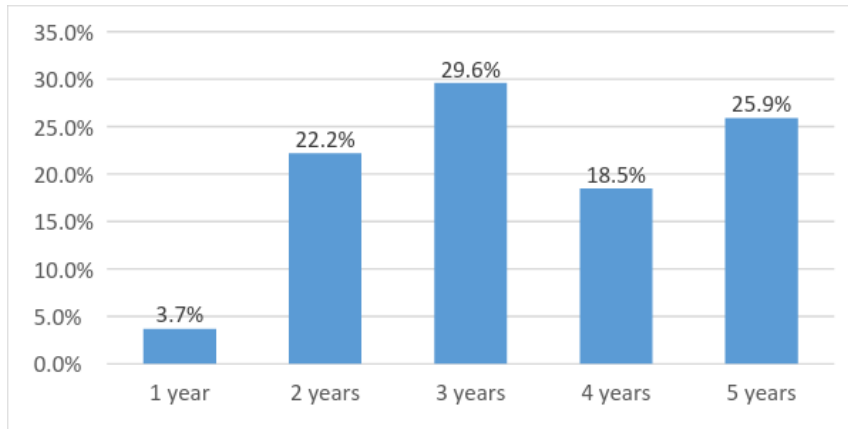


Figure 7. Preferred interval between data collection

When considering the total length of the study, the most preferred option for the Croatian experts was 10 to 15 years (34.6%), while one-fifth of them indicated a longer period (21-35 years) and another fifth unlimited time for the study (19.2%).

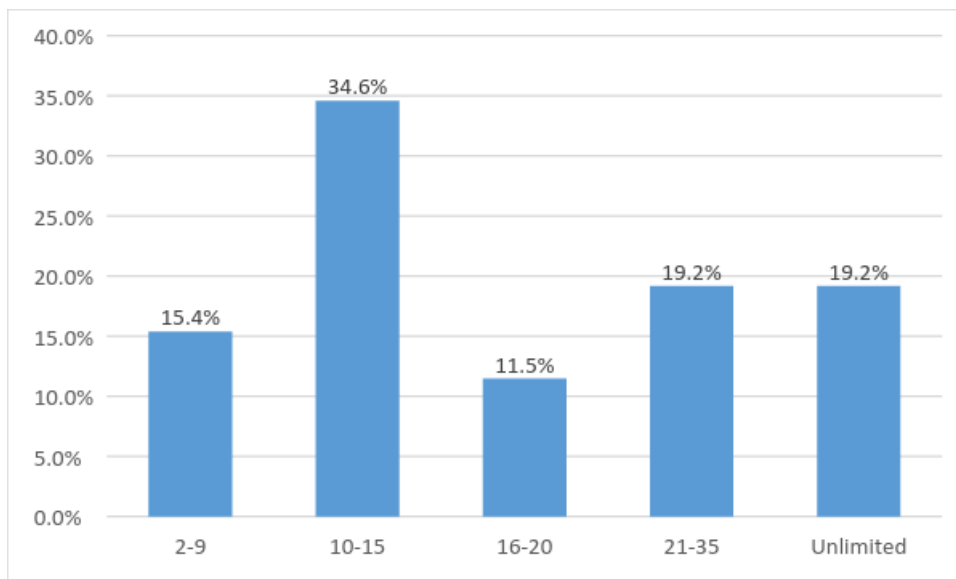


Figure 8. Length of the study

Sustainability and technical feasibility of the study

In designing a longitudinal study three criteria were used against which Croatian experts could assess feasibility. The great majority (80%) agreed that a longitudinal study is desirable. About half of them (56.7%) agreed that conducting a longitudinal study was technically feasible and financially sustainable (46.7%).

Qualitative comments also point to the conclusion that a longitudinal well-being study with CYP is desirable, financially sustainable and technically feasible despite the fact that a number of experts doubted its financial feasibility.

A respondent from health organization: *"I believe that technical skills and material resources should be developed and used no matter what is the cost, because of the importance of this issue."*

A respondent from academic/research institution: *"It would be very demanding and expensive, but I believe that it is possible to conduct it."*

When considering technical feasibility, respondents agreed that there should be no shortcomings regarding the implementation of consistent fieldwork practice, keeping the sample members in future

data collection phases, getting parental consents, managing a large and complex data set and having a representative sample study in each country.

The large majority of respondents (95.8%) agreed that evidence from a longitudinal well-being study of CYP would contribute to improving their well-being, and 92.6% thought that longitudinal data would allow policy makers to improve policy design and impact and would make policies aimed at improving child well-being more effective and efficient. Also, a large majority of respondents (96.2%) agreed that it was reasonable to assume that the economic benefits of improved CYP's well-being exceed the cost of implementing a longitudinal study.

Discussion

In recent years we are witnessing a rising interest in research of individual's as well as nation's well-being (Diener et al., 2016). This growing interest in research can be partly attributed to the interest of policy makers in this area. Subjective well-being is increasingly considered as a proper measure of social progress and a goal of public policy (Hallivell, Layard and Sachs, 2015). Several European surveys are conducted regularly, allowing the monitoring of trends in the well-being of adult population across European countries (for a detailed review see Noll, 2008). However, there is a lack of comparable data on the well-being of children and young people. A systematic review of the literature on the research of the CYP's well-being by Goswami et al. (2016) described quite a number of national surveys conducted in several countries, but only a few which allow comparisons across different countries. Most of these studies include only a limited number of well-being domains, the concepts of well-being were developed primarily from concepts which originated from the studies of adult well-being, and are primarily cross-sectional in nature and therefore unable to detect age-related developmental changes (Goswami et al., 2016). In order to fill the gap in existing knowledge of the well-being of CYP, the group of researchers from eleven EU countries conducted a project which looks at the feasibility of beginning a new longitudinal study to collect comparable EU data on the well-being of CYP.

The objective of this study was to examine the opinion of the Croatian experts about the feasibility and desirability of conducting such a large longitudinal study, using Delphi method. Results showed that the large majority of Croatian experts, who professionally deal and/or are interested in using data on CYP's well-being, believe that evidence from a longitudinal study will contribute to improving the well-being of CYP (96% experts agree) and think that such a study is highly desirable (80% agree). However, as there are many challenges of realizing such a large study, they realistically have doubts about its technical feasibility and financial sustainability (57% agree that it is technically feasible and 47% that it is financially sustainable). When it comes to technical details about conducting a longitudinal study, most of the Croatian experts agreed that children (90%) and young people (90.2%) should be included in designing the research instrument. As a study design, they preferred the accelerated longitudinal cohort design in which multiple cohorts, each one starting at a different age, are followed over a period of time. Croatian experts believe that the study should include the entire life-course of a young person, from birth to the age of 25 and should last between 10 and 15 years with repeated measurements every 3rd year.

The opinions of the Croatian experts complement the opinions of experts obtained by the same technique in other EU countries (Greece, Spain, Latvia, Georgia, Portugal, Hungary, United Kingdom, Estonia, Germany, Slovakia, Cyprus, Ireland, Belgium, Czech Republic, Italy, Luxembourg, Austria, France, and Romania), as well as experts from European institutions. There were in total 334 experts involved in this part of the larger project. The main conclusion obtained is that the well-being of CYP is of high relevance and should be systematically monitored through a longitudinal cross-European survey which is desirable, feasible and would offer great benefits for policy makers (MYWEB, 2017a). Data obtained by such survey will be invaluable for the EU member states for the monitoring and evaluating of the existing policies on children and young people's well-being and developing future evidence-based decision making (Goswami et al., 2016).

The main limitation of this study is that it represents in a way "wishful thinking". The Croatian experts, as well as the experts from other EU countries, expressed their need for comparable data on the well-being of CYP, but at the same time expressed concerns about the financial aspects of a new cross-European longitudinal survey. The decision about the implementation of such a survey should be made by the EU and its member countries' institutions and policy makers which did not participate in this study. In order to raise the policy awareness of the need to identify and assess the comprehensive set of CYP well-being indicators that should be regularly monitored through a well-designed longitudinal study, the MYWEB project produced short policy briefs from each member of the consortium (MYWEB, 2017b) to be distributed to the media, policy makers, researchers and institutions dealing with CYP.

Delphi method, which is not widely used in Croatia, proved to be a useful technique to obtain opinions of experts from different fields about many important issues regarding the design of a longitudinal study on the well-being of CYP. The participants were carefully chosen to cover expertise in those fields that are expected to benefit the most from using the data on CYP's well-being. It should be stressed that the response rate of Croatian experts was very high (91% in the first round and 85% in the second and third), indicating their interest in the survey. In that respect, the Croatian experts made a valuable contribution to the European research on children's and young people well-being.

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References

- Adler, M., & Ziglio, E. (1996). *Gazing into the oracle: The Delphi method and its application to social policy and public health*. Jessica Kingsley Publishers.
- Benson, P., Hill, A., & Hoffmann, T. (1982). Manufacturing systems of the future – a Delphi study. *Production & Inventory Management*, 23(3), 87-105.
- Bisson, J. I., Tavakoly, B., Witteveen, A.B., Ajduković, D., Jehel, L., Johansen, V. J., Nordanger, D., Orengo, G., Francisco, P., Raija, L., Schnyder, U., Sezgin, A.U., Wittmann, L., & Olf, M. (2010). TENTS guidelines: development of post-disaster psychosocial care guidelines through a Delphi process, *British Journal of Psychiatry*, 196(1), 69-74.
- Biswas-Diener, R., Kashdan, T. B., & King, L. A. (2009). Two traditions of happiness research, not two distinct types of happiness. *The Journal of Positive Psychology*, 4(3), 208-211.
- Boulkedid, R., Abdoul, H., Loustau, M., Sibony, O., & Albert C. (2011). Using and Reporting the Delphi Method for Selecting Healthcare Quality Indicators: A Systematic Review. *PLoS ONE*6(6).
- Ciarrochi, J., Heaven, P.C.L., & Davies, F. (2007). The impact of hope, self-esteem, and attributional style on adolescents' school grades and emotional well-being: A longitudinal study. *Journal of Research in Personality*, 41, 1161-1178.
- CROSBIB. Croatian Scientific Bibliography. Available at: <https://bib.irb.hr/index.html?lang=EN>
- Delbecq, A. L., Van de Ven, A. H., & Gustafson, D. H. (1975). *Group techniques for program planning: A guide to nominal group and Delphi processes*. Scott Foresman.
- Diener, E. (2006). Guidelines for national indicators of subjective well-being and ill-being. *Applied Research in Quality of Life*, 1, 151-157.
- Diener, E. (2012). New findings and future directions for subjective well-being research. *American Psychologist*, 67(8), 590-597.
- Diener, E., & Lucas, R. E. (1999). Personality and Subjective Well-Being. In: Kahneman, D., Diener, E., & Schwarz, N. (Eds.): *Well-Being: The Foundations of Hedonic Psychology* (pp. 213-29). New York: Russell Sage Found.
- Diener, E., Oishi, S., & Ryan, K.L. (2013). Universals and cultural differences in the causes and structure of happiness: A multilevel review. In: Keyes C.L.M. (ed.) *Mental Well-Being: International Contribution to the Study of Positive Mental Health*. Dordrecht: Springer.
- Diener, E., Heintzelman, S. J., Kushlev, K., Tay, L., Wirtz, D., Lutes, L. D., & Oishi, S. (2016). Findings All Psychologists Should Know From the New Science on Subjective Well-Being. *Canadian Psychology/Psychologie canadienne*. Advance online publication. <http://dx.doi.org/10.1037/cap0000063>
- Donohoe, H., Stollefson, M., & Tennant, B. (2012). Advantages and limitations of the e-Delphi technique: Implications for health education researchers. *American Journal of Health Education*, 43(1), 38-46.
- Galbraith, S., Bowden, J., & Mander, A. (2014). Accelerated longitudinal designs: an overview of modelling, power, costs and handling missing data. *Statistical methods in medical research*, 26(1), 374-398
- Galetić, L., & Prester, J. (2006). Manufacturing in Europe and Croatia till 2020: the forecasts of MANVIS delphi research. *Ekonomski pregled*, 57(3-4), 195-226.
- Green, B., Jones, M., Hughes, D., & Williams, A. (1999). Applying the Delphi technique in a study of GPs' information requirements. *Health and Social Care in Community*, 7, 198-205.
- Goswami, H., Fox, C., & Pollock, G. (2016). The Current Evidence Base and Future Needs in Improving Children's Well-Being Across Europe: is There a Case for a Comparative Longitudinal Survey?. *Child Indicators Research*, 9, 371-388.

- Grimes, R.M., & Moseley, S.K. (1976). An approach to an index of hospital performance. *Health Services Research, 11*, 288–301
- Helliwell, J. F., Layard, R., & Sachs, J. eds. (2013) *World Happiness Report 2013*. New York: Sustainable Development Solutions Network.
- Helliwell, J. F., Layard, R., & Sachs, J. (2015) *World Happiness Report 2015*. New York: Sustainable Development Solutions Network.
- Hrčak. Central portal of Croatian scientific journals. Available at: <http://hrcak.srce.hr/?lang=en>
- Hicks, S. (2011). *The Measurement of Subjective Well-Being. Paper for Measuring National Well-Being*. Technical Advisory Group. Newport: ONS.
- Huppert, F. A. (2009). Psychological Well-being: Evidence Regarding its Causes and Consequences. *Applied Psychology: Health and Well-Being, 1*(2), 137-164.
- Kaynak, E., & Cavlek, N. (2007). Measurement of tourism market potential of Croatia by use of Delphi qualitative research technique. *Journal of East-West Business, 12*(4), 105-123.
- Loo, R. (2002). "Delphi method: a powerful tool for strategic management", *An International Journal of Police Strategy & Management, 25*(49), 762.
- Luoma, L., Tamminen, T., Kaukonen, P., Laippala, P., Puura, K., Salmelin, R., & Almqvist, F. (2001). Longitudinal Study of Maternal Depressive Symptoms and Child Well-Being. *Journal of the American Academy of Child & Adolescent Psychiatry, 40*(12) 1367-1374.
- Ljubetić, M., Visković, I., & Slunjski, E. (2014). More successful education of preschool teachers by consensus—the Delphi method. *International Journal of Physical and Social Sciences, 4*(4), 217-237.
- Mason, J., & Danby, S. (2011). Children as experts in their lives: child inclusive research. *Child Indicators Research, 4*, 185–189.
- McGillivray, M. (2007). Human Well-being: Issues, Concepts and Measures. In: M. McGillivray, (Ed.): *Human Well-Being: Concept and Measurement*. Basingstoke, UK: Palgrave MacMillan.
- MYWEB (2017a). Measuring youth well-being. European Commission funded project received funding under its 7th framework programme. Available at: <https://fp7-myweb.eu/pdfs/MyWeb%20final%20flyer.pdf> (Retrieved on February 28, 2017)
- MYWEB (2017b). Measuring youth well-being. European Commission funded project received funding under its 7th framework programme. Available at: https://www.fp7-myweb.eu/policy_briefs.html (Retrieved on March 8, 2017)
- Noll, H-H. (2008). European Survey Data: Rich Sources for Quality of Life Research. In: V.Moller , D. Huschka , & A.C. Michalos (Eds.) *Barometers of Quality of Life Around the Globe. How Are We Doing?*. Dodrecht, The Netherlands: Springer.
- Noll, H.H. (2013). Subjective Social Indicators: Benefits and Limitations for Policy Making-An Introduction to this Special Issue. *Social Indicators Research, 114*(1): 1-11.
- OECD (2013). *How's Life? Measuring Well-Being*, OECD Publishing.
- Olsson, C.A., McGee, R. Nada-Raja, S., & Williams, S.M. (2013). A 32-Year Longitudinal Study of Child and Adolescent. Pathways to Well-Being in Adulthood. *Journal of Happiness Studies, 14*, 1069–1083.
- Pearce, J., Jones, C., Morrison, S., Olf, M., van Buschbach, S., Witteveen, A B., Williams, R., Orengo-García, F., Ajduković, D., Aker, A. T., Nordanger, D., Lueger-Schuster, B., & Bisson, J. I. (2012). Using a Delphi process to develop an effective train-the-trainers program to train health and social care professionals throughout Europe. *Journal of Traumatic Stress, 25*(3), 337-343.
- Pollard, E. L., & Lee, P. D. (2003). Child Well-being: A Systematic Review of the Literature. *Social Indicators Research, 61*(1), 59-78.
- Proctor, C., Tweed, R., & Morris, D. (2015). The naturally emerging structure of well-being among young adults: "Big Two" or other framework?. *Journal of Happiness Studies, 16*(1), 257-275.
- Rees, G., Bradshaw, J., Goswami, H., & Keung, H. (2010). *Understanding Children's Well-Being: A National Survey of Young People's Well-Being*. London: The Children's Society.
- Renko, N., Butigan, R., Renko, S., Vuletić, A., Schaer, B., & Zaouche-Laniau, M. (2013). Harnessing expert opinion: Trends and challenges on the Balkan organic market, based on a Delphi approach. In D. Barjolle, M. Gorton, J. Milošević Đorđević, Ž. Stojanović (Eds.) *Food Consumer Science Theories, methods and application to the Western Balkans* (pp. 89-106). Dordrecht: Springer.
- Ryan, R. M., & Deci, E. L. (2001). On Happiness and Human Potentials: A Review of Research on Hedonic and Eudaimonic Well-Being. *Annual Review of Psychology, 52*: 141-66.
- Shaw, C., Brady, L., & Davey, C. (2011). *Guidelines for research with children and young people*. London: National Children's Bureau
- Shek, D.T.L. (1998). A Longitudinal Study of the Relations Between Parent-Adolescent Conflict and Adolescent Psychological Well-Being. *The Journal of Genetic Psychology, 159*, 53-67

- Sičaja, M., Romić, D., & Prka, Ž. (2006). Medical students' clinical skills do not match their teachers' expectations: survey at Zagreb University School of Medicine, Croatia. *Croatian medical journal*, 47(1), 169-175.
- Starkweather, D.B., Gelwicks, L., & Newcomer, R. (1975). Delphi forecasting of health care organization. *Inquiry*, 12, 37-46.
- UNICEF Office of Research (2013). 'Child Well-being in Rich Countries: A comparative overview', Innocenti Report Card 11, UNICEF Office of Research, Florence.
- Visković, I. (2016). Possible applications of Delphi Method to pedagogic research. *Napredak: časopis za pedagoškijsku teoriju i praksu*, 157(1-2), 187-204.
- Vrcić Keglević, M., Kovačić, L., & Pavleković, G. (2014). Assessing primary care in Croatia: could it be moved forward?. *Collegium antropologicum*, 38(2), 3-9.

9

Life satisfaction, self-esteem as predictors in behaviour problems in adolescence

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Abstract

The most turbulent psychological changes take place during adolescence. Contemporary developmental psychology observes adolescence as a period in which a young person has to accomplish certain developmental tasks which are undoubtedly linked with interpersonal relationships. Behavioural problems are, therefore, very frequent during adolescence. The aim of this research was to establish the contribution of life satisfaction and self-esteem to internalising and externalising behaviour problems in adolescents. The participants were students of the 7th and 8th grades of elementary schools in Croatia and Bosnia and Herzegovina (N=483) with the average age of 13.4 years.

The results of the research show that self-esteem and life satisfaction are significantly related to internalising and externalising behavioural problems, and support the assumption that self-esteem and life satisfaction are protective/risk factors in the behaviour problems in adolescence. Also, evidence for a partial mediation of life satisfaction in the relationship between self-esteem and behaviour problems is given.

Keywords: Life satisfaction, self-esteem, behaviour problems, adolescence

Intensive developmental changes that characterise adolescence make this development period a specific one. Due to this fact, the subject of interest of a considerable body of research is studying the psychosocial functioning of adolescents and their adjustment (Ajduković & Rajhvajn Bulat, 2012; Adams, Montemayor, & Gullotta, 1996). The developmental tasks that adolescents need to overcome and whose realization indicates a successful psychosocial adjustment, result in different degrees of life satisfaction in adolescents. On the one hand, self-expectations, and on the other, expectations of the environment, represent a significant source of stress for adolescents. The need, also, to create one's own style of behaviour, aspirations, separation from parents and the creation of intensive relationships with peers or, to summarise, identity formation causes intensive changes which reasonably make this development period stressful. The transactions related to all aspects of development – physical, cognitive, emotional and social, characterise adolescence as an important development period in life. These intensive processes of identity formation result in changes of self-perception (Lebedina Manzoni & Lotar, 2011). Creating an image of oneself, or self-perception, often has a crucial role through one's lifetime, influencing satisfaction with self, the esteem of others and success in different activities.

One of the fields of research in adolescent functionality is the research of subjective well-being and its influence on behavioural problems during adolescence. In the context of positive youth development, two indicators are most often mentioned. The first is life satisfaction (Sun & Shek, 2010; Sun & Shek, 2012; Valois, Zulling, Huebner, Kammermann, & Drane, 2002), and the second is self-esteem (Rosenberg, Schooler, & Schoenbach, 1989; Shrier, Harris, Sternberg, & Beardslee, 2001; Wild, Flisher, Bhana, & Lombard, 2004).

Life satisfaction in adolescence

Life satisfaction represents a cognitive component of the global evaluation of personal life (Penezić, 2006), a cognitive component of subjective well-being respectively (Sun & Shek, 2010), or a cognitive evaluation of the entire life (Huebner, 2004). In the past twenty years, there has been an increased interest in the research of youth development and subjective well-being whereby well-being represents not only the key indicator to positive development but also a factor that enables and encourages mental health (Sun & Shek, 2010). Life satisfaction research is mainly limited to the adult population, while interest in researching life satisfaction in children and adolescents lasts for a relatively short period of time (Valois et al., 2002). Assessments of satisfaction in adolescents are linked to numerous variables such as those related to the environment (Suldo & Huebner, 2004), sociodemographic variables (Huebner, 2004; Huebner, Suldo, & Valois, 2003; Valois et al., 2002;), personality traits (Penezić, 2006; Suldo & Huebner, 2006), and behaviour (Sun & Shek, 2010, 2012; Suldo & Huebner, 2004; Valois, et al., 2002).

In the literature, we come across different data on life satisfaction in adolescents. Some research thus indicates relatively high levels of life satisfaction (Huebner et al., 2005; Lebedina-Manzoni & Lotar, 2011), while others report greater life dissatisfaction in adolescents in comparison to other life periods (Penezić, 2006; Valois et al., 2002). It seems that the life period of transition from childhood to adulthood really represents a period of significant changes. The very dynamic processes during adolescence greatly influence the formation of identity (or the search for identity) and may result in a crisis, which has further consequences in one's self-perception.

Research results on the relationship between life satisfaction and adolescent behaviour speak in favour of the fact that life satisfaction is positively related to positive aspects of behaviour while negatively connected to behavioural problems. Some authors thus state that adolescents who report a very high life satisfaction achieve very low results in all measures referring to emotional and behavioural problems and conclude that life satisfaction is connected to psychosocial functioning in adolescents (Suldo & Huebner, 2006). Moreover, some authors point out the possibility of predicting behavioural problems based on the evaluation of life satisfaction (Jessor, Turbin, Costa, Dong, Zhang, & Wang, 2003). In such research we find two assumptions. One derives from the relationship between life satisfaction and behavioural problems. Thereby life satisfaction and behavioural problems are negatively connected and life satisfaction is the output variable or a predictor (Sun & Shek, 2010, 2012). Adolescents with a high degree of life satisfaction have less internalising and externalising behavioural problems (Suldo & Huebner, 2004), have less risky sexual behaviour (Valois, et al., 2002), and are cognitively engaged in school (Lewis, Huebner, Malone, & Valois, 2011). There is also the possibility of a two-way relationship (Shun & Sherk, 2010). The other assumption derives from the analysis of a much more complex relationship and assumes a mediation effect of global life satisfaction in the development of behavioural problems (Suldo & Huebner, 2004).

As reported by Huebner (2004: 11), life satisfaction studies among children and adolescents show the relationship of this construct with numerous psychosocial variables. The differences in life satisfaction

are associated with the affective, cognitive and behavioural functioning of children and youth, with interpersonal (aggression, loneliness) and intrapersonal (depression, addiction) aspect of life. In summarising the results of research in this field, the author concludes that high life satisfaction in children and youth is associated with *“extroverted temperament, active coping, internal locus of control, positive self-concept, and purpose in life, participation in meaningful, prosocial activities, and lower likelihood of involvement with drugs and/or alcohol and psychopathological (externalizing and internalizing) behaviour.”*

Self-esteem in adolescents

Self-esteem represents a significant indicator of mental health, mature personality and adjustment. In psychology, self-esteem, as an evaluative and affective dimension of self-image, is the most often researched variable (Jelić, 2012). The fact that adolescence is a developmental period of significant psychophysical changes surely contributes to the increased interest in researching the development and significance of self-respect in adolescent functioning. The experience of oneself or the assessment of one's value is a significant resource in confronting the numerous stresses in life. Self-esteem is related to life satisfaction and school satisfaction (Slavnić & Zečević, 2015), with externalising and internalising behavioural problems (Flisher, Bhana, & Lombard, 2004; Rosenberg, Schooler, & Schoebach, 1989; Suldo & Huebner, 2004), with risky sexual behaviour (Shrier, et al., 2001) and low self-esteem in general has negative consequences during adulthood (Trzesniewski, Donnellan, Moffitt, Robins, Poulton, & Caspi, 2006). Positive self-esteem is the basis of mental health creating a protective factor from negative influences. On the other hand, low self-esteem is a risk factor in the development of behavioural problems such as depression, anxiety, suicidal tendency, and anorexia (Mann, Hosman, Schaalma, & Vries, 2004).

Behavioural problems during adolescence

Considering the lack of experience, uncritical acceptance, fragmented knowledge, the illusion of invulnerability and strong peer pressure, adolescents are a critical group when speaking of behavioural problems. Delinquent behaviour is on the rise during adolescence (Ajduković, 2000; Leadbeater et al., 1999) and in decline approaching the twenties (Ajduković, 2000; Overbeek, 2003). Behavioural problems are among the most frequently diagnosed problems in child and adolescent mental health institutions. Data report that 25% of children and youth have asked experts for help and have been diagnosed with one form of behavioural problem (Pejović Milovančević, 2002).

The “behavioural problems” concept has been introduced in science from the field of medicine and psychiatry. In its first period of use, its semantics already covered a series of different deviations in all fields of child and youth functioning; ranging from difficulties in relationships with family members, the social environment, and authorities, to difficulties in eating, sleeping and involuntary actions, lying, stealing, using and selling illegal substances and abusing legal (alcohol) psychoactive substances, running away from home and wandering to aggressiveness, violence, burglary, lighting fires, rape, and other types of asocial, antisocial, and criminal behaviour (Janković, 2012).

One of the classifications of behavioural problems includes internalising and externalising behavioural problems. Internalising behavioural problems include behaviour that is excessively controlling and directed towards oneself unlike externalising behavioural problems which are insufficiently controlling and directed towards others.

Anxiety, depression, preoccupation, panic reactions, frightfulness, absentmindedness, forgetfulness, reticence, despondency, disinterest and boredom refer to internalising problems. These types of problems are considered when a person is suffering. For example, an anxious person suffers from fear and guilt even though behaving generally well. Externalising problems are characteristic of a person bringing out a problem through his/her relationship with society and showing aggressive and delinquent behaviour, promiscuous behaviour, defiance by swearing, lying, running away from home, consuming drugs and alcohol. There is the possibility of simultaneous occurrence of internalising and externalising behavioural problems such as depression and aggressiveness (Wenar, 2003).

In this research, we made efforts to enlighten the relationship between self-esteem and life satisfaction with behavioural problems in adolescents. The research had two basic problems. The first problem was to investigate the contribution of self-esteem and life satisfaction to explaining behavioural problems. We presumed that self-esteem and life satisfaction would contribute to the explanation of behavioural problems in adolescents. The second problem was to test the hypothesis of mediation of life satisfaction in the relationship between self-esteem and behavioural problems. In line with the results of recent research, we presume that there will be a partial mediation of life satisfaction in the relationship between self-esteem and behavioural problems.

Method

Participants

In this research, the participants were 483 students of the 7th and 8th grades of elementary school. The sample consisted of 191 adolescents from Croatia and 292 adolescents from Bosnia and Herzegovina (there were 252 boys and 231 girls). The age range was from 12 to 16 years of age ($M=13.40$, $SD=0.656$).

Instruments

The following measuring instruments were used in the research:

Temporal life satisfaction scale (Penezić & Sorić, 2006)

The temporal life satisfaction scale is intended for measuring the temporal aspect of life satisfaction and, considering its goal, it measures the past, present and expected future life satisfaction. The subscale that measures satisfaction with present life was used for the purpose of this research. This scale consists of 5 items (e.g. "I am satisfied with my present life"). Students rated the agreement on items using a 5-degree Likert-type scale (from 1 – it does not refer to me at all to 5 - it refers to me completely). The total result on the scale represents a linear combination of the sum of scores on single items, and the obtained result is interpreted as satisfaction with the present life. The scale had satisfying internal reliability (Cronbach alpha= 0.84). A higher result on the scale indicates higher present life satisfaction.

Self-esteem scale (Vizek-Vidović & Kuterovac-Jagodić, 1996)

The most frequently used scale of self-esteem is the Rosenberg scale (1965). It consists of 12 items to which the students answer on a Likert-type scale (1- I completely disagree to 5 – I always agree). The typical item states "I am satisfied with myself". The reliability of the scale on our sample was 0.84 (Cronbach alpha). The total result is formed as a sum of scores on single items. Such a result is interpreted as general self-esteem. Higher results indicate higher general self-esteem.

Youth behaviour self-assessment scale (Achenbach, 2001, according to Živčić Bećirević & Smojver-Ažić, 2004).

The scale consists of 112 items that describe specific behavioural and emotional problems and three items of the open type at the end of the questionnaire for writing down eventual additional problems that have not been stated. The task of the participants is to evaluate, on a scale of three degrees (0 means incorrect, 1 sometimes or partly correct, 2 completely correct), how much each item describes their present behaviour or their behaviour in the past 6 months. The scale makes it possible to measure the representation of internalising and externalising problems in children and youth. The scale of internalising problems includes items that refer to anxiety and depression, while the scale of externalising problems includes items that include the violation of rules and aggressive behaviour. The remaining items refer to social problems, problems with thinking, attention etc. For the purpose of this study, we have used only the results on the scales of internalising and externalising problems. The total results on the scales were formed by summing the scores on the items of each of the two scales, while higher results indicated a higher representation of measured behaviour. Both scales have satisfactory reliability, the internalising problem scale had a 0.92 Cronbach alpha, while the externalising problem scale had 0.90.

Procedure

For the purposes of conducting the research, permission has been requested from the school head teachers and parents. Upon their approval, the measuring instruments were applied. The testing was performed during one school lesson. It was voluntary and each student had the possibility to withdraw from the testing at any time.

Results

The first step was to establish the possible differences in measurement variables according to the country they live in. The results of a one-way analysis of variance show that they differ only in the frequency of internalising behavioural problem manifestation which was more frequent in students from Bosnia and Herzegovina in comparison to those from Croatia ($F_{(1,350)}=4.33$, $p=.038$). The two samples of students do not differ in self-esteem, life satisfaction and externalising behavioural problems. Therefore,

the results were analysed taking the entire sample into account. The descriptive statistics results are shown in Table 1.

Table 1

Basic descriptive statistics of study variables and their inter-correlations on the entire sample of students

	M	SD	1	2	3	4
1. Life satisfaction	24.14	4.96	1.00	0.49**	-0.37**	-0.29**
2. Self-esteem	46.29	9.36		1.00	-0.47**	-0.24**
3 Internalising behavioural problems	44.19	10.99			1.00	0.63**
4. Externalising behavioural problems	45.36	10.75				1.00

** $p < .001$

Generally, correlations among all examined variables are statistically significant and in expected direction. It is also evident that the correlation between the two types of behavioural problems is high.

In giving an answer to the question on the possibility of predicting behavioural problems in students on the basis of life satisfaction and self-esteem, standard regression analyses have been conducted for internalising and externalising problems separately. The results are shown in Table 2.

Table 2

Regression analysis results for self-esteem and satisfaction as predictors and internalising and externalising behavioural problems as criteria

Criteria		Predictors
Internalising behavioural problems	Self-esteem	$\beta = -0.38^*$
		$\beta = -0.18^*$
	Life satisfaction	$R = 0.50$
		$R^2 = 0.24$
		$F_{(2,323)} = 52.34$
		$p = .000$
Externalising behavioural problems	Self-esteem	$\beta = -0.13^*$
		$\beta = -0.22^*$
	Life satisfaction	$R = 0.31$
		$R^2 = 0.10$
		$F_{(2,332)} = 17.46$
		$p = .000$

* $p < 0.05$

The results of regression analysis shown in Table 2 point to the conclusion that both predictors, self-esteem and life satisfaction contribute to the explanation of both criteria variance. Self-esteem and life satisfaction as predictors significantly explain 24 % of the variance of internalising behavioural problems. Externalising problems are explained in a lower percentage by these predictor variables (10%).

The next question we tried to answer concerns life satisfaction as a variable that represents a potential mediator in the relationship between self-esteem and behavioural problems. According to Baron and Kenny (1986), mediation is tested through several steps. The first step is testing the relationship between the predictor (self-esteem and life satisfaction) and the criteria (internalising and externalising behavioural problems). The results of our research are in favour of the significance of self-esteem and life satisfaction for both criteria (see Table 2). The second step is made by testing the relationship between the predictor (self-esteem) and the potential mediator (life satisfaction), in other words, it was necessary to establish that the predictor significantly explains the variance of presumed mediator variable. Regression analysis results performed with the aim of acquiring an answer to the question point to the conclusion that self-esteem explains for a significant part of life satisfaction variance (24%, $\beta = 0.50$, $p = .000$). The third step consists of testing the initial predictor and its significance after entering the potential mediator in the regression analysis. When the potential mediator is significant, the regression coefficient is decreased or becomes insignificant. The results of stepwise regression analyses are shown in Tables 3.

Table 3

Results of stepwise regression analysis results with self-esteem and life satisfaction as predictors and internalising and externalising behavioural problems as criteria

Predictors	Internalising behavioural problems			Externalising behavioural problems		
	β	$t_{(324)}$	$p(t)$	β	$t_{(333)}$	$p(t)$
Self-esteem	-0.47	-9.54	0.000	-0.24	-4.54	0.000
	$R=0.46$			$R=0.24$		
	$R^2=0.22$			$R^2=0.06$		
	$F_{(1,324)}=91.07$			$F_{(1,333)}=20.57$		
	$p=.000$			$p=.000$		
Self-esteem	-0.38	-6.79	0.000	-0.13	-2.19	0.002
Life satisfaction	-0.18	-3.29	0.001	-0.22	-3.68	0.000
	$R=0.49$			$R=0.31$		
	$R^2=0.24$			$R^2=0.10$		
	$F_{(2,323)}=52.33$			$F_{(2,332)}=17.46$		
	$p=.000$			$p=.000$		
	$\Delta R^2=0.025$			$\Delta R^2=0.04$		
	$F\Delta R^2=10.84, p=.001$			$F\Delta R^2=13.56, p=.000$		
	<i>Sobel's test</i> =6.11, $p<0.001$			<i>Sobel's test</i> =5.01, $p<0.001$		

Stepwise regression analysis results speak in favour of the assumption of the partial mediation role of life satisfaction in the observed relationship between self-esteem and internalising and externalising behavioural problems. We base this conclusion on the fact that the standardised regression coefficient (β) decreased after entering life satisfaction in the second step of analysis. A significant mediation is also confirmed on the basis of Sobel's test. We can, therefore, assume the existence of a direct relationship between self-esteem and behavioural problems but also a mediation realized through life satisfaction.

Discussion

One of the aims of this research was to establish the relationship between self-esteem, life satisfaction and internalising and externalising behavioural problems in students. It is important to highlight that a high correlation was observed between the examined variables. Self-esteem and life satisfaction are positively correlated, which shows that students who have high self-esteem are more satisfied with their life when compared to those who have lower self-esteem, which is confirmed by other research (Mirjanić & Milas, 2011). Regardless of these variables being highly related, it is important to point out that these are two different constructs (Diener & Diener, 2009).

On the other hand, self-esteem and life satisfaction are significantly associated to internalising and externalising behavioural problems, which means that students with high self-esteem and life satisfaction manifest less behavioural problems, both internalising as well as externalising. The obtained results are in line with numerous other research results (Huebner & Alderman, 1993; Jessor et al., 2003; Mann, Hosman, Schaalma, & Vries, 2004; Suldo & Huebner, 2004; Suldo & Huebner, 2006). More recent studies have also reported a negative relationship between externalising problems with life satisfaction (Sun & Sherk, 2010) and with self-esteem and life satisfaction (Park & Lee, 2016). The results of the present research are in favour of the assumption of subjective well-being (Sun & Shek, 2010; Valois, et al., 2002) and self-perception (Mann, Hosman, Schaalma, & Vries, 2004; Suldo & Huebner, 2004) are important indicators of positive development, which is in line with recent research.

The following issue refers to the possibility of predicting internalising and externalising behavioural problems in students based on self-esteem and present life satisfaction. The results of recent research speak in favour of the assumption that these two variables, which are the reflection of subjective perception of self and life, contribute to a successful confrontation with normative and non-normative events (Jessor et al., 2003; Suldo & Huebner, 2006). Self-esteem and life satisfaction represent significant resources in confronting stress. Persons with high self-esteem and life satisfaction confront a problem in stressful situations, while persons with low self-esteem and less satisfied with life manifest an avoiding coping strategy (Lodge & Feldman, 2007). Such findings indicate that those students who have high self-esteem and are satisfied with life find constructive solutions in stressful situations, unlike those students who have low self-esteem and are less satisfied with life. These students have the tendency of destructiveness directed towards themselves (internalising behavioural problems) and/or towards others

(externalising behavioural problems) (Mann, Hosman, Schaalma, & Vries, 2004). The results of this research also support the assumption that adolescents who view themselves more positively and who are more satisfied with their present life, have fewer internalised and externalised behavioural problems. This indirectly may lead to the conclusion on the protective role of these two variables. It is also important to point out that the contribution of self-esteem and life satisfaction is higher for internalised compared to externalised problems. A possible explanation refers to the fact that externalised problems, such as aggressive behaviour, tobacco and alcohol consumption, running away from home, and violating rules, result also from peer pressure (Lebedina - Manzoni, 2008).

The results of this research are in favour of recent studies that show a significant relationship between internalising and externalising behavioural problems, i.e. those children and youth who manifest internalising behavioural problems very often manifest externalising behavioural problems (Klarin & Đerđa, 2015). It is important to point out that self-esteem was particularly pronounced in the explanation of internalising behavioural problems (as an affective dimension of self-perception), while life satisfaction (as a cognitive evaluation of present life) was pronounced in externalising behavioural problems. Numerous authors (Suldo & Huebner, 2004; Valois, et al., 2002) report not only the importance of self-esteem and life satisfaction in behavioural problems, but also their possibility of predicting behavioural problems (Jessor et al., 2003).

Our next research question refers to the possible mediational role of life satisfaction in explaining the relationship between self-esteem and behavioural problem. The relationship between self-esteem, life satisfaction and different criteria has been researched relatively frequently, however, there are very few studies of life satisfaction as a mediator in the manifestation of behavioural problems (Sun & Shek, 2010). On the other hand, earlier research reported that self-esteem is a predictor of life satisfaction (Hill, 2015; Liwei Zhang & Jin-Pang Leung, 2002) and there is, therefore, the possibility of comprehending life satisfaction as a variable that is partly determined by self-esteem and is a possible mediator in the relationship of self-esteem and behavioural problems in youth. Kwan & Bond (1997) concluded that life satisfaction has a mediational effect in the relation between self-esteem and harmony in social relationships. The results of this research are in favour of this assumption. Self-esteem is a significant predictor of both life satisfaction and behavioural problems, while life satisfaction is a significant predictor of behavioural problems. We can, therefore, say that self-esteem partially mediates the relationship between self-esteem and behavioural problems. Life satisfaction has shown to be a significant mediator in the relationship between behavioural problems and numerous other variables such as parents' inclusion, parents' behaviour (Suldo & Huebner, 2004), stressful events (McKnight, Huebner, & Suldo, 2002) and social support (Suldo, Shannon, & Huebner, 2004).

The results of this research point to the conclusion that self-esteem and life satisfaction contribute to the explanation of behavioural problems in adolescents. It should also be emphasised that the contribution of self-esteem and life satisfaction is greater for internalised problems compared to their contribution to externalised problems in adolescents. We could also conclude that there is a direct relationship between self-esteem and behavioural problems, along with a mediation realized through life satisfaction. The results support the assumption of a partial mediation of life satisfaction in the relationship between self-esteem and behavioural problems.

We find it important to point out that the value of research like the present one is to provide an answer to the question about what lies in the basis of behavioural problems in young people and the possibility of preventing them. However, there are some study limitations that should be mentioned. A convenient sample of participants is the first limiting factor in generalizing the obtained results. Future research should be, therefore, conducted in a larger and more representative sample. Secondly, the conclusion of partial mediation should be taken with caution because this was a correlational study. Thirdly, future research should also include some sociodemographic variables such as financial status, because some researchers show that life satisfaction and behavioural problems are related to material status. Finally, future studies should include variables measuring social interaction, especially those with parents, who have proven to be a significant protective/risk factor for the development of behavioural problems.

References

- Adams, G.R., Montemayor, R., & Gullotta, T.P. (1996). Psychosocial Development During Adolescence: The Legacy of John Hill. In: G.R. Adams, R. Montemayor, & T. P. Gullotta (Eds.), *Psychosocial Development During Adolescence: Progress in Developmental Contextualism* (pp. 1-12). London: Sage Publications.
- Ajduković M. (2000). Ekološki multidimenzionalni pristup sagledavanju činitelja rizika i zaštite u razvoju poremećaja u ponašanju djece i mladeži [Ecological multidimensional approach to risk and protective factors in development of behavior problems of children and adolescents] In: J. Bašić, & J. Janković (Eds.), *Rizični i zaštitni čimbenici u razvoju poremećaja u ponašanju djece i mladeži* (pp. 47-62). Povjerenstvo Vlade Republike Hrvatske za prevenciju poremećaja u ponašanju djece i mladeži i zaštitu djece s poremećajima u ponašanju.
- Ajduković, M., & Rajhvajn Bulat, L. (2012). Doživljaj financijskog statusa obitelji i psihosocijalno funkcioniranje srednjoškolaca [Perception of family financial status and high school students' psychosocial functioning]. *Revija za socijalnu politiku*, 19(3), 233-254.
- Baron, R.M., & Kenny, D.A. (1986) The Moderator-Mediator Variable Distinction in Social Psychology Research. Conceptual, Strategic and statistical Considerations. *Journal of personality and social psychology*, 51(6), 1173-1182.
- Diener, E., & Diener, M. (2009). Cross-cultural correlates of life satisfaction and self-esteem. In E. Diener (Ed.), *Culture and Well-Being: The Collected Works by Ed Diener* (pp. 71-91). Social Indicators Research Series, 38.
- Flisher, W.L.G., Bhana, A.J., & Lombard, C. (2004). Associations among adolescent risk behaviours and self-esteem in six domains. *Journal of Child Psychology and Psychiatry*, 45, 1454-1467.
- Hill, E. (2015). The Relationship between Self-Esteem, Subjective Happiness and Overall Life Satisfaction. Degree-Bachelor of Arts Honour Degree, National College of Ireland. <http://trap.ncirl.ie/1966/1/edhill.pdf> 13.6.16.
- Huebner, E.S. (2004). Research on assessment of life satisfaction of children and adolescents. *Social Indicators Research*, 66, 3-33.
- Huebner, E.S., Suldo, S.M., & Valois, R.F. (2003). Psychometric Properties of Two Brief Measures of Children's Life Satisfaction: The Students' Life Satisfaction scale (SLSS) and the Brief Multidimensional Students' Life Satisfaction Scale (BMSLSS), Paper presented for Indicators of Positive Development Conference, http://www.childtrends.org/wp-content/uploads/2013/05/Child_Trends-2003_03_12_PDConfHSVP.pdf 15.6.16.
- Huebner, E.S., Valois, R.F., Paxton, R.J., & Drane, J.W. (2005). Middle school student's perceptions of quality of life. *Journal of Happiness Studies*, 6(1), 15-24.
- Huebner, E.S., & Alderman, G.L. (1993). Convergent and discriminant validation of a children's life satisfaction scale: Its relationship of self and teacher-reported psychological problems and school functioning. *Social Indicators research*, 30, 71-82.
- Janković J. (2012). *Plodovi roditeljskih poruka [The fruits of parental messages]*. Zagreb: Etcetera.
- Jelić, M. (2012). Nove spoznaje u istraživanjima samopoštovanja: Konstrukt sigurnosti samopoštovanja [New Findings in Self-Esteem Research: Self-Esteem Security]. *Društvena istraživanja*, 2, 443-463.
- Jessor, R., Turbin, M.S., Costa, F.M., Dong, Q., Zhang, H., & Wang, C. (2003). Adolescent Problem Behavior in China and the United States: A Cross-National Study of Psychosocial Protective Factors. *Journal of Research on Adolescence*, 13(3), 329-360.
- Klarin, M., & Đerđa, V. (2015). Roditeljsko ponašanje i problem u ponašanju kod adolescenata [Parental behaviour and adolescent behavioural problems]. *Ljetopis socijalnog rada*, 21(2), 243-262.
- Kwan, V.S.Y., & Bond, M.H. (1997). Pancultural Explanations for Life Satisfaction: Adding Relationship Harmony to Self-Esteem. *Journal of Personality and Social Psychology*, 73(5), 1038-1051.
- Leadbeater, B. J., Kupermink, G. P., Blatt, S. J., & Hertzog, C. (1999). A Multivariate Model of Gender Differences in Adolescents' Internalizing and Externalizing Problems, *Developmental Psychology*, 35(5), 1268-1282.
- Lebedina-Manzoni, M. (2008). Podložnost vršnjačkom pritisku i samopoštovanje kod studenata [Susceptibility to peer pressure and self-esteem]. *Hrvatska revija za rehabilitacijska istraživanja*, 44(1), 77-92.
- Lebedina-Manzoni, M., & Lotar, M. (2011). Percepcija sebe kod adolescenata u Hrvatskoj [Self-perception in adolescents in Croatia]. *Kriminologija i socijalna integracija*, 19(1), 1-130.
- Lewis, A.D., Huebner, E.S., Malone, P.S., & Valois, R.F. (2011). Life Satisfaction and Student Engagement in Adolescents. *J Youth Adolescence*, 40, 249-262.
- Liwei, Z., & Jin-Pang L. (2002). Moderating effects of gender and age on the relationship between self-esteem and life satisfaction in mainland Chinese. *International Journal of Psychology*, 37(2), 83-91.

- Lodge, L., & Feldman, S.S. (2007). Avoident Coping as a Mediator between Appearance-Related Victimization and Self-Esteem in Young Australian Adolescents. *British Journal of Developmental Psychology*, 25(4), 633-642.
- Mann, M., Hosman, C.M.H., Schaalma, H.P., & de Vries, N.K. (2004). Self-esteem in a broad-spectrum approach for mental health promotion. *Health Education Research*, 19(4), 357-372.
- McKnight, C.G., Huebner, E.S., & Suldo, S. (2002). Relationships among stressful life events, temperament, problem behavior, and global life satisfaction in adolescents. *Psychology in the Schools*, 39(6), 677-687.
- Mirjanić, L., & Milas, G. (2011). Uloga samopoštovanja u održavanju subjektivne dobrobiti u primjeni strategija suočavanja sa stresom [The Role of Self-Esteem in Maintaining Subjective Well-Being while Using Various Coping Strategies]. *Društvena istraživanja*, 3(113), 711-727.
- Overbeek, G. (2003). Internalizing and Externalizing Problem Behaviors in Adolescence and Young Adulthood: Longitudinal Studies on the Role of Co-occurrence and Intimate Bonds with Parents and Partners. Utrecht: ISED.
- Park, M.J., & Lee, D.S. (2016). The Effects of Self-esteem and Life Satisfaction on Problem Behaviors among Adolescents in Grandparent-Grandchild Families: The Mediating Effect of Social Support. *Indian Journal of Science and Technology*, 9(46), DOI: 10.17485/ijst/2016/v9i46/107365.
- Pejović Milovančević, M. (2002). Definiranje poremećaja u ponašanju u okviru dječje psihijatrije [Defining behavior problems within the frame of child psychiatry]. *Kriminologija i socijalna integracija: časopis za kriminologiju, penologiju i poremećaj u ponašanju*, 10, 139-152.
- Penezić, Z. (2006). Zadovoljstvo životom u adolescentnoj i odrasloj dobi [Life Satisfaction at Adolescence and Adulthood]. *Društvena istraživanja*, 4-5, 643-669.
- Penezić, Z., & Sorić I. (2006). Skala temporalnog zadovoljstva životom –TSWLS [Temporal satisfaction with life scale]. *Zbirka psihologijskih skala i upitnika, svezak 3*, Sveučilište u Zadru, 55-65.
- Rosenberg, M. (1965). *Society and the adolescent self-image*. Princeton, NJ: Princeton University Press.
- Rosenberg, M., Schooler, C., & Schoenbach, C. (1989). Self-Esteem and Adolescent Problems: Modelling Reciprocal Effects. *American Sociological Review*, 54, 1004-1018.
- Shrier, L.A, Harris, S.K., Sternberg, M., & Beardslee, W.R. (2001). Associations of Depression, Self-Esteem, and Substance Use with Sexual Risk among Adolescents. *Preventive Medicine*, 33, 179-189.
- Slavnić, D., & Zečević, I. (2015). Učeničko zadovoljstvo životom, školom i samopoštovanje [Students' satisfaction with life and school, and self-esteem]. In S. Subotić (Ed.), STED 2015. *Zbornik radova iz psihologije*. Banja Luka, BiH: Univerzitet za poslovni inženjering i menadžment.
- Suldo, S.M., & Huebner, S. (2006). Is extremely high life satisfaction during adolescence advantageous? *Social Indicators Research*, 78, 179-203.
- Suldo, S.M., & Huebner, S. (2004). The role of life satisfaction in relationship between authoritative parenting dimensions and adolescent problem behavior. *Social Indicators Research*, 66, 165-195.
- Suldo, S.M., Shannon, M., & Huebner, S. (2004). The role of life satisfaction in the relationship between authoritative parenting dimensions and adolescent problem behaviour. *Social Indicators Research*, 66, 165-195.
- Sun, R.C.F., & Shek, D.T.L. (2012). Positive Youth Development, Life Satisfaction and Problem Behaviour Among Chinese Adolescents in Hong Kong: A Replication. *Social Indicators Research*, 105, 541-559.
- Sun, R.C.F., & Shek, D.T.L. (2010). Life Satisfaction, Positive Youth Development, and Problem Behaviour Among Chinese Adolescents in Hong Kong. *Social Indicators Research*, 95(3), 455-474.
- Trzesniewski, K.H., Donnellan, M.B., Moffitt, T.E., Robins, R.W., Poulton, R., & Caspi, A. (2006). Low Self-Esteem During Adolescence Predicts Poor Health, Criminal Behavior, and Limited Economic Prospects During Adulthood. *Developmental Psychology*, 42(2), 381-390.
- Valois, R.F., Zullig, D.J., Huebner, E.S., Kammermann, S.K., & Drane, J. W. (2002). Association Between Life satisfaction and Sexual Risk-taking Behaviors Among Adolescents. *Journal of Child and Family Studies*, 11(4), 427-440.
- Vizek-Vidović, V., & Kuterovac-Jagodić, G. (1996). Self-worth scale for children-Evaluation Report, School – Based Health and Peace Initiative, Zagreb: Unicef CARE.
- Wenar, C. (2003). *Razvojna psihopatologija i psihijatrija od dojenačke dobi do adolescencije [Psychopathology from Infancy through Adolescence: A Developmental Approach]*. Jastrebarsko: Naklada Slap.
- Wild, L.G., Flisher, A.J., Bhana, A., & Lombard, C. (2004). Associations among adolescent risk behaviours and self-esteem in six domains. *Journal of Child psychology and psychiatry*, 45, 1454-1467.
- Živčić Bećirević, I., & Smojver-Ažić, S. (2004). Adaptacija ASEBA instrumenta u Hrvatskoj [Adaptation of ASEB instrument in Croatia]. *Psychology in Post-War Societies*, 14-16.

10

The Role of Digital Technology in the Lives of Young Children in Croatia

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Abstract

In this qualitative study, ten Croatian families from Osijek and its surroundings, having at least one child aged 6 to 7, were chosen to examine young children's and their families' experiences with new technologies. We wanted to find out what devices children at that age used, what they used them for, what they thought and how they felt about using such devices and why they used them. Furthermore, we wanted to find out what the parents thought about the children's engagement with digital technology – what were their perceptions of risks and opportunities, how much time they allowed their children to use the devices, to what end and why. Data collected from the parents are based on their answering the questions from the Protocol of Observation during the interview. Data collected from the children are based on observations and interviews conducted with the help of a card game and an activity book.

The result of this study provided us with an insight into young children's and their families' everyday life and how, in this context, they engage in new (online) technologies. The results show that digital technology is an integral part of the lives of the families included in the sample, but it does not dominate their daily routines. The children enjoy using digital technology, but the parents have somewhat ambivalent feelings towards such use.

Keywords: young children, digital technology, qualitative study

Contemporary life of families in European countries includes the use of more and more digital devices for all sorts of purposes. There are different devices available, including tablets, laptops and desktop computers, smartphones, e-books, etc. Some say that the change brought to our way of life by these devices can be compared to the changes brought by the invention of the writing or printing machine (Kress, 2003).

The effect of digitalization is especially interesting when it comes to young children and babies. The youngest population has more and more chances to interact with digital devices. Even when children do not interact with such devices themselves, their parents might be creating their 'digital footprints' for them, by posting their pictures and quotes on the social media, blogs, etc., sometimes even before they are born. The effects of such digital footprints are still hard to predict (Holloway et al., 2013) and might be a source of concern for the society. Another side of digital technology that might concern society is the link that is constantly being made between simple applications and games designed for children from the earliest age on the one hand, and the toy industry and marketing creating a lot of commercial pressure on the other (Burke & Marsh, 2013; Holloway et al., 2013). While using applications on digital devices, children are prompted to buy toy figurines of the characters appearing in them and vice versa. Furthermore, children have an opportunity to contact or to be contacted by persons they might not even know in person. On the other hand, by using digital technology children can communicate with distant family members and become acquainted with the possibilities of distant communication via Skype or similar tools. These are just some of the possible uses of digital technology when it comes to children. And of course, the thing that parents and educators are most worried about today is the effect of digital devices on children's social, emotional and cognitive development (Plowman & Hancock, 2014).

Considering the impact of digital technology on the lives of children and babies, it is surprising how many studies on the everyday use of technology at home tend to overlook the role of children, and especially young children (Plowman, 2015). So far, the existing research on this topic has focused mainly on older children and teens (Olafsson et al., 2013), which is interesting, since it is the babies and preschool children who spend more time at home than older children who are more engaged in various activities outside their homes. The existing research shows that children go online at an increasingly younger age, and the younger they are, the more vulnerable they are to the effects of digital technology (Livingstone et al., 2011). That is precisely what makes the research on digital practices of small children imperative, by aiming to address the benefits, as well as the risks of such engagement.

The focus of this study is on young children and their interaction with digital technology in Croatia, in their home environment. We opted for qualitative research to gain some insight into and understanding of different patterns of the use of digital devices, which goes beyond the frequency and duration of such use.

The research is part of the framework of the Joint Research Center Project ECIT, Empowering Citizen's Rights in emerging ICT, which tries to identify possible threats to children other than the ones that emerge from using social networks. Based on the experience from the 2014 Pilot study (Chaudron et al., 2015), this research aims to address the digital practices of children aged 0 to 8 through four topics or dimensions: use, perception/attitudes, individual context and family context.

The research questions are as follows:

1. How do children under the age of 8 engage with new (online) technologies?
2. How are new (online) technologies perceived by different family members?
3. How do parents manage their younger children's use of (online) technologies?
4. What role do these new (online) technologies play in children's and parents' lives?

Method

The sampling procedure

The participants were recruited through personal contacts, applying the snowball procedure (existing study participants recruit possible future participants from among their acquaintances) and with the help of social services.

The families were recruited based on a combination of criteria. The first criterion was that the families had a six or a seven- year- old child, whereby we also tried to balance the children's gender. The next criterion pertained to family composition – we wanted to find families with one child, single parent families and families with a sibling either younger or older than the target child. We also tried to balance the sample according to income, i.e. to include families with a low, medium and high income, and to include families with employed and unemployed parents. A very important criterion was that we had to

find families whose target children were either “low users” of digital technology (use digital technology at least once a week), “medium users” (use a digital device at least two or three times a week), or “high users” (children who use a digital device at least once a day). Additionally, we tried to find families who live in a city, as well as those who live in the country or less urban areas.

The sample

As mentioned above, the families were recruited based on a combination of criteria (Table 1). The final sample included 5 boys and 5 girls as target children. Eight of them were 6, and two were 7 years old. Only three of them go to school, and the others attend kindergarten. As for the family composition, we have two single child families, one of whom is also a single parent family, four families with siblings who are younger than the target child and four families with siblings older than the target child. Considering the income factor, we have three families with a high income, three with medium and four with a low income. As for the criterion of the frequency of digital technology use, the sample consists of three families with target children described as “low users”, four families with target children described as “medium users” and three families described as families with target children who are “high users”.

Table 1

Some characteristics of the sample and codes of each family

Family code	Low - medium - high family income	Family member's gender	Family member's age	Year of school/ max level of education	Level of digital technology use by target child	Profession of the parents
HR1	High	F	36	Tertiary	Medium user	Croatian language teacher Geography teacher
		M	36	Tertiary		
		M	6	Kindergarten		
		M	4	Kindergarten		
HR2	Medium	M	31	Secondary	Medium user	Administrator/Delivery Lawyer
		F	34	Tertiary		
		F	6	Kindergarten		
		F	2	Kindergarten		
HR3	High	M	40	Secondary	High user	Electrician Nurse
		F	38	Secondary		
		M	36	Kindergarten		
HR4	Medium	M	40	Secondary	High user	Electrician Administrator
		F	37	Secondary		
		F	6	1st Primary		
HR5	Low	F	9	2 nd Primary	Low user	Turner
		M	36	Secondary		
		F	6	Kindergarten		
HR6	High	N	43	University	Low l user	Programmer Self-employed accountant
		F	41	University		
		F	7	2nd Primary		
		F	12	6 nd Primary		
HR7	Low	F	46	Secondary	Medium user	Singer Deliverer
		M	47	Secondary		
		F	6	Kindergarten		
		M	17	3 th Secondary		
		M	20	Student		
HR8	Low	M	30	Primary	High user	Unemployed Unemployed
		F	28	Primary		
		M	6	Kindergarten		
		M	9	3 rd Primary		
		M	10	4 th Primary		
HR9	Medium	F	36	Tertiary	Medium user	Economist Deminer
		M	38	Secondary		
		M	6	Kindergarten		
		F	2	Kindergarten		
HR10	Low	M	45	Secondary	Low user	Electrician Saleswomen
		F	34	Secondary		
		M	7	1st Primary		
		M	1	Kindergarten		
		M	76	Secondary		

Note.M = male gender;F = female gender

Procedure

The research was based on a collaboration agreement with JRC of the European Commission. After receiving the research materials in English, the researchers first translated all the documents into Croatian. Following the Ethics Committee's approval of the research proposal, the researchers started looking for families for the sample and conducting the interviews.

Most interviews were conducted by two researchers coming to the family home. After the initial part and the ice-breaking activity, which included both researchers and all the present family members, the researchers would split up, with one carrying out a separate interview with the children and the other with the parent(s). For practical reasons, four interviews were conducted by just one researcher.

The interviews started with an activity from the activity book "Play and Learn: Being Online" (Insafe, 2011), which included all family members. In this game, with the help of the parents, the children had a task of introducing us to their usual daily activities, using stickers.

This was followed by separate semi-structured individual interviews with the children and the parents. The card game, a set of cards with pictures of different media devices (tablets, laptops, smartphones, etc.), and of traditional toys, such as dolls or cars, was also used during the interview with the children. The card game was usually used as a "warm-up" activity at the beginning of the interview, when the researcher and the children played with the cards. The game was always used for orientation – which devices the children know, which ones they use and what they do with them.

At the end of each interview, the children were given a goody bag, and all the family members were thanked and asked if they had any additional questions. The interviews were recorded with an audio recording device or a small camera. After the interviews, all the recordings were transcribed. The analysis was done based on the transcripts, the researchers' notes and debriefings that took place while making notes after the interviews, using the thematic analysis approach. Thematic analysis is a method for analyzing quantitative data by identifying, analyzing, and reporting patterns (themes) within those data (Braun & Clarke, 2006).

Results and Discussion

The results of this study provided us with an insight into young children's and their families' everyday life and showed us how, in this context, they engage with new (online) technologies. They will be displayed according to previously stated research questions.

How do children under the age of 8 engage with new (online) technologies?

All the children enjoy using digital technology in their homes. Still, they tend to use a limited range of devices and for a limited period of time.

Apart from *television*, which is owned by all the families, almost all the families (nine out of ten) have *smartphones*, and those are usually available for children to use on some occasions. Four children, and those are in principle the ones who go to school, have their own mobile phones.

Also, all the families but one have a *computer*, usually just one – either a desktop computer or a laptop and it is a device that all members of the family use, including the children. This means that it is usually situated in a common space.

Only half of the interviewed families have *tablets* and the children are quite often not allowed to use them. In fact, one of the surprising findings of this research pertains to the low level of tablet use reported by the parents in this study, when compared to other countries. For example, the Ofcom survey (2014) found that in the UK, 54% of children aged 5 to 7 years use tablets.

Only two families have other *playing devices* – one family owns a Nintendo Wii and the other family owns a Sony PlayStation.

In general, these results are similar to the results from other recent studies on family possession of digital devices. For example, a recent survey of 2,326 homes with children under 8 years of age in the United States (Lauricella, Wartella & Rideout, 2015) showed that 99% of families had at least one television set in their home, 86% had a computer, 69% had a smartphone and 40% a tablet.

For most of the children, digital technology does not interfere with other daily activities. All of them, except two children from very low-income families, are involved in some kind of organized afternoon activities, which often include sports. Apart from the problem of paying for the activities, one of the families whose children do not attend them has a problem that there are no such activities organized close to the place where they live (they live in a small village).

Although it was not the main focus of this study, it has come to light that television is far more present in the children's lives than any other digital device. In fact, the only activity all the children in the sample have in common is *watching cartoons on television*.

Two-thirds of the children in the sample use a computer, in most cases to *watch cartoons* they would otherwise watch on television. Other activities include *playing free games or watching videos on YouTube*. On rare occasions when they need to *search for information*, they use the computer to find what they need on Google or YouTube. It is interesting that children often report an overlap of activities on computers and smartphones, with one exception being that they do not use smartphones to watch cartoons. This means that smartphones are most often used for playing games and those are usually the same games that children play while using a computer. Most children play simple games that include memory, labyrinths, coloring, cooking, dress-up, grooming pets, racing or alike. From the commercial point of view, it is interesting that parents download exclusively free games and apps, and some of them try to find some educational ones. Just as with computers, children often use smartphones to go to YouTube and watch music videos or some other video clips. It is on such occasions that they are particularly at risk of being exposed to advertisements.

Summarizing the children's activities with digital devices to watching cartoons and videos, and playing games, the results of this study are very similar to other studies of the most common digital activities for children under 8 years of age (Chaudron et al., 2015; Marsh et al., 2015; Ofcom, 2016).

Tablets are not as widespread in use as other devices, and are usually used for the same purposes for which the children use smartphones. The difference is that, although they would prefer to use tablets because they have a bigger screen, smartphones are more available. There is no clear reason for that. Only half of the families even own a tablet, and those who do not are usually families with a lower income, so the financial factor could be taken into consideration. The two children, who are the only ones to report a regular use of a tablet, say they prefer it because they can use it in bed while lying down. Research shows children in other European countries also emphasize the portability of tablets as one of their biggest advantages (OFCOM, 2012).

All the children have fairly good mastery of the digital devices they use, but have a limited range of skills. All of them that have access to a computer, know how to turn it on and start the game they want to play or go to the internet and find video clips or cartoons they are interested in. Those that are allowed to do so, can easily download a game or an application to a smartphone or a tablet. When it comes to searching for information, they usually seek help, because most of them still have no reading and writing skills. Only three children from the sample go to school, and, at this time, only one of them has good reading and writing skills. Others have some letter recognition knowledge, which is sometimes enough to conduct a simple search, but not if they want to find some more specific information. Children who play games, prefer touchscreens to a computer mouse. None of them have more sophisticated digital literacy skills, such as, for example, using different search engines to find information, basic programming skills, editing text or photographs, creating passwords, etc. This raises a question of which digital literacy skills should be prompted in children at this age to even develop, considering their interactions with digital devices. The question of digital competence is still receiving a lot of attention in the research with adults as well. Ferrari (2012, p.3) defines digital competence as "the confident, critical and creative use of ICT to achieve goals related to work, employability, learning, leisure, inclusion and/or participation in society". But what these competencies are in children, especially children younger than 8, is still quite unclear.

Most parents (nine out of ten) report that their children learned how to operate a device by watching them or older siblings, if they had older siblings, which is something that other research also confirms (Chaudron et al., 2015). The later method of learning was by just exploring the options through trial and error.

How are new (online) technologies perceived by different family members?

Children enjoy using digital devices, without much consideration for the positive or negative effect it might have on them. When asked specifically about the negative sides of digital technology, they usually repeated what they heard their parents or other significant adults told them about it: that it is bad for your eyes, that violent games are not good for children and can give you nightmares, and that you can interact with strangers, which might be dangerous. But they do not fully understand what all that means, which might be worrying. Their thinking about digital technology is related to specific activities they are involved in and they do not yet grasp the bigger picture. When considering the positive effect of using digital devices, they often report that it is fun and they like it.

Parents offer a lot more elaborated worries about the digital technology, but also clearly emphasize its positive sides.

There are five areas that parents feel can benefit from the use of digital devices. First of all, most of them clearly state that digital literacy is of utmost importance in contemporary society, and that children's interaction with digital devices at an early age is beneficial in this regard. Parents think that when children use digital technology for learning, they have the advantage of learning the actual material and the advantage of becoming more proficient users of digital technology in general. Another positive aspect of digital technology that often comes up is *the opportunity for children to observe, learn and improve many of the skills unrelated to digital technology*. For example, the boy who plays the drums often watches short video clips of other people playing drums and his parents say this helps him improve his skills. But it is not just the motor skills that parents feel can be improved - they mention that educational content in some cartoons can teach the children good manners, or how to be a good friend, how to recognize when someone is feeling sad, etc. In addition, parents mention the *positive effect of digital technology on cognitive development*, including intelligence. In this regard, some parents also tend to think that digital technology aids children in the learning process, regardless of the material they are learning, because, for example, it helps them visualize something through pictures and animations.

There is also another interesting observation and that is how *digital technology helps children learn foreign languages*. This is interesting because none of the parents or children actually reported having any specific applications or programs for foreign language learning. Yet another positive aspect of digital technology that most parents emphasize is *the ease of information seeking* provided by digital technology.

Far more often than the possible positive effects of digital technology, parents mention the negative ones, although they have trouble elaborating what is really wrong with digital technology. Most often they mention the possibility that *children can develop an addiction to a device or digital content*. Still, this concern is expressed only by one-third of the parents in the sample. Along the same line, some parents report they are concerned about the fact that their *children overreact when the device is taken away*. Sometimes, it is in the form of aggressive behavior - yelling, refusing to communicate and throwing toys without any idea how to continue playing without the digital device, and sometimes, it is in the form of cranky, unsatisfied whining.

Other worries that parents report can be differentiated as those concerning the use of digital devices in general, and those that concern specific content. As for the former, parents fear that *they take away the time the children would otherwise spend outside or playing with traditional toys and other children*. In the same regard, parents mention that they fear digital technology might take away the natural way for children to acquire skills. Also, some of them *fear that using digital technology alienates the children from one another*. Another point that one-third of the parents mentioned is *the bad influence digital devices have on the children's eye sight and their body posture*. Again, these worries were expressed by those parents that limit their children's screen time. Parents who express fewer concerns are also the ones who have fewer rules about the use of digital technology and allow their children a lot more screen time.

Parents often worry about the influence of specific content that children engage in while using digital technology. For example, one-third of them mentioned that *playing aggressive games and watching violent content can influence children to become more aggressive themselves*. In fact, two families report such effect in their children. Also, parents fear that their *children might be influenced by things happening on social networks*, although none of the children in the sample are allowed to use such networks, and do not have access to them, except for one boy. Parents are also worried that children could be contacted by strangers, but it is a fear related to the children's future use of digital technology, not a fear they have for the current state of things.

We feel it is important to address all of these worries through proper education readily available to the parents, through different institutions in their surroundings. For example, while most children in the study enjoy using YouTube, parents do not report any real concerns about this activity, and previous studies have shown that it is precisely on YouTube that children younger than 8 are most vulnerable to exposure to inappropriate content (Dias and Brito, 2016).

How do parents manage their younger children's use of (online) technologies?

Parental mediation strategies are quite diverse. There are different strategies involved regarding time and content, but having straightforward and clear rules about time restrictions does not in fact mean that children spend less time in front of a screen when compared to some families who have very loose rules. The rules are mostly set arbitrarily and they change as new situations and circumstances occur. They also depend on the children's interests.

Most parents highlight that they restrict the time spent with digital devices, regardless of the specific content being watched or played, which means that the children choose what they do during this

time and what content they watch. It may seem careless on the side of the parents, but those parents are also the ones whose children by default do not watch or play content that is inappropriate, and rarely use digital devices unsupervised. Parents feel that this will change in the near future, as children get older, and that they will soon need more elaborate rules on the use of digital technology. These will also include more conversation with the children about the effect of digital technology. These parents are not as passive in their mediation strategies as it may seem. They often help their children with a specific device or content if needed, and they spontaneously set limitations to the type of content they find appropriate, so even though it is the children who choose at a given moment, they in fact choose from a previously defined set of activities. This might be a clever way to manage their choices without arguments.

Other families first consider what their children are doing, with less concern about setting a strict time limit. For example, one family that had a problem with their child's aggressive behavior after watching too much television (he was watching Nickelodeon channel), restricted what he is allowed to watch, but they still let him watch television for quite long periods of time.

There are also families who have very limited, if any, restrictions regarding time or content when it comes to their children's interaction with digital technology. One of those families believes digital technology is something predominantly positive and inevitable in contemporary life.

To sum up this section, parents who are very permissive and passive when it comes to their children's engagement with digital technology, actually have very few worries about the possible negative effect of this technology. In other words, there seems to be a negative correlation between the amount of children's screen time and the amount of parental concerns about digital technology, but the research conducted in this study does not allow us to make causal relationships between these variables.

None of the parents or children in this study reported any unusual or negative experiences during the children's interaction with digital devices, regardless of the parental mediation style. Still, other research shows that restrictive mediation can effectively reduce children's exposure to online risks (Dürager & Livingstone, 2012).

Almost all the families, with the exception of one, report that punishments for misbehavior sometimes include taking away digital devices or limiting screen time. Still, this is not a prevalent way of structuring children's behavior and maintaining their discipline in any of the families. On the other hand, none of the families reported rewarding their children with extra screen time or a new device.

What role do these new (online) technologies play in children's and parents' lives?

It is difficult to estimate the role of digital technology in families' lives based only on the parental reports. For example, one family reported that they feel their parenting practices are under the influence of digital technology because it is all around them and they are also affected by it themselves, but at the same time, they do not feel that it dominates their lives in any way, their children have a restricted access to digital devices and none of the joint family practices and rituals include digital devices. On the other hand, families that allow their children a lot more screen time sometimes feel they are not influenced by digital technology, and feel it does not affect their parenting style. But the question remains what their children would do with their time and how parents would moderate their activities if there were no digital devices present.

One thing that all the families in the sample have in common is that they all put great emphasis on outdoor activities and physical, active play. Besides scheduled sports activities, all the children say they like riding bikes, playing with friends in the playground, playing hide and seek, playing football or basketball and going to the beach in summer. Naturally, when compared to winter months, all the families report a lot less screen time during the summer. This distinction should be taken into account in all the research discussing children's overall screen time.

For most parents (nine out of ten) in the sample, digital technology is regarded as something that helps them throughout the day because it occupies their children for a while, so they can do something else, e.g. have lunch in peace, take a shower, etc. It also helps their children develop some skills they would otherwise probably take longer to attain. They mostly see it as something that complements their way of life and makes it easier to cope with children and their other obligations in some situations. At the same time, some of the parents would prefer if their children used it even less, but they have no plans or strategies to achieve that. This is a problem that obviously needs paying more attention to in programs aimed at enhancing parental skills.

One family says that technology today is something that cannot be avoided and that if you do not allow your children to use it, they will "*fall behind*". So, both the parents and the children in this family use it regularly and for longer periods of time. Indeed, prior research shows that restrictive mediation of children's interactions with digital devices limits their online opportunities and skills (Dürager & Livingstone, 2012).

Most of the parents in the sample say their children still play a lot more often with traditional toys – dolls, puzzles, Lego bricks, cars, animals, cartoon figurines, etc. They also play board games such as “Don’t Get Angry”. It is the impression of the researchers that children are ok with this and that they indeed enjoy playing with their toys and their friends or siblings, but on the other hand, they would gladly welcome more screen time if they were allowed – there is indeed a love affair between children and digital devices.

As for joint family activities, they rarely involve digital technology. First of all, most activities that include all family members are oriented to outdoor activities. When the family spends time together indoors, they often read books, talk and play simple games. Activities involving digital technology that include all family members are limited to watching television, watching movies and cartoons or, in case of one family, listening to songs on YouTube together.

Conclusions and future research recommendations

Despite the fact that children use a wide range of digital devices at a younger age than ever before, the knowledge we currently have on the topic is such that there is still much left unexplored. The results of this scientific study provided us with an insight into young children’s and their families’ everyday life in Croatia and showed us how, in this context, they engage with new (online) technologies.

Our findings confirm some of the concerns regarding children’s interaction with digital technology, expressed in the introduction, mainly in terms of the effect of digital technology on children’s emotional states – some parents report that children overreact when a device is taken away, they become upset, etc. Also, the findings show that children under 8 years of age go online and enjoy using YouTube to watch videos and cartoons, and while doing this, they are exposed to different advertisements, but neither they nor their parents express any concerns in this regard. On the other hand, children from the sample did not report any disturbing experiences related to the use of digital devices – no contacts with strangers, no frightening experiences, etc. Since the majority of children still have limited and controlled or supervised screen time, it remains to be seen what will happen as they get a little older.

Although our research included a diverse set of families whose children’s practices with digital technology differ in terms of range of available devices and time and content restrictions, it is reasonable to assume that there are families in Croatia, with children aged six or seven, who have yet different practices in this regard, but we were not able to include all of them in the sample at this time. We feel that the obtained sample gives us a good idea of what these practices are in Croatian children younger than eight. Still, we feel that the best way to improve the findings is to recruit more families with even more diverse background and even more diverse strategies when it comes to children’s engagement with digital technology.

One of the aims of future research in this area could be to try to integrate children’s activities in schools and kindergartens with those in home environment. Extending the field of research in this manner might give us a better picture of children’s overall digital practices, beyond those in home environment. Also, we find that more attention should be given to capturing the role of peers, especially in pre-school children and children in the first grades of primary school. In Croatia, since 2014, even the children who do not attend kindergarten have been obligated to attend pre-school and for some of them this is the first time they spend more time outside their homes interacting with previously unfamiliar peers on a regular basis. It would be interesting to see if such experiences, which probably include shared experiences of playing video games and other activities that children enjoy, have any effect on children’s personal interactions with digital technology (e.g. they might learn about new games and new possibilities that digital devices provide). In this regard, previous research shows that apart from the influence of parental beliefs and values, children’s use of digital media is also influenced by peers and institutions such as nurseries and schools (Marsh, 2014).

Still, the most important thing this research brings us lies in the ability of its findings to serve as the basis for possible future quantitative research on young children’s interactions with digital technology in Croatia. Also, the research findings give us a glimpse of possible weak points in the relationship between children, parents and digital technology, which need to get more attention in future research in order to provide the parents with more precise strategies for managing their children’s screen time.

References

- Burke, A., & Marsh, J. (2009). (Eds.) *Children's Virtual Play worlds: Culture. Learning and Participation*. New York, NY: Peter Lang.
- Chaudron S., Beutel M. E., Černikova M., Donoso Navarette V., Dreier M., Fletcher-Watson B., Heikkilä A-S., Kontríková V., Korkeamäki R-L., Livingstone S., Marsh J., Mascheroni G., Micheli M., Milesi D., Müller K. W. , Myllylä-Nygård T., Niska M., Olkina O., Ottovordemgentschenfelde S., Plowman L., Ribbens W., Richardson J., Schaack C. , Shlyapnikov V., Šmahel D., Soldatova G., & Wölfling K. (2015). Young Children (0-8) and digital technology: A qualitative exploratory study across seven countries. JRC 93239/EUR 27052/ISBN 978-92-79-45023-5/ISSN: 1831-9424. Retrieved April 4, 2015, from: <http://publications.jrc.ec.europa.eu/repository/handle/JRC93239>
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77-101.
- Dias, P., & Brito, R. (2016). *Crianças (0 a 8 anos) e Tecnologias Digitais* [Children (0 to 8) and Digital Technology]. Lisboa: Centro de Estudos em Comunicação e Cultura, Universidade Católica Portuguesa.
- Durager, A., & Livingstone, S. (2012). *How can parents support children's internet safety?* EU Kids Online, London, UK. Retrieved April 5, 2015, from: <http://eprints.lse.ac.uk/id/eprint/42872>
- Ferrari, A. (2012). *Digital Competence in Practice: An Analysis of Frameworks*. Retrieved May 4, 2015, from: <http://ftp.jrc.es/EURdoc/JRC68116.pdf>
- Holloway, D., Green, L., & Livingstone, S. (2013). *Zero to eight. Young children and their internet use*. Retrieved February 5, 2015, from: <http://eprints.lse.ac.uk/52630/>
- Kress, G. (2003). *Literacy in the new media age*. New York: Routledge.
- Insafe (2011). Activity book – Play and Learn: Being Online.
- Lauricella, A., Wartella, E., & Rideout, V. (2015). Young children's screen time: The complex role of parent and child factors. *Journal of Applied Developmental Psychology*, 36, 11-17.
- Livingstone, S., Görzig, A., & Ólafsson, K. (2011). *Disadvantaged children and online risk*. Retrieved February 5, 2015, from: <http://www.lse.ac.uk/media@lse/research/EUKidsOnline/EU%20Kids%20Online%20reports.aspx>
- Marsh, J.A. (2014) From the wild frontier of Davy Crockett to the wintry fiords of Frozen: changes in media consumption, play and literacy from the 1950s to the 2010s. *International Journal of Play*, 3(3), 267-279.
- Marsh, J., L. Plowman, D. Yamada-Rice, J. C. Bishop, J. Lahmar, F. Scott, A. Davenport, A. Davis, S., French, K., Piras, M., Thornhill, S., Robinson, P., & Winter, P. (2015). *Exploring Play and Creativity in Pre-Schoolers' Use of Apps: Final Project Report*. Retrieved April 15, 2016, from: www.techandplay.org
- OFCOM (2012). *Children and Parents: Media Use and Attitudes Report*. Retrieved April 15, 2016, from: <http://goo.gl/0eqVP>
- OFCOM (2014). *Children and Parents: Media Use and Attitudes Report*. London: Office of Communications. Retrieved April 15, 2016, from: http://stakeholders.ofcom.org.uk/binaries/research/media-literacy/media-use-attitudes-14/Childrens_2014_Report.pdf
- OFCOM (2016). *Children and Parents: Media Use and Attitudes Report*. Retrieved April 15, 2016, from: <https://www.ofcom.org.uk/research-and-data/media-literacy-research/children/children-parents-nov16>
- Ólafsson, K., Livingstone, S., & Haddon, L. (2013). *Children's Use of Online Technologies in Europe: A Review of the European Evidence Database*. London School of Economics and Political Science and EU Kids Online, London. Retrieved May 6, 2015, from: <http://www2.lse.ac.uk/media@lse/research/EUKidsOnline/EU%20Kids%20Online%20reports.aspx>
- Plowman, L., & Hancock, J. (2014). *Parents' FAQs on children's use of media*. Children's Media Foundation: London. Retrieved February 5, 2016, from: www.thechildrensmediafoundation.org/parent
- Plowman, L. (2015). Researching Young Children's Everyday Uses of Technology in the Family Home. *Interacting with computers*, 27(1), 36-46.

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Preliminary evidence on some psychometric characteristics of the Forgiveness Scales and the Forgiveness Likelihood Scale on the sample of Croatian adolescents

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Abstract

During the course of their lives, people are involved in different forms of social relationships which can wrong them. Forgiveness represents the possibility to overcome and avoid the negative consequences. It also represents a multi-dimensional process consisting of changes on emotional, cognitive, motivational and behavioural levels, so its definition differs depending on various theoretical models. There are a number of different instruments for measuring the likelihood or willingness of forgiveness. One is used to measure the level of disposition, and the others measure it on a level specific for each individual event by measuring the damage that a person has suffered (McCollough and Witvliet, 2002). The goal of this research was to assess some basic psychometric characteristics on two Forgiveness scales on the sample of high school students. The authors translated the Forgiveness Likelihood Scale – FLS (Rye et al., 2001), which contains 10 hypothetical situations and the Forgiveness Scale – FS (Rye et al., 2001) consisting of 15 statements on forgiveness after certain events that wronged the participant. Certain sociodemographic data has also been gathered. 377 third and fourth graders from four Zadar high schools participated in this research. The factor analysis was done on both questionnaires where the results are not completely consistent with the findings of the authors. The factor analysis of the Forgiveness Likelihood Scale points out one general factor of forgiveness likelihood as an indicator of the general disposition to forgive in different situations. The factor analysis of the Forgiveness Scale did not completely confirm the earlier results obtained by this scale (Rye et al., 2001) where a two-factor structure was found. Preliminary results indicate the need for additional adjustment of the Croatian version of FS scale before possible applications to samples of adolescents in Croatia.

Keywords: forgiveness likelihood, youth, psychometric validation of the questionnaire

During the course of their lives, people are involved in different forms of social relationships which can wrong them. Those relationships can cause different emotions such as anger, rage, hatred, disappointment, anxiety, but also a need for revenge or punishment of the offender. Forgiveness represents the alternative and also a possibility to diminish or avoid the negative consequences for the wronged individual. Until the early 90s of the last century mainly theologians and philosophers dealt with the subject of forgiveness, so it is actually conceptualized as a philosophical or religious construct (Fehr, Gelfand and Nag, 2010). Lately, the problematics of forgiveness has been the psychologists' focus of interest (Enright, 2001; Enright and Fitzgibbons, 2000; Wade, Worthington and Mayer, 2005) who have mostly dealt with the victim and the positive impact forgiveness could have on him/ her. Regarding the theoretical analyses and empirical research on forgiveness many definitions, theoretical models and measuring methods were suggested (Enright and Nort, 1998; McCollough, Pargament and Thoresen, 2000; Worthington, 1998, 2005; McCollough and Witvliet, 2002).

Different definitions emphasize different aspects of forgiveness. According to its definitions it can be divided in many ways, i.e. situational and dispositional, between the different groups and dyadic, self-forgiving and forgiving others, forgiving the situation or God. It can also be selfishly motivated or altruistic, decisive and emotional, unilateral and interpersonal, quiet and insincere, private and public (Exline, Worthington, Hill and McCullough, 2003; Mullet, Neto and Rivière, 2005; Worthington, 2005). Overviewing the literature certain disagreements on the definition of forgiveness can be noticed (Hanke, 2009). Some of the authors see it as a group of specific processes and changes e.g. motivational changes which range from hostility towards the prosocial motivation (McCollough, Hoyt and Rachal, 2000) or changes in the perception or cognitive experience of conflicted sides and also changes in emotional experience and behavioural intentions (Worthington, 2005). Some authors see forgiveness as a complete process of exchanging negative thoughts, emotions or behaviours with the positive forms of the same events (Enright and Fitzgibbons, 2000). Enright (1998) defines forgiveness as a readiness to denounce our right to ignore, to negatively evaluate and also to be bitter towards the individual who has unduly wronged us. At the same time it is possible for the victim to develop emotions which the offender did not deserve, such as compassion, generosity and even love. It is generally assumed that the willingness to forgive has a long-term influence on health and well-being, because negative feelings (e.g. anger, rage) and negative thoughts (e.g. thoughts of revenge, hostility) can be avoided and overcome. According to Baumeister, Exline and Sommer (1998) forgiveness is equally presented on a cognitive, affective and behavioural level. Therefore the wronged individual does not think about the damage that has been done, although he/she remembers it. He/She does not yearn for revenge or ask for punishment of the transgressor. Forgiving others depends on many external and internal factors and also situational, relational and personal factors (Mullet, Houdbine, Laumonier, and Girard, 1998; 2005; Exline et al., 2003):

- a) External factors are: the characteristics of the wronged individual (i.e. age, gender, religion, personal philosophy, mood), the characteristics of the offender (especially his social closeness to the wronged individual), also the characteristics of the offense (i.e. consequences, the existence of the intention to harm the individual, negligence) and everything that happens after the transgression (i.e. the time span, the disappearance of the negative consequences of the transgression, apology, pressure from some close person or religious authority).
- b) Internal factors are: establishing empathy towards the transgressor (it is possible to forgive the transgressor as much as one can empathize with him/her) and overlooking the whole situation.

The situational factors of forgiveness give an answer to the question "What happened?"

They also include factors and processes related to interpersonal transgressions and at this stage of analysis, forgiveness should be investigated in relation to a specific interpersonal transgression and a specific transgressor (Hoyt and McCollough, 2005). Several factors at this level can also encourage or inhibit forgiveness, such as the context of transgression or certain environmental pressures (Fehr et al., 2010; McCollough and Witvliet, 2002). Research has also shown that apologies facilitate forgiveness, so at this level it is possible to have reactions from the transgressor after the transgression took place. On the other hand, the dispositional factors of forgiveness are generally predisposing the wronged individual to interpret the transgression in a certain way (McCollough and Witvliet, 2002). That is why the dispositional level focuses on differences in emotions, motivations, behaviours of individuals involved, telling us more about the context of each interpersonal transgression (Hoyt and McCollough, 2005).

Methodological Problems in Assessment of the Forgiveness

There are various instruments for measuring forgiving others in certain circumstances (situational forgiveness) and also for measuring dispositional forgiveness. Mullet et al. (2005) came to realize that some of these instruments do not exclusively measure forgiveness, but also some other

dimensions including revenge, conciliation, neuroticism, attitude towards forgiveness or revenge and the duration of transgression. The authors McCollough, Worthington and Rachal (1997) consider it necessary to differentiate between the concepts mentioned and measure them separately, regardless of the possible existence of their correlations. The forgiveness can be measured on a general level, the same as attitudes and behaviours are being measured. On the most general level we measure it as somebody's attitudes, values or beliefs in his/her inclination or power to forgive. On the most specific level we measure it as a reaction of a person to the specific damage that the person has suffered.

According to McCollough et al. (2000) there are three different dimensions in which different measures can be distinguished. The first is the level of specificity with which forgiveness is measured. Those measures can be:

- 1) Situational/offense-specific (there is a specific transgressor for a specific transgression);
- 2) Dispositional (assessing for a generally forgiving disposition);
- 3) Present hypothetical vignettes (asking how likely a participant would be to forgive in a specific situation);

The second is the direction of measurement where the scales could be focused on giving or receiving forgiveness, and the third one is the actual method of measurement. The other forms of measures mostly emphasize the relationship between the transgressor and the victim (Hargrave and Sells, 1997), but the most popular measure seems to be the self-report measure of situational and interpersonal forgiveness (McCollough et al., 2000).

In the last three decades, various instruments have been developed to measure the willingness to forgive others in certain circumstances (situational forgiveness), as well as to measure dispositional forgiveness.

Situational measures (this refers to certain offenders). An example of the measuring instrument could be the *Related Interpersonal Motivations Inventory TRIM-18* (McCullough, M. E., 1998). The questionnaire (TRIM-18) consists of 18 items that measure the readiness to forgive, current thoughts and feelings towards the person who wronged them. It consists of three subscales: avoidance (7 items), revenge (5 items) and benevolence (6 items). *Dispositional measures* (an assessment of the general disposition of forgiveness). Mauger Forgiveness Scales (1992) can serve as an example. The scale consists of 15 items that measure the general willingness to forgive, and to self-forgiveness. It consists of two subscales that measure different aspects of other-forgiveness and self-forgiveness. Some applications of vignettes that represent a way of measuring willingness to forgive is the *Forgiveness Likelihood Scale* (Rye et al., 2001).

Other measurements associated with forgiveness include those that place a greater emphasis on the relationship between the offender and the offense victim (e.g. Interpersonal Relationship Resolution Scale; Hargrave and Sells, 1997), as well as those that assess beliefs of individuals about the nature of forgiveness as opposed to his / her actual willingness to be forgiving (e.g. Conceptualizations of Forgiveness Questionnaire; Mullet et al., 2004). Also, here we can mention the Heartland Forgiveness Scale (Thompson, L. Y. et al., 2005), consisting of 18 items which measure the willingness to forgive. The scale consists of three subscales: Forgiveness of Self (1-6), Forgiveness of Others (7-12) and Forgiveness of Situations (13-18).

Some other examples of the instruments used in this field could be Tendency to Forgive Scale (TTF; Brown, 2003) and Trait Forgivingness Scale (TFS; Berry, Worthington, O'Connor, Parrott, Wade, 2005).

The review of the literature indicated the absence of valid measuring instruments in the Croatian speaking area. Based on the review of some measuring instruments, in this study, we aimed at assessing the psychometric properties of the scales that measure the readiness to forgive the offender on the emotional, cognitive and behavioural level. According to the available psychometric properties and theoretical foundation we have chosen and translated the *Forgiveness Likelihood Scale* – FLS (Rye et al., 2001) and the *Forgiveness Scale* – FS (Rye et al., 2001) for the purposes of this research. Both scales were published in 1998 (Rye, 1998) and revised (Rye et al., 2001) and have shown to have adequate psychometric characteristics.

The Forgiveness Scale (FS) was used by several researchers in different samples: adults in England (Maltby and Day, 2004), psychology students in USA (Ross, Hertenstein and Wrobel, 2007; Messay, 2010; Hampes, 2016; Glover, 2015), university students in Iran (Asgari and Roshani, 2013) and adults in Spain (Prieto, Jodar, Martinez, Carrasco, Gismero and Cagigal, 2012). The authors used the principal components analysis to explore the latent structure of the Forgiveness scale. The results indicated two and three-factor solutions as appropriate. The three-factor solution produced one factor that contained only two items and had inadequate internal consistency, so the authors suggested the two-factor solution. The first factor contains 10 items describing the absence of negative thoughts, feelings, and behavior toward the wrongdoer (AN - Absence of Negative) and the second factor contains 5 items

describing the presence of positive thoughts, feelings, and behavior toward the wrongdoer (PP - Presence of Positive) (Rye, 2001). The reliability of this scale was replicated by different researchers although the latent structure was not explored.

The Forgiveness Likelihood Scale (FLS) was also used in different samples: USA students (Kumar and Ryan, 2009; Hampes, 2016; Glover, 2015; Ross, Hertenstein and Wrobel, 2007), Angolans, Brazilians, Indonesians, Mozambicans and Portuguese students (Neto, Mullet, Chiaramello and Suwartono, 2012) and Portuguese high school students (Neto, Ferreira and Pinto, 2007). During the development of the Forgiveness Likelihood Scale, the principal components analysis indicated that both one- and two-factor solution would be appropriate. The authors decided that a one-factor solution (with explained 43.9% of the total variance) provided the strongest conceptual clarity without compromising psychometric properties (Rye et al., 2001). This finding was confirmed by Kumar and Ryan (2009), and an additional confirmatory factor analysis showed that the questionnaire was unidimensional among Portuguese high school students (Neto et al., 2007). Both scales were described in some recent reviews of forgiveness measures (Worthington, et al, 2014).

Research aim

The goal of this research was to test the latent structure and some psychometric characteristics of two forgiveness scales on a sample of Croatian high school students. The sample of adolescents was selected since there are no adequate measuring instruments that could be used in research on the readiness to forgive among the Croatian adolescent population.

Method and material

Participants

For this research, we used a convenient sample of high school students from the Zadar County which is representative with regard to the type of secondary school (grammar school or vocational high school). 377 third and fourth- graders from four different high schools participated in this research. The sample consisted of 207 female and 170 male students. The participants were from the following schools: The Grammar School Vladimir Nazor (27.3%), The Classical Grammar School Ivan Pavao II (24.1%), The Medical School Ante Kuzmanić (26%) and The Nautical School (22.5%). The age of the sample group ranged from 16 to 19 years. The average age of the sample group was 17.5 ($SD = 0.65$).

Questionnaire

The questionnaire was completed anonymously and in groups during the school hours at the particular schools after the headmasters' approvals had been given.

a) The questionnaire on sociodemographic characteristics included information on the gender and age of the participants, school and class they are attending, their general achievement in education up to then, school conduct, place of living and self-assessment of religiosity.

b) The Forgiveness Likelihood Scale – FLS (Rye et al., 2001) consists of 10 hypothetical situations related to scenarios in which a person could have been wronged (e.g. gossip, theft, cheating). The participants were asked to imagine the event suggested and think about the likelihood of their forgiving the person who offended them. For each hypothetical situation answers ranging from 1 to 5 were given, where 1 was for “completely unlikely” and 5 for “most likely”. The total result on the scale was determined as a sum of all items, where higher results indicated greater likelihood of forgiveness. According to the authors the Forgiveness Likelihood Scale assesses the general factor of likelihood to forgive as disposition. The author of this scale points out that the coefficient of internal reliability (Cronbach's alpha) is .85. Test-retest reliability ($N = 287$), computed with an average of 15 days between administrations was .81 (Rye et al., 2001).

c) The Forgiveness Scale – FS (Rye et al., 2001) consists of 15 items which measure affective, cognitive and behavioural reactions towards the offender. The scale consists of two subscales estimating the positive and negative reaction to the damage that has been done.

Absence of Negative - There are 10 items included in this scale, which measure the absence of negative thoughts, feelings and behaviours towards the offender (items: 1, 3, 4, 5, 8, 9, 10, 11, 12 and 14). One item example: “I avoid certain individuals or places that remind me of the person who has wronged me.” *Presence of Positive* - There are 5 items on this scale which measure the presence of positive thoughts, feelings and behaviours towards the offender (items: 2, 6, 7, 13 and 15). One item example: “I wish only

good to the person who has done injustice to me.” The task of the participants was to assess to what degree they agreed with each statement by circling the right number on a 5- point rating scale, where 1 stands for “ I completely disagree “ and 5 stands for “I completely agree”. The final result on the scale was a sum of the results from each item where a higher result implied higher readiness to forgiveness. Cronbach alphas for the Absence of Negative and Presence of Positive subscales of the Forgiveness Scale were .86 and .85 respectively. Cronbach alpha for the entire scale was .87. Test-retest reliability ($N = 287$), computed with an average of 15 days between administrations was .76 for both the Absence of Negative and the Presence of Positive subscales and .80 for the entire scale (Rye et al., 2001).

Results

Analyses of the psychometric properties of both questionnaires are presented. These include an item analysis, an analysis of the questionnaire scores and the factor analysis.

a) Analysis of Forgiveness Likelihood Scale (FLS)

Within the standard item analysis, we calculated response frequencies, arithmetic means, standard deviations and discriminant validity coefficients for all items. The results are presented in Table 1.

Analysis of the means and percentages of responses to all 10 items shows that the lowest mean (the lowest likelihood to forgive) was observed for Item 5 ($M = 1.50$), for which 69.3% of the participants stated it was not all likely at all that they would forgive sexual infidelity to their partner, followed by Item 9 ($M = 1.79$), for which 53.10% of the participants stated they would not forgive a stranger for stealing a large sum from them, and then by Item 2, regarding a friend starting a nasty gossip about them ($M = 2.14$), and Item 3 regarding a romantic break-up ($M = 2.15$).

The greatest likelihood of forgiveness was established for Item 4, regarding a family member disclosing a personal secret ($M = 3.56$), which only 10% of the participants were not at all likely to forgive, and Item 7 ($M = 3.05$) about a friend losing a borrowed item, which could not be forgiven by 8.40% of the participants. The discriminant validity of the items, defined as the non-spurious correlation between the item and test score, was acceptable, ranging between .223 and .581. The reliability of the test score defined as the sum of responses to all 10 items, indicated by Cronbach alpha, was $\alpha = .75$ (0.85 in the original research, Rye et al. 2001), while the average inter-item correlation was $r = 0.237$, which can be considered to be an indication of a certain degree of consistency in the forgiveness likelihood estimation in different situations, as well as of heterogeneity of the situations used in the questionnaire.

There were statistically significant aberrations in the distribution of the total scores from normal distribution (Kolmogorov-Smirnov $z = 0.107$, $p < .01$) with a slight shift towards higher scores. The mean of the total scores was 24.77 and $SD = 5.983$ ($M = 27.2$ and $SD = 7.2$ in the original research, Rye et al. 2001), the total range 10-46, with higher scores indicating a higher likelihood of forgiveness.

Analyses of the variance indicated there were no statistically significant differences in forgiveness likelihood regarding gender ($F = 0.083$; $p > 0.05$), year of high school ($F = 0.182$; $p > 0.05$), school behaviour (exemplary/good/bad; $F = 2.250$; $p > 0.05$), place of residence (rural/urban; $F = 0.295$; $p > 0.05$) and religiosity (practical form of being religious, religious, atheist, agnostic; $F = 1.094$; $p > 0.05$). The only significant difference was between the participants from the grammar school, who had lower scores ($M = 23.07$), and the participants attending the Nautical School ($M = 26.10$; $F = 4.635$; $p < 0.01$).

Table 1

Descriptive statistics and item analysis for Forgiveness likelihood scale

Items	Percentage of responses					Item analysis				Factor analysis			
	1- Not likely at all	2- Not very likely	3- Somewhat likely	4- Quite likely	5- Most likely	M(rank) (SD)	r_{nu}	r_{PC1} ($r_{PC1orig}$)	h^2_{PAF} (1F)	h^2_{PAF} (1F+2F)	r_{PAF1}	r_{PAF2}	
1. A friend reveals a secret you told him in confidence.	4.90	26.4	41.8	18.6	8.40	2.99 (8.) (.990)	.53	.686 (.630)	.405	.445	.637	.199	
2. A friend spreads an unpleasant and untruthful rumour about you.	27.5	42.6	20.2	7.50	2.20	2.14 (3.) (.977)	.58	.734 (.770)	.492	.472	.590	.351	
3. A boyfriend/girlfriend left you and started seeing your friend.	37.5	29.6	18.6	8.90	5.40	2.15 (4.) (1.17)	.29	.448 (.730)	.135	.419	.048	.646	
4. A family member humiliated you by revealing your secret to other people.	10.0	11.3	18.9	32.9	27.0	3.56 (10.) (1.27)	.22	.353 (.500)	.086	.468	.612	-.305	
5. A boyfriend/girlfriend cheated on you by having sex with somebody else.	69.3	17.8	8.10	3.50	1.30	1.50 (1.) (.886)	.32	.476 (.640)	.157	.441	.076	.660	
6. A friend told a lie about you and then denied everything.	17.5	36.1	31.8	9.70	4.90	2.48 (5.) (1.04)	.49	.639 (.720)	.326	.314	.469	.307	
7. A friend does not want to compensate you for something you loaned to him/her and he lost it.	8.40	20.2	41.0	18.9	11.6	3.05 (9.) (1.09)	.43	.559 (.650)	.234	.373	.611	-.002	
8. Your acquaintance applied for a job you had told him about and he got it.	21.6	32.9	26.1	14.3	5.10	2.49 (6.) (1.13)	.43	.559 (.610)	.230	.232	.441	.196	
9. A stranger broke into your home and stole a significant amount of money from you.	53.1	27.2	11.1	4.90	3.80	1.79 (2.) (1.06)	.41	.553 (.610)	.219	.341	.218	.541	
10. A person who invited you for a dance breaks his/her promise and takes some other person who he/she finds more attractive instead.	16.4	34.5	26.4	15.9	6.70	2.62 (7.) (1.14)	.43	.573 (.710)	.245	.236	.392	.288	

Note. M = item means (higher scores indicate higher forgiveness); SD = item standard deviations; r_{nu} = corrected item total correlations between item and scale; r_{PC1} – correlations with general factor (above – this research; under – original research); $h^2_{PAF(1F)}$ = item communalities explained with 1 factor (PAF); $h^2_{PAF(1F+2F)}$ = item communalities explained with 2 factors (PAF); r_{F1} , r_{F2} = item correlations with 2 factors (PAF) after varimax rotation

b) Latent structure of FLS

We used R software (lavaan package; version 0.5-16, Rosseel, 2012) to perform the confirmatory factor analysis (ML) to investigate the fit of the one-factor model suggested by the authors. The model did not fit the data well ($\chi^2 = 276.19$, $df=35$, $p < 0.001$; $\chi^2/df = 7.89$; $CFI = 0.692$, $TLI = 0.604$, $RMSEA = 0.136$, $SRMR = 0.104$). In order to explore the nature of the misfit, we decided to use the principal components analysis to make our results comparable to the authors' original research.

The suitability of the correlation matrix for factorization was checked with the Kaiser-Meyer-Olkin coefficient and was .795, as well as with Bartlett's sphericity test ($\lambda^2 = 812.59$, $df = 45$, $p < .001$), suggesting that the correlation matrix was acceptable for factorization.

The analysis produced two principal components with eigenvalues larger than 1 ($\lambda_1 = 3.23$ or 32.30% of the total variance; $\lambda_2 = 1.71$ or 17.10% of the total variance) and according to Kaiser-Guttman criterion, scree-plot analysis, and results of parallel analysis suggested a two-factor solution. Both components explained 49.40% of the variance. The first components explained 32.3% of the total variance, which is less than 43.9% that was referred by the authors in the original article.

If we compare factor loadings from our data with the ones referred to by the authors (table 1, column r_{PC1}) we can notice that their structure is similar, whereas the saturations in our research are slightly lower especially for items 3, 4, 5 and 9. All items have saturations higher than 0.350.

In the third step, the exploratory factor analysis was performed using the principal axis method (PAF) with the aim of a more realistic estimation of item communality. In the case of retaining one factor extracted by the principal axis method, 25.29% of the total variance was explained, but from Table 1 (column $h^2_{PAF(1F)}$) it was obvious that the communalities of items 3, 4, 5 and 9 explained by one factor were very low (.135, .086, .157 and .219). If the second common factor is retained, it explains another 11.38% of the variance, which amounts to 37.42%. For items 3, 4, and 5 (and 9), the introduction of a second factor accounts for more variance, and the communalities are now .419, .468, .441 and .341 (Table 1; column $h^2_{PAF(1F+2F)}$). In addition, we performed an orthogonal varimax rotation of the factors (oblimin rotation resulted in an almost orthogonal solution). Table 1 (columns Γ_{PAF1} ; Γ_{PAF2}) shows correlations of the 10 items with two rotated factors.

In the two-factor solution after varimax rotation three items formed the second factor (items 3, 5 and 9). Seeing these items also had the highest means, one possible explanation is that the second factor was a method artefact, which was further corroborated by the content analysis of these items which did not provide a meaningful interpretation of this factor.

These results partially confirm the findings presented by the authors of the original research, in which there was an indication of the existence of the second factor. The results of this analysis are also in line with the results obtained by Kumar and Ryan (2009), which suggested differentiating the items based on the facet of the ease of forgiving with three subsets: easy, medium, and difficult items, and they suggest that it is possible that these tasks are not in one dimension. A possible hypothesis for future research is that somewhat different psychological processes are underlying the estimation of the likelihood to forgive "mild" and "severe" events.

c) Analysis of the Forgiveness Scale (FS)

Response frequencies, means and standard deviations of the 15 Forgiveness Scale items are presented in Table 2. Items 1, 3, 4, 5, 8, 10, 12 and 14 are reverse-coded so that higher scores indicate higher forgiveness and less pronounced after-effects of the harm done. Taking that into account, Items 14, 3, and 8 had the highest means, i.e. participants mostly did not agree with these statements. Cronbach alpha coefficient for the first subscale (AN - Absence of negative) was 0.60 (0.86 by Ryan et al.) and for the second subscale (PP - Presence of positive) it was .30 (0.85 by Ryan et al.). The correlation between the AN subscale (Absence of negative) and the FLS one was 0.205 ($p < 0.001$) (0.150 in the original research) and between the PP (Presence of positive) FLS scale was 0.193 ($p < 0.001$) (.300 in the original research).

Again we performed the confirmatory factor analysis (ML) to investigate the fit of the two-factor model suggested by the authors. The two-factor model did not fit the data well ($\chi^2 = 382.17$, $df=89$, $p < 0.001$; $\chi^2/df = 4.29$; $CFI = 0.582$, $TLI = 0.507$, $RMSEA = 0.094$, $SRMR = 0.093$). As in the case of FLS scale, in order to explore the nature of the misfit, we decided to use the principal components analysis (with varimax rotation) to make our results comparable to the authors' original research.

Table 2
Descriptive statistics and item analysis for The Forgiveness Scale

Items	Percentage of responses					Item and factor analysis					
	1-Strongly Agree	2- Agree	3- Neutral	4-Disagree	5-Strongly Disagree	M*(rank) (SD)	r _{PC1} (orig)	r _{PC2}	r _{PC2} (orig)	h ² _(PC1+PC2)	h ² _(PAF1+PAF2)
1. I can't stop thinking about wronged by this person.*	5.40	17.5	46.4	24.8	5.90	2.93(10) (.933)	-.082 (.030)	.482 (.800)	.482 (.800)	.239	.111
2. I wish for good things to happen to the person who wronged me.	11.3	19.4	43.9	20.5	4.90	2.88(12) (1.02)	.710 (.850)	-.060 (.060)	-.060 (.060)	.507	.417
3. I spend time thinking about ways to get back at the person who wronged me.*	30.5	33.4	19.9	12.9	3.20	3.75 (2) (1.12)	.595 (.320)	.306 (.560)	.306 (.560)	.448	.351
4. I feel resentful toward the person who wronged me.*	6.20	15.1	34.2	32.9	11.5	2.71(14) (1.05)	.256 (.460)	.034 (.580)	.034 (.580)	.067	.040
5. I avoid certain people and/or places because they remind me of the person who wronged me.*	19.7	30.7	25.9	17.0	6.70	3.40 (5) (1.17)	-.031 (.200)	.450 (.570)	.450 (.570)	.203	.095
6. I pray for the person who wronged me.	34.5	27.8	22.1	10.5	5.10	2.24(15) (1.18)	.477 (.700)	-.313 (-.080)	-.313 (-.080)	.325	.194
7. If I encountered the person who wronged me I would feel at peace.	12.4	28.3	32.1	18.6	8.40	2.93(10) (2.42)	-.126 (.660)	.060 (.300)	.060 (.300)	.020	.010
8. This person's wrongful actions have kept me from enjoying life.*	23.5	29.9	33.4	10.5	2.70	3.61 (3) (1.04)	.138 (.000)	.626 (.800)	.626 (.800)	.411	.288
9. I have been able to let go of my anger toward the person who wronged me.	7.80	10.5	32.6	36.7	12.4	3.35 (7) (1.08)	.387 (.440)	.225 (.550)	.225 (.550)	.200	.126
10. I become depressed when I think of how I was mistreated by this person.*	18.9	26.1	30.7	20.8	3.50	3.36 (6) (1.11)	.004 (-.130)	.747 (.770)	.747 (.770)	.558	.448
11. I think that many of the emotional wounds related to this person's wrongful actions have healed.	8.10	22.6	40.2	21.8	7.30	2.98 (9) (1.03)	.295 (.210)	.009 (.570)	.009 (.570)	.087	.045
12. I feel hatred whenever I think about the person who wronged me.*	20.8	33.7	30.5	11.6	3.50	3.57 (4) (1.05)	.562 (.580)	.303 (.520)	.303 (.520)	.407	.305
13. I have compassion for the person who wronged me.	18.3	22.1	30.2	22.6	6.70	2.78(13) (1.18)	.534 (.870)	.009 (.040)	.009 (.040)	.285	.175
14. I think my life is ruined because of this person's wrongful actions.*	50.9	29.1	14.0	4.0	1.90	4.23 (1) (.964)	-.138 (.050)	-.683 (.620)	-.683 (.620)	.486	.371
15. I hope the person who wronged me is treated fairly by others in the future.	12.9	13.5	41.2	18.6	13.7	3.07 (8) (1.18)	.683 (.830)	-.058 (.070)	-.058 (.070)	.469	.346

Note. M* = item means after rescaling (higher scores indicate higher forgiveness); SD = item standard deviations; r_{PC1} – correlations with first principal component (above – this research; under – original research); r_{PC2} – correlations with second principal component (above – this research; under – original research); h²_(PC1+PC2) = item communalities explained with 2 principal components; h²_(PAF1+PAF2) = item communalities explained with 2 factors (PAF)

The suitability of the correlation matrix for factorization was checked with the Kaiser-Meyer-Olkin coefficient and was 0.705, as well as with Bartlett's sphericity test ($\chi^2 = 784.51$, $df = 105$, $p < .001$), suggesting that the correlation matrix was acceptable for factorization. The principal component analysis produced three principal components with eigenvalues larger than 1 according to the Kaiser-Guttman criterion ($\lambda_1 = 2.74$ or 18.25% of total the variance; $\lambda_2 = 1.98$ or 13.17% of the total variance; $\lambda_3 = 1.60$ or 10.69% of the total variance). Also, the analysis of the Scree plot suggested the retaining of three factors. Three factors explained 42.11% of the variance. In addition, we performed an orthogonal varimax rotation of the factors (again oblimin rotation resulted in almost the same structure).

In the case of retaining and rotation of two factors it can be seen that saturations of 9 items (1, 2, 5, 6, 8, 10, 13, 14 and 15) correspond to the structure mentioned by the authors in the original research (Table 2, columns r_{PC1} and r_{PC2}), while saturations for 6 items (3, 4, 7, 9, 11, 12) do not coincide. It can be seen from the table that neither in the authors' research do these items have a simple factorial structure.

In order to obtain a more realistic assessment of the communality of a particular item explained by two factors, the exploratory factor analysis was performed using the principal axis method (PAF). Two extracted factors accounted for a total of 22.15% variance. From Table 2 (column $h^2_{(PAF1+PAF2)}$), it is evident that the communalities of certain items in the two-factor solution are close to zero (items 4, 7, 11), which indicates that it is obvious that it is necessary to extract a larger number of factors. The conducted analyses indicate that the latent structure obtained by the authors was not fully replicated.

Therefore, in this case, we created the subscales proposed by the authors by using only those items that confirmed the factorial structure. The shortened subscale AN (Absence of negative) consists of 5 questions (1, 5, 8, 10 and 14), while the shortened scale PP (Presence of Positive) consists of 4 questions (2, 6, 13, 15). Reliability of the two shortened subscales was $\alpha = .610$ for AN subscale (5 items), and $\alpha = .600$ for PP subscale (4 items). Pearson correlation of the Forgiveness Likelihood Scale with the shortened subscale Absence of negative (AN) was not significant $r = .033$ ($p > .050$; (0.150 in original research), while the correlation with the shortened subscale Presence of positive (PP) was $r = .336$ ($p < .001$; .300 in the original research). The correlation between shortened subscales PP and AN was not significant ($r = .005$, $p > .05$).

Analyses of variance indicated that scores on the subscale PP were significantly lower for boys compared to girls ($F = 21.801$; $p < 0.001$), for the Nautical college students compared to other schools ($F = 7.223$, $p < 0.001$), and for atheists and agnostics compared to the religious participants ($F = 4.066$; $p < 0.01$). There were no significant differences regarding the years of high school ($F = 1.614$, $p > 0.05$), school behaviour ($F = 2.831$; $p > 0.05$), and the place of residence ($F = 2.814$, $p > 0.05$). None of the analysed group differences on the AN subscale proved statistically significant.

Discussion

The aim of this paper was to assess some basic psychometric characteristics of the two scales measuring forgiveness likelihood and readiness in a sample of high school students. The results of this research show the moderately similar characteristics to those quoted in earlier research for the Forgiveness Likelihood Scale (Rye et al., 2001; Kumar and Ryan, 2009), while the results from the Forgiveness Scale do not completely match the results from earlier research (Rye et al., 2001).

The Forgiveness Likelihood Scale (FLS) measures the likelihood of forgiveness in various hypothetical scenarios. The analyses of the answers given to certain questions showed that high school students, from all of the situations offered, are least likely to forgive a partner's sexual infidelity (69.3%), while they are most likely to forgive in the situation when the family member disclosed their secret (27%). Two psychological factors could influence the likelihood of forgiveness i.e. closeness to a person and the extent of the damage that has been done. It is less likely to forgive in close relationships, so-called romantic or friendly relationships, especially if it is a case of great loss. Also, it is less likely to forgive a complete stranger or an acquaintance in situations including a certain possibility of damage. In answers to items 1, 6, 7 and 10 the participants state that they are likely to forgive up to a certain point. Those items name certain friendly situations which obviously are not very important for the participants so there are no obstacles for forgiveness. The results of the item and factor analysis (despite the heterogeneity of the situations) moderately justify the use of the overall result as a measure of forgiveness likelihood, which also points towards a disposition which is consistent in different situations, up to a certain degree. The limitation of this approach to measuring is that it is related to hypothetical situations which may not have been experienced by the participants, so the actual results represent their estimated reaction in a given situation. It would be necessary to analyse the connection between the results in this questionnaire with

the behaviour of the participants in real situations. Due to the heterogeneity of the 10 situations used, the reliability of the overall results is rather low (Cronbach alpha = .66 vs the reliability of .86 referred by the authors). The factor structure obtained in this study partially confirms the findings of the author of the scale of one latent dimension with the exception of questions 3, 5 and 9. In the study of the author, these items showed a correlation with the first component above .60, while in our study they created another factor. Nevertheless, these three items correlate within a range of 0.3 - 0.4 with a non-weighted total score on the scale. These results are consistent with the results obtained by Kumar and Ryan (2009) which also suggest that it would be useful to analyse separately items involving more "severe" events. Taking into account that factor saturations with the first factor, as with the total scale score, were higher than 0.30, we can conclude that it permits the usage of the total score in this questionnaire as an indicator of the general tendency/disposition to forgive in different situations. Therefore it is recommended, as a methodological improvement, to increase the number of questions by another 5 at least to improve the overall reliability and adapt their content to the experience of the adolescent population. Also, it would be desirable to check the reliability using the retest method.

The purpose of the Forgiveness Scale (FS) is to measure affective, cognitive and behavioural reactions towards the offender. The results obtained in this research did not confirm the earlier results obtained by this scale, where the first factor contained 10 items describing the absence of negative thoughts, feelings, and behaviour towards the wrongdoer (Absence of Negative), and the other factor contained 5 items describing the presence of positive thoughts, feelings, and behaviour towards the wrongdoer (Presence of Positive) (Rye et al., 2001). Two subscales, designed according to the instructions of the authors, showed exceptionally low reliability (alpha coefficient for the first subscale was .60 and for the other subscale .30), and the results of the factor analysis did not confirm the earlier results. The confirmatory factor analysis did not fit the two-factor model and the principal component analysis of the Forgiveness Scale determines three significant factors according to the Kaiser-Guttman criterion and the analysis of the Scree plot.

It should be emphasized that the authors of the original research did not obtain a completely simple factor structure either, and they had a dilemma between two or three factors. Reliabilities of the subscales in other studies are replicated (Maltby, Day, 2004; Ross, Hertenstein, Wrobel, 2007), but this is the first attempt to assess the latent structure of the scale in a sample of adolescents. Considering the results it was possible to create shortened versions of the sub-scales PP and AN. Despite the low reliability of the subscale Presence of Positive, a correlation with gender, religiosity, and type of school was found. The results point towards the potential usability of this scale in research on the consequences of injustice, but they also indicate the complexity of the scale and a further need for the improvement of the questions especially for the adolescent population. The results of the preliminary assessment of the usability of the FS scale in a sample of adolescents indicate the need for additional adjustments of the scale. Without further modifications, it is possible to use the shortened versions of sub-scales PP and AN.

One of the possible methodological problems, when these measurements are being used, is that the participants are trying to imagine different hypothetical situations, and with each question they evaluate different events. Another possible hypothesis is that the majority of high school students have not experienced really difficult situations, which could cause strong reactions to the questions given. An extra limitation on the results of this research is the sample of participants which included the younger population of high school students in Zadar. It would be desirable to check the characteristics of this scale in different samples. In the field of Croatian-speaking area research, this particular research represents a contribution to methodology in measuring willingness to forgive.

References

- Asgari, P., & Roshani, K. (2013). Validation of forgiveness scale and a survey on the relationship of forgiveness and students' mental health. *International Journal of Psychology and Behavioral Research*, 2(2), 109-115.
- Baumeister, R. F., Exline, J. J., & Sommer, K. L. (1998). The victim role, grudge theory, and two dimensions of forgiveness. In E. L. Worthington, Jr. (Ed.), *Dimensions of forgiveness: Psychological research and theological speculations* (pp. 79-104). Philadelphia: The Templeton Foundation Press.
- Berry, J. W., Worthington, E. L., O'Connor, L. E., Parrott, L. III., & Wade, N. G. (2005). Forgiveness, vengeful rumination, and affective traits. *Journal of Personality*, 73(1), 183-225.
- Brown, R. P. (2003). Measuring individual differences in the tendency to forgive: Construct validity and links with depression. *Personality and Social Psychology Bulletin*, 29(6), 759-771.
- Enright, R. D., & North, J. (1998). *Exploring forgiveness*. Madison: University of Wisconsin Press.

- Enright, R. D., & Fitzgibbons, R. P. (2000). *Helping clients forgive: An empirical guide for resolving anger and restoring hope*. Washington, DC: American Psychological Association.
- Enright, R. D. (2001). *Forgiveness is a choice*. Washington, DC: APA Life Tools.
- Exline, J. J., Worthington, E. L., Hill, P., & McCullough, M. E. (2003). Forgiveness and justice: A research agenda for social and personality psychology. *Personality and Social Psychology Review*, 7, 337-348.
- Fehr, R., Gelfand, J., & Nag, M. (2010). The Road to Forgiveness: A Meta-Analytic Synthesis of Its Situational and Dispositional Correlates. *Psychological Bulletin*, 136 (5), 894-914.
- Glover, Natalie G., "The Five Factor Forgiveness Inventory: A Measure of Forgiveness from the Perspective of the Five Factor Model" (2015). *Theses and Dissertations--Psychology*. Paper 75. http://uknowledge.uky.edu/psychology_etds/75
- Hampes W. P. (2016). The Relationship Between Humor Styles and Forgiveness. *Europe's Journal of Psychology*, 12, 338-347.
- Hanke, K. (2009). Victim and perpetrator perspectives in post World War II contexts: Intergroup forgiveness and historical closure in Europe and East Asia. Unpublished doctoral thesis. Victoria University of Wellington, New Zealand.
- Hargrave, T. D., & Sells, J. N. (1997). The development of a forgiveness scale. *Journal of Marital and Family Therapy*, 23(1), 41-63.
- Hoyt, W. T., & McCullough, M. E. (2005). Issues in the multimodal measurement of forgiveness. In E. L. Worthington, Jr. (Ed.), *Handbook of Forgiveness* (pp. 109-124). New York: Routledge.
- Kumar, V. K., & Ryan, R. (2009). On measuring forgiveness: Implications from smallest space analysis. *Current Psychology*, 28, 32-44.
- Maltby, J., & Day, L. (2004). Forgiveness and Defense Style. *Journal of Genetic Psychology*, 165, 99-109.
- Mauger, P. A., Perry, J. E., Freeman, T., & Grove, D. C. (1992). The measurement of forgiveness: Preliminary research. *Journal of Psychology and Christianity*, 11(2), 170-180.
- McCullough, M. E., Worthington, E. L., Jr., & Rachal, F. C. (1997). Interpersonal forgiving in close relationships. *Journal of Personality and Social Psychology*, 73, 321-336.
- McCullough, M. E., Hoyt, W.T., & Rachal, K. C. (2000). What we know (and need to know) about assessing forgiveness constructs. In McCullough, M. E., Pargament, K. I., & Thoreson, C. E. (Eds.), *Forgiveness: Theory, research, and practice* (65-88). New York, NY. Guilford Press.
- McCullough, M.E., Pergament, K.I., & Thoresen, C.E. (2000). *Forgiveness: Theory, research and practice*. New York: Guilford Press.
- McCullough, M. E., & Witvliet, C. V. (2002). The psychology of forgiveness. In C. R. Snyder & S. L. Lopez (Ed.), *Handbook of positive psychology* (pp. 446-458). New York: Oxford University Press.
- Messay B, 2010. *The relationship between quest religion, forgiveness and mental health*. Master Thesis, University of Dayton.
- Mullet, E., Houdbine, A., Laumonier, S., & Girard, M. (1998). "Forgivingness": Factor structure in a sample of young, middle-aged, and elderly adults. *European Psychologist*, 3, 289-297.
- Mullet, E., Barros, J., Frongia, L., Usai, V., Neto, F., & Rivière Shafighi, S. (2003). Religious involvement and the forgiving personality. *Journal of Personality*, 71, 1-19.
- Mullet, E., Girard, M., & Bakhshi, P. (2004). Conceptualizations of forgiveness. *European Psychologist*, 9, 78-86
- Mullet, E., Neto, F., & Rivière, S. (2005). Personality and its effects on resentment, revenge, forgiveness, and self-forgiveness. In E. L. Worthington, Jr. (Ed.), *Handbook of forgiveness* (pp. 159-181). New York: Routledge.
- Neto, F., Mullet, E., Chiaramello, S., & Suwartono, C. (2013). Seeking forgiveness: Factor structure in samples from Latin America, Africa, Asia, and Southern Europe. *Universitas Psychologica*, 12(3), 663-669.
- Prieto, M., Jódar, R., Martínez, M.P., Carrasco, M.J., Gismero, E., & Cagigal, V. (2013). Effects of Conceptualizations of Forgiveness on Specific and Dispositional Forgiveness. *Procedia Social and Behavioral Sciences*, 84, 1341 - 1345.
- Ross S R, Hertenstein M J, & Wrobel T A. (2007). Maladaptive correlates of the failure to forgive self and others: Further evidence for a two-component model of forgiveness. *Journal of personality Assessment*, 88(2), 158-167.
- Rosseel, Y. (2012). lavaan: An R Package for Structural Equation Modeling. *Journal of Statistical Software*, 48, 2.
- Rye, M.S. (1998). *Evaluation of a secular and a religiously integrated forgiveness group therapy program for college students who have been wronged by a romantic partner*. Unpublished doctoral dissertation, Bowling Green State University, Bowling Green, OH.

- Rye, M. S., Loiacono, D. M., Folck, C. D., Olszewski, B. T., Heim, T. A., & Madia, B. P. (2001). Evaluation of the psychometric properties of two forgiveness scales. *Current Psychology: A Journal for Diverse Perspectives on Diverse Psychological Issues*, 20(3), 260-277.
- Thompson, L. Y., Snyder, C. R., Hoffman, L., Michael, S. T., Rasmussen, H. N., Billings, L. S., et al. (2005). Dispositional forgiveness of self, others, and situations. *Journal of Personality*, 73, 313-359.
- Wade, N. G., Worthington, E. L., Jr., & Meyer, J. E. (2005). But do they work? A meta-analysis of group interventions to promote forgiveness. In E. L. Worthington Jr. (Ed.), *Handbook of forgiveness* (pp. 423-440). New York, NY: Routledge.
- Worthington, E. L. (1998). *Dimensions of forgiveness*. Radnor: Templeton Foundation Press.
- Worthington, E. L., Jr. (2005). *Handbook of forgiveness*. New York: Routledge.
- Worthington, E. L. Jr., Lavelock, C., Witvliet, C. V., Rye, M. S., Tsang, J., & Toussaint, L. (2014). Measures of forgiveness: Self-report, physiological, chemical, and behavioral indicators. In G. J. Boyle, D. H. Saklofske, & G. Matthews (Eds.), *Measures of personality and social psychological constructs* (pp. 474 - 502). Chennai, India: Elsevier.

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Longitudinal Psychosocial Predictors of Life Satisfaction in Old Persons

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Abstract

The aim of this longitudinal study was to examine the predictive contribution of psychosocial factors to the life satisfaction in old persons. Life satisfaction has been regarded as an indicator of psychological adaptation in ageing, but also as linked to health. It has been suggested that positive emotions promote a more active lifestyle and a motivation toward self-care. Predictors of life satisfaction in old age, determined predominantly by cross-sectional research, were social engagement, self-perceived health, and depression, adversely. There are no conclusive results on longitudinal predictors of life satisfaction including social, physical and cognitive functioning in old persons.

Participants were 138 retirement homes' residents in Zagreb, Croatia, 22% men, 78% women, aged 69-100 years, on average 84 years (62-93 years, on average 77 at baseline), mobile and not diagnosed with dementia. Variables were: sociodemographic, self-perceived health, functional ability, cognitive function, social participation, depression, and life satisfaction. The measurement was applied three times: baseline in 2008, and two follow-ups in 2010 and in 2016, individually, by trained interviewers, at retirement homes. Life satisfaction variable was measured only in 2016.

Regression analyses results indicated that the observed set of predictors explained 21% cross-sectionally, and 26% longitudinally of the life satisfaction variance. The significant cross-sectional predictor was self-perceived health, and the significant longitudinal predictors were depression and cognitive function, adversely.

Key words: life satisfaction, old adults, psychosocial predictors, longitudinal study

There is a growing body of research evidence on the best predictors of life satisfaction in old age, determined predominantly by cross-sectional research. The present study examined both cross-sectional and longitudinal predictive contribution of psychosocial factors to the life satisfaction, as the outcome variable, in old persons followed up for eight years.

Life satisfaction has been defined as a cognitive process, in which a person's quality of life is globally assessed according to his/her chosen criteria (Diener, Emmons, Larsen, & Griffin, 1985; Kaliterna Lipovčan & Prizmić Larsen, 2006; Penezić, 2006; Shin & Johnson, 1978). Apart from the cognitive component, affect is another component of life satisfaction, also described by researchers (Penezić, 2006; Gutierrez, Tomas, Galiana, Sancho, & Cebria, 2013).

Life satisfaction has been regarded as an indicator of psychological adaptation in ageing, or as a potential indicator of successful ageing, a concept drawn from one of the main theoretical frameworks to understand well-being in the old age – the Selection, Optimization and Compensation (SOC) model (Baltes, 1997; Gerstorf, Ram, Röcke, Lindenberger, & Smith, 2008; Riediger, Li, & Lindenberger, 2006). SOC can be seen as strategies of psychological gains and losses management, and thus may be indicators of successful ageing. Successful ageing has been characterized as maintaining positive psychological well-being in the face of the later life changes and losses: physical health, sustaining good cognitive function, having active engagement with other people and productive activities (Allerhand, Gale, & Deary, 2014; Berg, Smith, Henry, & Pearce, 2007; Smith & Ryan, 2016; Schaie, 2016).

The link between life satisfaction and health has been studied (Gutierrez et al., 2013). Possible paths of associations between life satisfaction and health have been suggested. Thus, positive emotions promote a more active lifestyle and a motivation toward self-care (Carver, Scheier, & Segerstrom, 2010). Also, positive affect is associated with higher social engagement, and older people with better subjective well-being seem to have better coping capabilities. All of these factors have been found related to better survival in older people (Lyyra, Törmäkangas, Read, Rantanen, & Berg, 2006).

In the gerontological literature, life satisfaction has mainly been used as an end point. Psychological status may be an outcome of good functioning rather than a cause. Life satisfaction ratings might represent evaluations that summarize perceptions of an individual's level of and change in functioning in a variety of domains (Gerstorf et al., 2008; Penezić, 2006, Röcke & Brose, 2013; Tomas, Sancho, Gutierrez, & Galiana 2014). Although there is some evidence of a decrease in affective reactions to events, a large body of research has suggested that there is a relative stability of life satisfaction across adulthood and old age, despite increased risks of social losses and declines in physical health. These decreases do not inevitably compromise adaptive functioning (Riediger et al., 2006).

The following domains of potential loss in old age have been studied as predictors of life satisfaction in old age, predominantly by the cross-sectional research.

In the case of gender, some studies have found no differences in life satisfaction between older women and men (Tomas et al., 2014). Other studies found different moderating effects for women and men, specifically, a significant association of self-perceived health in oldest women, but not in oldest men (Berg et al., Hassing, McClearn, & Johansson, 2006), and significant effects of higher education in older men, but not in older women (White, St. John, Cheverie, Maryam Iraniparast, & Tyas, 2015).

Regarding age, there is still little research on the psychological factors associated with life satisfaction in the oldest old. Among the variables related to satisfaction with life in the oldest old, perceived health, social support, perceived control and functional ability have arisen as significant factors (Berg et al., 2006; Tomas et al., 2014). Seligowski et al. (2012) found that older age had a positive effect on life satisfaction for those who were the least endowed with protective factors, e.g. personal resources and good health.

Self-rated, or self-perceived health, is a subjective measure that can provide information on objective disease outcomes and life expectancy, by asking an apparently simple question: "How would you rate your health?" or: "In comparison with your age peers, how would you rate your health?" (Bowling, 1995). Self-rated health has been confirmed as a significant and positive predictor of life satisfaction in old persons (Burton-Jeangros & Zimmermann-Sloutskis, 2016; Gutierrez et al., 2013; Reyes Fernández, Rosero-Bixby, & Koivumaa-Honkanen, 2016; Tomas et al., 2014). The association of self-rated overall health and life satisfaction has often been found to be stronger than the association between objective health measures and life satisfaction in cross-sectional studies. However, other studies found self-rated health to be unrelated to long term change in life satisfaction (Berg, Hoffman, Hassing, McClearn, & Johansson, 2009), and so the relations between self-rated health and life satisfaction over time are inconclusive.

Functional ability primarily refers to the physical independence in performing activities of daily living, but it is also strongly determined by psychological factors (Idler, 1992). Many studies confirm that the performance of tasks within family and social areas is important for satisfaction with life in older

adults (Siedlecki, Salthouse, Oishi, & Jeswani, 2014), while dependency has a significant and negative effect on life satisfaction (Gutierrez et al., 2013; Tomas et al., 2014).

Regarding cognitive function, impaired cognition in old age may constrain the ability to manage usual activities of daily life and hence cause a decline in well-being. Longitudinal evidence in support of this is limited. In the study on the association of physical function and cognitive function with life satisfaction in older middle-class, community-dwelling adults, the impairment of cognitive function was not associated with life satisfaction (Ratigan, Kritz-Silverstein, & Barrett-Connor, 2016). The findings of the Georgia Centenarian Study confirmed that cognitive performance was associated with positive and negative affect, and life satisfaction over time (Bishop, Martin, Poon, & Johnson, 2011). Cognitive impairment had a negative contemporaneous association with life satisfaction. However, the extent of this association in centenarians seems to be dependent on the presence of positive emotions, i.e. happiness. In the English Longitudinal Study of Ageing, cognitive function and positive well-being were assessed four times over a 6-year period (Allerhand et al., 2014). Small but significant associations between cognition and well-being remained after variation in age and depression were controlled. The adverse effect of depression on the cognition - well-being association was greater for those with higher well-being.

Social participation and social support have been largely researched in association with life satisfaction. Social participation refers to the frequency of one's participation in social and productive activities, and has been associated with positive emotional and physical outcomes (Berg et al., 2007). Research findings strongly suggest that active engagement with others accounts for benefits on life satisfaction in old adults (Gutierrez et al., 2013). However, there exist variations in findings because of the researchers' conceptualization and operationalization of social engagement and life satisfaction, both of which are complex constructs.

Depressive symptoms, as indicators of lowered mood, can usually be detected in varying degrees in older adults. Depressive symptoms appear to be related to life satisfaction, but the pattern of associations and the direction over time is still uncertain. Berg et al. (2009) concluded that depressive symptoms and life satisfaction both constituted elements of the well-being concept since in their study of life satisfaction they correlated significantly, but the small shared variance (18%) suggested that they were largely separate constructs. Kim and Sok (2013) in their study of older Korean women living alone found that depression, of all predictor factors, had the largest adverse impact on life satisfaction. Both life satisfaction and good self-rated health have been reported as negatively related to depressed mood (Reyes Fernández et al., 2016).

Because of the positive outcomes associated with life satisfaction, it is important to understand the factors that contribute to it. However, there are no conclusive results on longitudinal predictors of life satisfaction and especially on long-term contribution of associations between social, physical and cognitive functioning in old persons to their life satisfaction.

The aim of this three-wave longitudinal study was to determine the cross-sectional and the longitudinal predictive contribution of psychosocial factors to the life satisfaction in old persons living in retirement homes. In accordance with results of other similar studies, we expected a significant cross-sectional contribution of the observed set of psychosocial variables measured at the third time point, to the prediction of life satisfaction. We also expected that better psychosocial functioning in old persons would contribute significantly to the long-term prediction of life satisfaction, in light of the adaptive functioning hypothesis.

Variables observed in the present study were the domains of potential loss in old age, that have been found related to adaptive functioning, in accordance with the SOC model.

Method and materials

Participants

The participants were 138 residents of 7 retirement homes in Zagreb, Croatia, 22% men, 78% women, aged 69-100 years, on average 84 years (62-93 years, on average 77 at baseline). The criteria of baseline inclusion were that they were mobile and not diagnosed with dementia. These were the surviving of the 561 first wave sample.

Procedures

The measurement was applied three times, with the same remaining participants: baseline in 2008 (561 total participants), and two follow-ups in 2010 (410 reassessed participants), and in 2016, with the surviving 138 participants from the baseline sample. At all measurement times, data were collected individually, at the retirement homes, by trained interviewers, in the form of a structured interview. All participants signed their consent to participate in the research, at each measurement time.

Instruments

The observed variables were sociodemographic characteristics, life satisfaction, self-perceived health, functional ability, cognitive function, depression, and social participation. Depression variable was measured two times, at baseline and in 2010. In the 2016 measurement it was replaced by the life satisfaction variable, for reasons of time efficiency. Life satisfaction variable was introduced in the research and measured only in 2016, as the outcome variable. All other variables were measured in the same way at all three measurement times.

Sociodemographic characteristics questionnaire was administered, at all three measurement times, including age, gender, marital status, and chronic illnesses variables.

The Life Satisfaction Scale (Defilipis & Havelka, 1984) assesses global life satisfaction. It consists of 8 items measuring the degree of satisfaction with different aspects of life, on three-point scales (e.g. "Do you feel lonely?" or "Are you satisfied with your current financial situation?": 1 = often/mostly no, 2 = sometimes, to 3 = never/mostly yes). A higher score (range 8-24) indicates better life satisfaction. Internal consistency coefficient, Cronbach's alpha, of this scale for older persons in different research in Croatia was .80 (Despot Lučanin, 2003), and in present research .73.

Self-perceived health was assessed by two linearly added four-point scales: participants rated their general health ("How would you rate your health"), and compared their health to that of their age-peers ("In comparison with your age peers, how would you rate your health"), from 1 = poor to 4 = excellent. A higher score (range 2-8) indicates better self-perception. Internal consistency coefficient, Cronbach's alpha, of this scale in present research ranged from .60 at baseline, and .63 and .53 at the other two measurement times.

Functional ability was assessed by Activities of Daily Living Index, by Shanas et al., 1968 (Defilips & Havelka, 1984; Despot Lučanin, 2003), consisting of 14 items measuring the degree of independence in performing daily activities: personal care, walking inside and outside of home, basic domestic chores, on four-point scales (from 1 = totally dependent on other people's help to 4 = totally independent). A higher score (range 14-56) indicates better functioning. Internal consistency coefficient, Cronbach's alpha, of this scale for older persons in different research in Croatia was .96 (Despot Lučanin, Lučanin, & Havelka, 1997), and in present research .89 at baseline, and .91 and .92 at the other two measurement times.

The Cognitive Function Scale of the Clifton Assessment Procedures for the Elderly (CAPE, by Pattie & Gilleard, 1996) was administered for the assessment of cognitive functioning. It consists of 12 information/orientation items, each scored 1 point, and four mental ability tasks: counting, saying the alphabet, word list reading, each scored 0-3 points, and name signing, scored 0-2 points. Total score range is 0-23. Score less than 15 indicates a mild cognitive decline, and less than 8 suggests a considerable cognitive decline. The test-retest reliability coefficient of this test was .74 to .89 (Pattie & Gilleard, 1996). In present research the test-retest reliability coefficient was .44 to .50, for two subtests, however, this may be due to the several years' time distance between the test and retest.

Social participation was assessed by the 5-item scale, measuring the frequency of participation in different social activities (social, cultural, religious, etc.), on three-point scales (1 = never, 2 = sometimes, 3 = often). A higher score (range 5-15) indicates more social participation. Internal consistency coefficient, Cronbach's alpha, of this scale for older persons in different research in Croatia was .61 (Despot Lučanin, 2003), and in the present research .54 at baseline, and .59 and .51 at the other two measurement times.

Depression Scale for the Elderly, created after Zung's Depression Scale (Bowling, 1991; Despot Lučanin, 2003) was administered, consisting of 20 items measuring the frequency of the feelings and symptoms occurrence, lately, on four-point scales (e.g. "I feel like crying" or "I get tired for no reason", from 1 = almost never to 4 = almost always). Scores for the positive items are reversed before summing. A higher score (range 20-80) indicates more symptoms of depression. This scale is not a measure of clinical depression, it is a screening tool for depressive symptoms, which may be indicative of the possible clinical depression development. Internal consistency coefficient, Cronbach's alpha, of this scale for older persons in different research in Croatia was .88 (Despot Lučanin, 2003), and in the present research .78 at baseline, and .80 at the second measurement.

Results

Descriptive statistics and bivariate correlations for the observed variables were calculated. The significance of changes in the observed variables was tested by the one-way analyses of variance for repeated measurement. Regression analyses were performed in order to identify the cross-sectional and longitudinal predictors of life satisfaction.

Sociodemographic Characteristics

Participants' age distribution shows that this is a long surviving group (Table 1). There are 80% of participants 80 years and older, and 20% of all are 90 years and older, up to 100 years (one participant). Regarding the participants' marital status, there are 65% widowed persons, and 13% or 18 married ones, of which 8.7% or 12 persons reside with their spouse in the retirement home. 91% of participants have reported being diagnosed with some chronic illness or condition.

Descriptive Statistics Results

Analyses of variance were employed to test the differences in observed variables at baseline and at second-time measurement between those participants that took part at all three measurement points and those that did not, because of having been deceased. Statistically significant differences were found between the surviving and the deceased participants in all observed variables (at $p < .01$), except for the self-perceived health variable at baseline measurement (although bordering at $p = .056$). All the variables' means showed significantly better baseline functioning and younger age of the surviving participants compared to the deceased ones, a finding common in longitudinal studies.

Most variables' distributions were significantly negatively skewed, confirmed by the Kolmogorov-Smirnov test (all at $p < .01$), except for the age and depression variables (at both measurement times). No distributions' normalization was performed since there were no extreme skewness cases, and it would interfere with further interpretation of the associations among variables (Tabachnick & Fidell, 2007).

Test-retest Pearson correlation coefficients (r) between the same variables measured at different time points ranged from: .38 - .60 for social participation, .31 - .51 for self-perceived health, from .57 - .70 for functional ability, from .42 - .55 for cognitive function, and .64 for depression (measured at first and second time points), and all were significant at the $p < .01$. Coefficients were the highest between the two closer measurements, in 2008 and in 2010.

Descriptive statistics for the observed variables (Table 1) showed relatively high levels of participants' functioning in all measured variables, despite some statistically significant decline in most variables over two to eight-year period.

Table 1

Descriptive statistics for the observed variables at three measurement times and one-way Analysis of variance results for difference testing (N = 138)

Variables	Mean Time1	Mean Time2	Mean Time3	Range (theor.)		F
				Min	Max	
Participants' Age	76.6	78.6	84.3	56	100	101.19**
Self-perceived Health	5.6	4.9	5.3	2	8	5.11**
Functional Ability	48.7	42.7	42.1	14	56	13.64**
Cognitive Function	19.3	17.2	17.7	0	23	10.53**
Social Participation	8.3	8.3	8.5	5	15	25.22**
Depression	40.4	42.7	/	20	80	2.91
Life-satisfaction	/	/	19.9	8	24	/

** = $p < .01$

Self-perceived health in participants shows a statistically significant decline over eight years' time ($F = 5.11$, $p < .01$), although mean results indicate that older retirement homes' residents rate their own health as good (Table 1). At third - the most recent measurement, almost half (48%) of the participants perceived their health as very good, while 23% were in the lowest result quartile and perceived their health as poor, which is similar to the baseline self-perceived health distribution.

Functional ability statistically significantly declined ($F = 13.64$, $p < .01$), as shown by the mean values (Table 1). However, despite their increased age (80% are 80 years and older), and impaired health (91% with chronic illness) participants still remain mainly independent in managing their daily activities, with none or some difficulties. There are, however, 25% participants in the lowest result quartile that manage their daily activities with difficulties and need assistance.

Cognitive function in participants statistically significantly declined over the eight years' period ($F = 10.53, p < .01$), but remains well- preserved regarding means (Table 1). Only 8.8% or 12 persons scored less than 15, indicating a mild cognitive decline, and none scored less than 8, which would indicate serious impairment. These fairly good results in functional ability and cognitive function have been expected, since the participants were a high functioning group at the baseline measurement, with the inclusion criteria of being mobile, and not diagnosed with dementia.

Social participation mean results statistically significantly declined over the eight- year period ($F = 25.22, p < .01$). The participants, on average, sometimes engage in different social activities, in or out of the retirement home (Table 1). And although the majority does engage in some social activity - 60% sometimes, and 20 % frequently, there is, however, 20% in the lowest result quartile who are very rarely socially active.

Mean depression scale results in the participants indicate none or mild depression symptoms, at both measurement times (Table 1). No statistically significant difference in mean values was observed after the two-year follow-up period ($F = 2.91; p > .05$). However, 12% of participants at the baseline, and 18% at the second measurement showed moderate frequency of depression symptoms.

Life satisfaction scale mean result indicates a high level of the participants' satisfaction with their present life. There are 39% participants in the highest result quartile, but there are also 23% participants in the lowest result quartile who often feel dissatisfied with their life. Distribution of results is slightly negatively skewed (-.85), which somewhat limits the interpretation of results and the strength of conclusions.

Correlation coefficients between observed psychological variables at third, the most recent measurement, are weak (up to $r = .20$) to moderate ones: between life satisfaction and self perceived health, and functional ability ($r = .43, p < .001$, and $r = .32, p < .001$, respectively); between self perceived health and functional ability ($r = .51, p < .001$); between cognitive function and functional ability ($r = .32, p < .001$).

Prediction of Life Satisfaction Results

Regression analyses were performed in order to determine whether life satisfaction could be predicted by the set of observed variables, cross-sectionally, at third measurement time, and longitudinally, with predictors from baseline and second measurements and with the life satisfaction at third measurement, as a criterion (dependent) variable. Since both hierarchical regression model, with the variables measured in the year 2008 entered in the first block, and variables measured in 2010 in the second block, and linear regression model, with all variables measured in 2008 and in 2010 entered simultaneously, yielded identical results, the linear regression results are presented.

Table 2

Regression analysis results: Cross-sectional predictors of Life-satisfaction - in 2016 (N = 138)

Predictors 2016	β	p
Participants' Age	-.09	.31
Self-perceived Health	.36	.001
Functional Ability	.13	.18
Cognitive Function	-.05	.58
Social Participation	-.04	.61

$R = .46; R^2 = .21; F(5, 124) = 6.2; p < .001$

Cross-sectionally, at third measurement time, regression analysis results showed significant contribution of the set of observed variables to the prediction of life satisfaction ($R^2 = .21; F(5,124) = 6.2; p < .001$) (Table 2). The only significant predictor variable was self-perceived health, explaining 21% of the total life satisfaction variance. Better self-perceived health significantly predicted better life satisfaction, cross-sectionally at third measurement.

Table 3

Regression analysis results: Longitudinal predictors from 2008 and 2010 of Life-satisfaction in 2016 (N = 138)

Predictors	β - 2008	p	β - 2010	p
Participants' Age	.08	.41	.02	.82
Self-perceived Health	-.04	.55	-.10	.40
Functional Ability	-.03	.86	.07	.68
Cognitive Function	.18	.10	-.30	.02
Social Participation	.01	.93	-.01	.92
Depression	-.24	.10	-.34	.03

$R = .51; R^2 = .26; F(11, 98) = 2.81; p < .01$

Longitudinally, regression analysis results showed significant long-term contribution of the set of observed variables measured at second measurement time to the prediction of life satisfaction at third measurement ($R^2 = .26; F(11, 98) = 2.8; p < .01$) (Table 3). Predictor variables: depression symptoms and cognitive function at second measurement, in this order of contribution, significantly but adversely predicted life satisfaction at third measurement, explaining 26% of its total variance. Lower depression symptoms frequency, and lower cognitive function, significantly predicted better life satisfaction six years later.

Discussion

Age Changes in Participants' Functioning

The study participants showed significantly better baseline functioning in observed variables and younger age compared to the deceased ones, which contributed to their survival.

Expected age changes were found in all observed variables. Still, the overall psychological functioning of old persons in this research remained fairly good on average, over eight years' period (Table 1). At the most recent measurement, self-perceived health in research participants (77%) is good. The finding that self-perceived health does not realistically reflect their objective health status is very common in old adults. Old persons usually expect chronic illness because of their age, however, unless the illness severely impairs their daily functioning, they do not consider it important for the quality of their lives, thus suggesting the importance of psychological factors in the perception of health (Smith, Young, & Lee, 2004).

Cognitive and physical functioning of old persons in this research remained quite good until recent time (Table 1), since only 8.8% of participants show a mild cognitive decline, and 75% participants manage their daily activities with none or some difficulties, but independently despite their advanced age - 80% are 80 and more years old, and impaired health - 91% with chronic illness.

A large proportion of participants still remains socially active (80%), with different frequency, however, which is reflected in quite a low mean frequency of social participation, even though they live in an environment where an array of group activities is offered to residents.

The majority of participants showed none or mild symptoms of depression at baseline and second measurement (87% and 82%, respectively). Other studies have confirmed similar prevalence - up to 20% of potentially depressed old persons, especially those residing in institutions (Blazer, 2003).

Life satisfaction, assessed only at third measurement time, indicates that the majority of participants (77%) often feel satisfied with their life, despite a decline in their psychological and physical functioning in the eight years period, and despite the presence of chronic health conditions (93%).

Prediction of Life Satisfaction

The observed set of predictors explained 21% of the life satisfaction variance, cross-sectionally at third measurement time (Table 2). The strongest and the only significant cross-sectional predictor variable was self-perceived health. Better self-rated health predicts better life satisfaction, a finding that has been confirmed by other research. Reyes Fernández et al. (2016) in their research on life satisfaction among older adults in Costa Rica found that both life satisfaction and good self-rated health had been negatively related to depressed mood, but good self-reported health had also predicted life satisfaction. Evidence has also been found in studies showing that positive indicators of affect and function were

strongly related to current and future self-perceived health (Benyamini, Blumstein, Murad, & Lerner-Geva, 2011). In this research, the subjective feeling of good health predicts the feeling of overall life satisfaction, at the same measurement time. This finding is in accordance with the interpretation of life satisfaction as an indicator of psychological adaptation in ageing, but also as linked to health (Baltes, 1997; Gutierrez et al., 2013). In the current situation of this very old participants' group, what matters most is feeling good, despite different ailments, limitation of functions etc.

In the longitudinal prediction of life satisfaction, the observed set of variables from the two previous measurement times explained 26% of the life satisfaction variance, as the dependent, outcome variable at third measurement time (Table 3). The significant longitudinal predictors were depression and cognitive function, adversely, both psychological factors, from second measurement time. A lower frequency of depression symptoms, and lower cognitive function, significantly predicted better life satisfaction six years later. The negative association of depression symptoms and life satisfaction has been confirmed by other research. Kim and Sok (2013) found higher depression symptoms and lower life satisfaction in Korean older women living alone, and they interpreted this as resulting from social isolation, loneliness, and longer life compared to older men.

Life satisfaction and depressed mood are often regarded as two opposite elements of the same well-being concept. However, the usually small shared variance suggests that they are largely separate constructs (Berg et al., 2009). Thus, a person unsatisfied with life is not necessarily a depressed person and vice versa, and an intervention aimed to treat depression might reduce depressed mood but that does not mean the person will become satisfied with life at the same time (Reyes Fernández et al., 2016).

The most interesting finding in this research has been the negative long-term predictive association of cognitive function variable with life satisfaction. It may be explained that within a multivariate context, the expected direction of the relationship may change. However, a similar finding has been confirmed by other research. Bishop et al. (2011) in their study of centenarians found that positive emotions among long-lived persons were associated with a continuous decline in cognitive abilities. However, the direction and extent of this association seems to be dependent on whether centenarians were emotionally happy. Allerhand et al. (2014) in the English Longitudinal Study on Ageing found that the association between cognition and well-being, as the outcome, was almost entirely because of within-person fluctuation in cognitive test performance, suggesting that when a person's cognitive function is better than usual for them, they will also feel greater well-being. Longitudinal models of change enable to distinguish between within-person and between-person effects and suggest that although at a population level, greater well-being may be linked with a reduced risk of cognitive decline, this apparently protective relationship does not appear to hold at an individual level. In this research on retirement homes' residents, the possibility of the living environment effects on the old persons' life satisfaction has to be taken into account, as well as other factors, cognitive function among them. This particular finding could also be regarded as an adaptive relationship. Very old persons with reduced functioning when and if provided with the care they need would feel satisfied with their present life. When resources are limited or lost, SOC related management strategies, particularly compensation strategy may be engaged in buffering negative effects of the losses on indicators of adaptive functioning (Riediger et al., 2006).

There were no significant predictor variables from the baseline measurement. This could result from the shorter time span between the baseline and second measurement – two years, than between second and third measurement - six years.

Age has not shown any predictive association with life satisfaction, cross-sectional or longitudinal. In the present study, longitudinal data is used to compare models of age-related change in subjective well-being. In other cross-sectional research, age has typically not been associated with individuals' reported levels of well-being (Gerstorff et al., 2008).

Gender differences in the prediction of life satisfaction have not been presented because of a very small proportion of male participants in the research sample.

This research emphasized the function variables: health, mobility, cognition, social, that become very important in determining subjective well-being as persons get older. The only affect variable, apart from life satisfaction, was depression symptoms, and it exerted its long-term effect in predicting life satisfaction, along with cognitive function, in a sample of high functioning retirement homes' residents followed for eight years.

The findings of this research support the adaptive processes view of life satisfaction and its determinants, cross-sectional and longitudinal. Older adults can maximize their potential and improve their life satisfaction by properly adapting to the physical, mental, and social changes that emerge during old age, which will eventually lead to successful ageing or ageing well (Allerhand et al., 2014; Baltes, 1997; Kim & Sok, 2013). Research findings clearly suggest that well-being could be promoted as people grow older.

The limitation of this study is that life satisfaction was measured only at the last time point so no control for the prior levels of life satisfaction is available. Another limitation of the presented study is the sample of participants that comprised high functioning individuals, which is reflected in slightly negatively skewed results' distributions in several variables, so our findings may not generalize to populations who are not relatively healthy and independent functioning. This is a common occurrence in longitudinal studies resulting from the sample attrition due to longer survival of better functioning older persons. Also, participants are retirement homes' residents so the findings could not be generalized to the older adults' population. Older community-dwelling people should be added and compared for more general interpretation and conclusions. Women prevail in this sample, as usual in this age group so their results weigh over those of male participants, and this is why gender differences could not be tested. Assessment relies on self-report measures, although they were administered individually, in the form of a structured interview. Objective health assessment was performed at baseline measurement, but this was not the subject of this article.

Finally, this is a correlational study, so no causal inferences can be proposed. However, a longitudinal study design enables better control of long-term associations in observed variables both between and within persons.

Significant long-term association of depression and life satisfaction is suggestive for further research goals. Since affect is a component of life satisfaction, along with the cognitive component, and there has been research evidence of the mediating role of affect – positive and negative, on the association between life satisfaction and health, and even survival in old age (Lyyra et al., 2006), it should be included in future research. Other research has shown that social support was correlated with higher life satisfaction and linked to fewer depressive symptoms in older adults (Berg et al., 2006; Siedlecki et al., 2014), so this is another variable to be regarded further. There are strong indications that despite very old age, impaired functioning and adverse events, satisfaction with one's own life can be improved.

Conclusion

The aim of this longitudinal study was to determine the age changes and predictive contribution of psychosocial factors such as sociodemographic factors, self-perceived health, functional ability, cognitive function, depression, and social participation to the life satisfaction in 138 old persons living in retirement homes in Zagreb.

Expected age changes were found in all observed variables. Despite a slight decline, the overall psychological functioning of old persons in this research remained fairly good on average, over the eight year period.

Cross-sectionally, the observed set of variables contributed to the explanation of 21% of the life satisfaction variance. The strongest and the only significant cross-sectional predictor variable was self-perceived health. Better self-rated health predicted better life satisfaction. Longitudinally, the observed set of variables from the two previous measurement times explained 26% of the life satisfaction variance. The significant longitudinal predictors were depression and cognitive function, adversely, both psychological factors, from the second measurement time. Lower depression symptoms frequency, and lower cognitive function, significantly predicted better life satisfaction six years later. There were no significant predictor variables from the baseline measurement.

The findings of this research support the adaptive processes view of life satisfaction and its determinants, cross-sectional and longitudinal. The implications of this study are in considering the potential of old persons to adapt to well-being challenges.

References

- Allerhand, M., Gale, C. R., & Deary, I. J. (2014). The dynamic relationship between cognitive function and positive well-being in older people: A prospective study using the English Longitudinal Study of Aging. *Psychology and Aging, 29*(2), 306–318.
- Baltes, P. B. (1997). On the incomplete architecture of human ontogeny: Selection, optimization, and compensation as foundation of developmental theory. *American Psychologist, 52*, 366-380.
- Benyamini, Y., Blumstein, T., Murad, H., & Lerner-Geva, L. (2011). Changes over time from baseline poor self-rated health: For whom does poor self-rated health not predict mortality? *Psychology & Health, 26*(11), 1446-1462.
- Berg, A. I., Hassing, L. B., McClearn, G. E., & Johansson, B. (2006). What matters for life satisfaction in the

- oldest old? *Aging and Mental Health*, 10, 257-264.
- Berg, A. I., Hoffman, L., Hassing, L. B., McClearn, G. M., & Johansson, B. (2009). What matters, and what matters most, for change in life satisfaction in the oldest-old? A study over 6 years among individuals 80+. *Aging & Mental Health*, 13(2), 191-201.
- Berg, C. A., Smith, T. W., Henry, N. J. M., & Pearce, G. E. (2007). A developmental approach to psychosocial risk factors and successful aging. In C.M. Aldwin, C.L. Park, & A. Spiro (Eds.), *Handbook of health psychology and aging* (pp. 30-53). New York: The Guilford Press.
- Bishop, A. J., Martin, P., Poon L., & Johnson, M. A. (2011). Exploring Positive and Negative Affect as Key Indicators of Life Satisfaction among Centenarians: Does Cognitive Performance Matter? *Journal of Aging Research*, Article ID 953031, 10 pages,
- Blazer, D. G. (2003). Depression in late life: Review and commentary. *Journal of Gerontology: Medical Sciences*, 58A(3), 249-265.
- Bowling, A. (1995). *Measuring disease*. Buckingham: Open University Press.
- Burton-Jeangros, C., & Zimmermann-Sloutskis, D. (2016). Life satisfaction trajectories of elderly women living in Switzerland: an age-period-cohort analysis. *Ageing & Society*, 36(1), 106-132.
- Carver, C. S., Scheier, M. F., & Segerstrom, S. C. (2010). Optimism. *Clinical Psychology Review* 30, 879-889.
- Defilipis, B., & Havelka, M. (1984). *Stari ljudi [The old people]*. Zagreb: Stvarnost.
- Despot Lučanin, J. (2003). *Iskustvo starenja [The experience of ageing]*. Jastrebarsko: Naklada Slap.
- Despot Lučanin, J., Lučanin, D., & Havelka, M. (1997). The role of psychological factors in the aging process - stress and health as predictors of aging. *Croatian Medical Journal*, 38(3), 222-227.
- Diener, E., Emmons, R.A., Larsen, R.J., & Griffin, S. (1985). The satisfaction with life scale. *Journal of Personality Assessment*, 49, 71-75.
- Gerstorf, D., Ram, N., Röcke, C., Lindenberger, U., & Smith, J. (2008). Decline in Life Satisfaction in Old Age: Longitudinal Evidence for Links to Distance-to-Death. *Psychology and Aging*, 23(1), 154-168.
- Gutierrez, M., Tomas, J. M., Galiana, L., Sancho, P., & Cebria, M. A. (2013). Predicting life satisfaction of the Angolan elderly: A structural model. *Aging & Mental Health*, 17(1), 94-101, Retrieved from <http://dx.doi.org/10.1080/13607863.2012.702731>
- Idler, E. L. (1992). Self-assessed health and mortality: A review of studies. *International Review of Health Psychology*, 1, 33-54.
- Kaliterna Lipovčan, L.J., & Prizmić Larsen, Z. (2006) Kvaliteta življenja, životno zadovoljstvo i osjećaj sreće u Hrvatskoj i europskim zemljama [Quality of life, life satisfaction and happiness in Croatia in comparison to European countries]. In K. Ott (Ed.), *Pridruživanje Hrvatske Europskoj uniji. Izazovi sudjelovanja* (pp.181-198).Zagreb: Institut za javne financije, Zaklada Friedrich Ebert.
- Kim, S.-Y., & Sok, S. R. (2013). Factors influencing the life satisfaction in the older Korean women living alone. *Contemporary Nurse* 44(1), 111-119.
- Lyyra, T. M., Törmäkangas, T. M., Read, S., Rantanen, T., & Berg, S. (2006). Satisfaction with present life predicts survival in octogenarians. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, 61(6), 319-326.
- Pattie, A. H., & Gilleard, C. J. (1996). *CAPE - Clifton postupci za procjenu starijih osoba [Clifton assessment procedures for the elderly]*. Jastrebarsko: Naklada Slap.
- Penezić, Z. (2006). Zadovoljstvo životom u adolescentnoj i odrasloj dobi [Life satisfaction at adolescence and adulthood]. *Društvena istraživanja*, 4-5(84-85), 643-669.
- Ratigan, A., Kritz-Silverstein, D., & Barrett-Connor, E. (2016). Sex differences in the association of physical function and cognitive function with life satisfaction in older age: The Rancho Bernardo Study. *Maturitas*, 89, 29-35.
- Reyes Fernández, B., Rosero-Bixby, L., & Koivumaa-Honkanen, H. (2016). Effects of self-rated health and self-rated economic situation on depressed mood via life satisfaction among older adults in Costa Rica. *Journal of Aging and Health*, 28(2) 225-243.
- Riediger, M., Li, S.-C., & Lindenberger, U. (2006). Selection, optimization, and compensation as developmental mechanisms of adaptive resource allocation: Review and preview. In Birren, J. E. & Schaie, K. W. (Eds.), *Handbook of the psychology of aging* (pp. 298-313). San Diego: Academic Press.
- Röcke, C., & Brose, A. (2013). Intraindividual variability and stability of affect and well-being: Short-term and long-term change and stabilization processes. *GeroPsych: The Journal of Gerontopsychology and Geriatric Psychiatry*, 26(3), 185-199.
- Schaie, K. W. (2016). Theoretical Perspectives for the psychology of aging in a lifespan context. In K. W. Schaie & S. L. Willis (Eds.), *Handbook of the psychology of aging* (pp. 3-13). San Diego: Academic Press.
- Seligowski, A. V., Pless Kaiser, A., King, L. A., King, D. W., Potter, C., & Spiro III, A. (2012). Correlates of life satisfaction among aging veterans. *Applied Psychology: Health And Well-Being*, 4(3), 261-275.

- Shin, D. C., & Johnson, D. M. (1978). A vowed happiness as an overall assessment of the quality of life. *Social Indicators Research*, 5, 475–492.
- Siedlecki, K. L., Salthouse, T. A., Oishi, S., & Jeswani, S. (2014). The relationship between social support and subjective well-being across age. *Social Indicators Research*, 117, 561–576.
- Smith, J., & Ryan, L. H. (2016). Psychological vitality in the oldest old. In K. W. Schaie & S. L. Willis (Eds.), *Handbook of the psychology of aging* (pp. 303-319). San Diego: Academic Press.
- Smith, N., Young, A., & Lee, C. (2004). Optimism, health-related hardiness and well-being among older Australian women. *Journal of Health Psychology*, 9(6), 741-752.
- Tabachnick, B. G., & Fidell, L. S. (2007). *Using multivariate statistics*. Boston: Pearson / Allyn & Bacon.
- Tomas, J. M., Sancho, P., Gutierrez, M., & Galiana, L. (2014). Predicting life satisfaction in the oldest-old: A moderator effects study. *Social Indicators Research*, 117, 601–613.
- White, C. M., St. John, P. D., Cheverie, M. R., Maryam Iraniparast, M., & Tyas, S. L. (2015). The role of income and occupation in the association of education with healthy aging: Results from a population-based, prospective cohort study. *BMC Public Health* 15, 1181.

13

Young Twitter users in Balkans: A case of “clicktivism” or more civic activism in general?

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Abstract

There is contradictory evidence among scholars about the impact of social networking and online activism on real-life activism. Some authors claim that mere “clicktivism” creates the false sense of making a difference, and therefore undermines real life activities, while others say it actually boosts it. Therefore, this research aimed to investigate (a) the prevalence of Twitter users as a relatively new form of social networking, among youth in Western Balkans, and (b) the extent of different type of civic activism among Twitter users compared to other social networking sites users, (c) the relation between online and offline activism among Twitter users compared to other social networking sites (SNS) users.

A total of 1,023 representatively selected participants from Serbia, Bosnia-Herzegovina (BIH), Macedonia, Montenegro and Kosovo aged between 13 and 18 years were interviewed over the phone. Their online and offline civic participation were assessed by parallel versions of activism scale, for eight different social issues and six different levels of engagement. Young Twitter users were compared to non-Twitter users, i.e. users of other social networks, prominently Facebook.

Twitter users made 19% of the sample, and, in comparison to other SNS users demonstrated not only higher online activism but also higher offline activism. Our results give further evidence to the typical portrayal of Twitter users as being more engaged in civic issues in comparison to other SNS users.

Keywords: Twitter, social networking sites, civic activism, young people, Balkan

Intensive and continual development of social networking sites (SNS) changed not only the everyday life of young people but also their civic activities. Gathering information, ways of communication and exchanging ideas became dramatically different with the rise of Internet. New communication technologies have great potential in developing civic activism, expanding the forms of potential participation. Social media provide a platform for ideas, attitudes and values expression, but also a platform for collective action, as users can, for example, form virtual groups and pressure the authorities without sharing physical space or direct interpersonal contact. Social networking sites differ in their purpose and scope of engagement for their users. While some of them are typically used for socializing and communicating in the private sphere (e.g. Facebook, Snapchat, Instagram), the others are more often used for exchanging ideas in the political sphere (e.g. Twitter).

Twitter is a social networking site whose microblogging form is especially suitable for discussing political and social issues. Twitter activities consist of posting short comments usually delivered to a network of associates, but they can be widely and quickly shared by re-tweeting, and therefore reach a large audience in short time. Although there is data confirming that young people in the Balkans are heavy SNS users (Milošević-Đorđević & Žeželj, 2014), their use of SNSs for civic engagement is still under-researched. As Twitter, in particular, can serve this purpose in the virtual world, we decided to examine online and offline activism of young Twitter users in the Balkans and to compare them to users of other SNSs.

Defining “civic activism” can be a challenging task: it includes a wide variety of actions, from minimally involving (so-called soft activism) to highly involving (hard activism) (Brunsting & Postmes, 2002), with extremes such as: expressing an opinion, persuading others vs. participating in demonstrations, performances or sabotages. Issues that motivate groups or individuals for action might cover areas as different as environment protection, human rights, animal rights, political issues, health care... On top of the differences in issues of engagement and level of engagement, there is a new difference in social environment activism - offline and online activism can differ substantially. Online activism lacks face to face interaction (Kiesler, Siegel, & McGuire, 1984; Hardy, & Scheufele, 2005), it operates in reduced social/nonverbal cues and more individualistic environment, but some authors suggest that social identity can be salient despite the fact that group members are physically isolated (Lea & Spears, 1991; Haslam, 2001). Online and offline actions require different sets of skills and, more importantly, a different amount of effort: it is much easier to join a virtual than a real group, to sign an electronic than a real petition, to join a virtual than a real event. These facts spark a continual debate over the influence of online activism on offline activism: does it prevent offline activities (Putnam, 2000), or it can actually boost them (Verba, Schlozman, Brady, & Shapiro, 1996; Shah, Cho, Eveland, & Kwak, 2005; Krueger, 2006; Boulianne, 2009; Wojcieszak, 2009). Some authors suggest that virtual actions could undermine real-life activities by creating a false sense of making a difference (therefore a term “clicktivism” was coined – Tarrow, 2014; Sormanen, & Dutton, 2015), while others argue that online and offline activism impel one another, leading to the new “hybrid” type (Hands, 2011; Gerbaudo, 2012).

This research aimed to investigate (a) the prevalence of Twitter usage among youth in Western Balkans, as there is not much data on this region, and (b) the extent of activism of Twitter users compared to users of other SNS, with activism defined to include a broad variety of issues and behaviors with different level of engagement (c) and the relation between online and offline activism within both subsamples. We expected that Twitter was not as popular as other SNSs (predominantly Facebook) among the youth from the Balkan countries (Milošević-Đorđević & Žeželj, 2014), but those who use Twitter would show more civic activism in both online and offline sphere (Vaccari, Valeriani, Barberá, Bonneau, Jost, Nagler, & Tucker, 2015), and that correlation between online and offline activism would be higher in this subsample. In order to test those hypotheses, we conducted a correlation survey in five countries of the Balkan region in a representative sample of young population.

Method

Sample

A total of 1,023 representatively selected participants from Serbia, Bosnia-Herzegovina (BIH), Macedonia, Montenegro, and Kosovo*¹ aged between 13 and 18 years were interviewed over the telephone. Approximately 200 respondents per five Balkan countries participated in the survey (Table 1). The sampling universe in each country was based on data from the national Census and estimated

¹*This designation is without prejudice to positions on the status and is in line with UNSCR 1244 and the ICJ Opinion on Kosovo

population dynamics, based on stratified two-staged combined probability sampling. Primary sampling units were households, which were defined as a group of people living in the same dwelling. Secondary sampling units were members of the household of targeted age. The sample was stratified by the type of settlement (urban-rural), region, and gender per country. Data was gathered via IPSOS regional offices in the Balkans in November 2014. The research procedure adhered to APA ethical guidelines.

Table 1
Demographic profile of the sample

Sample structure		%	N
Country	Montenegro	19.6	200
	Serbia	20.0	205
	BiH	19.7	202
	FYRoM	20.2	207
	Kosovo	20.4	209
Gender	Male	50.7	519
	Female	49.3	504
Settlement type	Urban	56	573
	Rural	44	450
Average age		15.7	
Total number of respondents		1023	

Instruments

Online and offline civic participation were assessed by parallel versions of activism scale, in which the participants were asked to mark all (offline/online) activities they had ever taken part in. Every offline activity had its online counterpart. A different level of engagement was operationalized by offline activities (I openly expressed my opinion on that issue; I tried to persuade other people to agree with my opinion; I was wearing a T-shirt or a badge with the slogan supporting an idea; I signed a petition; I participated in meetings/rallies to support an idea; I volunteered in an organization / was a member of some organization) and online activities (I openly expressed my opinion about that issue in a virtual discussion; I tried to persuade other people to agree with my opinion during a virtual discussion; I changed a photograph, status or profile on Facebook/ Twitter, etc. to support an idea; I signed an online petition; I joined Internet groups to support an idea; I volunteered in an Internet group e.g. as an administrator).

The respondents were offered these scales for eight different social issues like ecology; human (marginal group) rights; humanitarian issues (floods, earthquakes, storms...); political issues; issues in local communities; issues related to school/after-school activities; animal rights. For each of these eight issues, respondents were asked whether they had ever participated in different offline/online activities ranked by level of engagement.

We created two matrices 8 (issues) x 6 (soft plus hard activities) for online and offline activism – the total scores ranged from minimum 0 to maximum 48. We also created two matrices of 8 (issues) x 6 (online and offline activities) for soft and hard activism – the total scores ranged from 0 to 48. We proceeded to compare young Twitter users (young people who used Twitter along with other SNSs, as there were no sole Twitter users in the sample), to non-Twitter users (this subsample consisted of predominantly Facebook users).

Results

We detected a relatively small portion of Twitter users in the young people in the Balkans. Twitter users comprised 19% of the combined sample (N=196 out of 1023), with no significant country differences.

Next, we used ANCOVA to test the differences in the level of civic activism between Twitter and other SNS users. We entered Twitter usage as an independent variable, and (a) total scores for online/offline activism as dependent variables in the first two analyses, (b) scores for soft activism/hard activism as dependent variables in the next two analyses. As we wanted to eliminate age as a possible confound, it was entered as a covariate.

The analyses revealed Twitter users significantly outperform other SNS users in both types of activism: while controlling for age, Twitter users were more active in virtual life ($F(1, 1022)=38.12, p<.001, \text{Partial Eta Squared}=.04$), with non significant covariate effect $F(1, 1022)=0.39, p=.53, \text{Partial Eta Squared} <.0001$), as well as in real life ($F(1022,1)=29.97, p<.001, \text{Partial Eta Squared}=.03$), with non significant covariate effect $F(1, 1022)=0.12, p=.72, \text{Partial Eta Squared} <.0001$) (Table 2 reports adjusted means and confidence intervals, as suggested by Kesselman et al., 1998).

Further analyses revealed similar difference by level of engagement: while controlling for age, Twitter users were also more active in soft types of activism ($F(1, 1022)=31.92, p<.001, \text{Partial Eta Squared}=.03$), with non significant covariate effect $F(1, 1022)=0.083, p=.77, \text{Partial Eta Squared} <.0001$), and hard types of activism ($F(1, 1022)=38.61, p<.001, \text{Partial Eta Squared}=.04$) with non significant covariate effect $F(1, 1022)=0.00, p=.98, \text{Partial Eta Squared} <.0001$) (Table 3 reports adjusted means and confidence intervals).

Table 2

Offline and online types of activism among Twitter and non-Twitter users

		Mean (95% confidence interval)	SE	N
Activism offline	non Twitter users	11.14 (10.52-11.77)	.32	827
	Twitter users	15.13 (13.84-16.42)	.65	196
	Total	13.14 (12.43-13.85)	.36	1023
Activism online	non Twitter users	8.45 (7.77-11.91)	.34	827
	Twitter users	13.26 (11.91-14.68)	.71	196
	Total	10.87 (10.1-11.64)	.39	1023

Note. Adjusted means

Table 3

Soft and hard types of activism among Twitter and non-Twitter users

		Mean (95% confidence interval)	SE	N
Soft activism	non Twitter users	12.58 (11.85-13.31)	.37	827
	Twitter users	17.36 (15.87-18.86)	.76	196
	Total	14.97 (14.14-15.8)	.42	1023
Hard activism	non Twitter users	7.01 (6.45-7.57)	.28	827
	Twitter users	11.06 (9.91-12.21)	.59	196
	Total	9.03 (8.38-9.67)	.32	1023

Note. Adjusted means

Next, we proceeded to compare the relationship between online and offline activism in two subsamples by Twitter usage: within the Twitter users group, there were two more forms of activism than in the other group, in the total sample, and in all countries except Serbia and Macedonia (Table 4). These differences, however, were not substantial.

Table 4

The relation between online and offline activism among Twitter users compared to other social networking sites users, in total sample and by country

		Total	Montenegro	Serbia	Bosnia and Hercegovina	Macedonia	Kosovo
Total activism	Twitter users	.80**	.85**	.58**	.78**	.71**	.90**
Offline/online	Other SNS users	.74**	.69**	.76**	.65**	.75**	.86**

Note. ** $p < .01$

Discussion

The question of civic activism is particularly important for new democracies (Tworzecki & Semetko, 2012) especially those still recovering from a violent conflict in the past decades. Young people from the Western Balkan region exhibit high social distance and intolerance toward marginal groups (Milošević-Đorđević, 2016), political cynicism and a strong feeling of disempowerment, as well as relatively rigid identity structure (Branković et al., 2016). More importantly for this research, studies from the region showed that the general activism in this population is relatively low (Pavlović, 2012; Reidy et al., 2015). Our study, however, probed for more types and forms of activism, and therefore registered more activism than it is typically registered. It also proved that online and offline activism is not to be treated as mutually exclusive, but rather as complementary and interdependent (as in Conroy, Feezell, & Guerrero, 2012; Milošević-Đorđević & Žeželj, 2017).

Twitter is an especially important platform for all types of civic engagement, as it forces users to distill their messages to maximize their social impact. Influential Twitter users do not only react to political and social events, they create it. Having this in mind, researchers argued there is a need to understand this particular population better (Mislove, Lehmann, Ahn, Onnela, & Rosenquist, 2011), especially the forms of activism they engage in, both online and offline. Our research is in line with those demands. Drawing from probability samples of youth in five Western Balkan countries, our data illustrate that Twitter is still used way less frequently than some other social networking sites, especially Facebook (for a comparison see Bodroža & Jovanović, 2016). Young Twitter users were more active than non-users in online activism, as expected, but also in offline activism; they were more active than non-users in soft forms of activism, as expected, but also in hard forms. They seem to be the most engaged segment of youth regardless of type and level of involvement. The fact that they are so easy to identify and easy to reach as well can be very important for policies aimed at raising the level of youth civic engagement.

There is, however, a methodological caveat in the way we measured two types of activism: the respondents assessed different types and issues of activism in a single session, in parallel forms – the future research should explore if the high correlation between the two is an artefact of the type of assessment. It would also benefit from measuring virtual and real-life behavior in addition to self-report measures.

Conclusion

This study portrays young Twitter users in the Balkans, and its importance lies in the fact that studies of Twitter users are at a very early stage (Larsson, & Moe, 2015). Its main results are in line with initial expectations (a) although Twitter usage decreases with age, it is still less popular than Facebook even with the youngest segment of population, (b) a typical Twitter user is more engaged in civic issues in comparison to other SNS users, (c) both in the online and offline sphere. The results revealed the strong correlation between two types of activism, within both subsamples of SNS users, slightly stronger within Twitter users. This goes to show that the interests in civic engagement translate into behaviors in both spheres available, fostering the unidimensional activism labeled “hybrid” by scholars (Hands, 2011; Gerbaudo, 2012). Most importantly, this research goes to show that social networking platforms, especially Twitter, can be useful tools to reach out to young people and mobilize them for important social and political issues.

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References

- Bodroža, B., & Jovanović, T. (2016). Validation of the new scale for measuring behaviors of Facebook users: Psycho-social aspects of Facebook use (PSAFU). *Computers in Human Behavior*, 54, 425-435.
- Boulianne, S. (2009). Does internet use affect engagement? A meta-analysis of research. *Political Communication*, 26, 193-211.
- Branković, M., Pavlović, M., Žeželj, I., Vladisavljević, M., Jovanović, O., & Petrović, N. (2016). Social identity complexity and inclusiveness as predictors of intergroup emotions. *Primenjena psihologija [Applied psychology]*, 8, 363-378.
- Brunsting, S., & Postmes, T. (2002). Social movement participation in the digital age, predicting offline and online collective action. *Small Group Research*, 33, 525-554.
- Conroy, M., Fezell, J. T., & Guerrero, M. (2012). Facebook and political engagement: A study of online political group membership and offline political engagement. *Computers in Human behavior*, 28, 1535-1546.
- Gerbaudo, P. (2012). *Tweets and the streets: Social media and contemporary activism*. Pluto Press.
- Hands, J. (2011). *@ is for activism: Dissent, resistance and rebellion in a digital culture*. Pluto Press.
- Hardy, B. W., & Scheufele, D. A. (2005). Examining differential gains from Internet use: Comparing the moderating role of talk and online interactions. *Journal of Communication*, 55, 71-84.
- Haslam (2001). *Psychology in organizations: The social identity approach*. London, Sage.
- Keselman, H. J., Huberty, C. J., Lix, L. M., Olejnik, S., Cribbie, R. A., Donahue, B., ... & Levin, J. R. (1998). Statistical practices of educational researchers: An analysis of their ANOVA, MANOVA, and ANCOVA analyses. *Review of Educational Research*, 68, 350-386.
- Kiesler, S., Siegel, J., & McGuire, T. W. (1984). Social psychological aspects of computer-mediated communication. *American psychologist*, 39, 1123-1134.
- Krueger (2006). A comparison of conventional and internet political mobilization. *American Politics Research*, 34, 759-776.
- Larsson, A. O., & Moe, H. (2012). Studying political microblogging: Twitter users in the 2010 Swedish election campaign. *New Media & Society*, 14, 729-747.
- Lea, M., & Spears, R. (1991). Computer-mediated communication, de-individuation and group decision making. *International Journal of Man Machine Studies*, 34, 283-301.
- Milošević-Đorđević, J. S., & Žeželj, I. L. (2014). Psychological predictors of addictive social networking sites use: The case of Serbia. *Computers in Human Behavior*, 32, 229-234.
- Milošević-Đorđević, J. (2016). The role of contact in reducing social distance of youth from the Balkans towards minority groups, *Primenjena psihologija [Applied Psychology]*, 8, 415-432.
- Milošević-Đorđević, J., & Žeželj, I. (2017). Civic activism online: Making young people dormant or more active in real-life? *Computers in Human Behavior*, 70, 113-118.
- Mislove, A., Lehmann, S., Ahn, Y. Y., Onnela, J. P., & Rosenquist, J. N. (2011). Understanding the demographics of twitter users. *ICWSM*, 11, 5th.
- Pavlović, Z. (2012). Predictors and correlates of youth political knowledge in Serbia. *Psihologija*, 45, 433-449.
- Putnam (2000). *Bowling Alone*. New York: Simon and Schuster.
- Reidy, C. M., Taylor, L. K., Merrilees, C. E., Ajduković, D., Biruški, D. Č., & Cummings, E. M. (2015). The political socialization of youth in a post-conflict community. *International Journal of Intercultural Relations*, 45, 11-2.
- Shah, D. V., Cho, J., Eveland, W. P., & Kwak, N. (2005). Information and expression in a digital age. *Communication research*, 32, 531-565.
- Sormanen, N., & Dutton, W. H. (2015). The role of social media in societal change: Cases in Finland of fifth estate activity on Facebook. *Social Media+ Society*, 1, 2056305115612782.
- Tarrow, S. (2014). Response to W. Lance Bennett's review of the language of contention: Revolutions in words, 1688–2012. *Perspectives on Politics*, 12, 472-473.

- Tworzecki, H., & Semetko, H. A. (2012). Media use and political engagement in three new democracies: Malaise versus mobilization in the Czech Republic, Hungary, and Poland. *The International Journal of Press/Politics*, *17*, 407-432.
- Vaccari, C., Valeriani, A., Barberá, P., Bonneau, R., Jost, J. T., Nagler, J., & Tucker, J. A. (2015). Political expression and action on social media: Exploring the relationship between lower-and higher-threshold political activities among Twitter users in Italy. *Journal of Computer-Mediated Communication*, *20*, 221-239.
- Verba, S., Schlozman, K. L., Brady, H. E., & Shapiro, R. Y. (1996). Voice and equality: Civic voluntarism in American politics. *Political Science Quarterly*, *111*, 706-706.
- Wojcieszak, M. (2009). "Carrying online participation offline" – Mobilization by radical online groups and politically dissimilar offline ties. *Journal of Communication*, *59*, 564-586.

14

Metacognitive monitoring and conflict sensitivity in the ratio-bias task

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Abstract

In this study, we investigated the processes of conflict detection and metacognitive monitoring and regulation using the conflict and no-conflict versions of the ratio-bias task. Participants were asked to give an intuitive response to a problem along with an assessment of the rightness of that response (FOR) and were then allowed as much time as needed to rethink their response and provide a final response. The obtained results supported the predictions of the Metacognitive Reasoning Theory. Low FORs were associated with more analytic thinking (higher probability of changing responses, longer rethinking times, and higher normative accuracy). Although response times did not differ for conflict and no-conflict versions of problems, conflict sensitivity was demonstrated by lower FORs when heuristic responses were given to conflict problems. A higher proportion of changed responses for conflict than for no-conflict problems indicates more engagement of Type 2 processes.

Keywords: Feeling of rightness, Analytical thinking, Conflict detection, Ratio-bias

Dual Process Theories of reasoning make a distinction between two different types of processes: Type 1 processes, which are fast, automatic, and unconscious, and Type 2 processes, which are slow, deliberative, analytic, and conscious (Evans, 2008). The Metacognitive Reasoning Theory (Thompson, 2009; Thompson, Prowse Turner, & Pennycook, 2011) proposes a monitoring mechanism which signals the need for further analytical processing. It posits that the output of intuitive, Type 1 processes is accompanied by a metacognitive judgment called FOR (Feeling of Rightness), which signals whether the outputs of these processes are sufficient or the engagement of Type 2 processes is needed. It determines both the extent of analytic engagement (as measured by rethinking time) as well as the outcome of that engagement (as measured by probability of response change and by accuracy of response). The two-response paradigm was developed by Thompson and colleagues (Thompson et al., 2011) to study the relationship between metacognitive monitoring and analytical thinking. In this procedure, participants are asked to give a quick, intuitive response to a problem, and then are allowed to take as much time as they need to give a final response, making sure their final response is a correct one. Participants are also asked to rate the FOR following their first response, as well as the final judgment of confidence following their final response. Fluently processed tasks generate strong FOR, while less fluent responses generate lower FOR. When FOR is weak, the initial response is likely to be reconsidered and changed, indicating more Type 2 thinking.

In some situations, a conflict between the two types of reasoning processes occurs. In conflict tasks (e.g., base rate neglect tasks and ratio-bias tasks), Type 1 and Type 2 processes lead to opposing responses. Although these tasks require the application of logical or probabilistic principles to give a correct response (the response which is considered normative according to logic or probability theory), they are constructed in such a way that they intuitively cue a heuristic response that is in conflict with normative principles. The results of several studies by De Neys and colleagues (e.g., De Neys & Glumicic, 2008; De Neys, Cromheeke, & Osman, 2011; Franssens & De Neys, 2009) suggest that giving a heuristic response which is not normatively accurate is caused by reasoners' failure to resolve the conflict after it has been detected rather than by a failure of conflict detection. *Conflict sensitivity* is typically assessed by comparing reasoners' processing of conflict versions of problems with control, no-conflict versions, in which the conflict is removed and the cued heuristic response is consistent with the response cued by logical or probabilistic principles. Results of several studies indicate that reasoners, even when they give a heuristic response, are sensitive to conflict; i.e., they spend more time when they solve conflict than no-conflict problems (Bonner & Newell, 2010; De Neys & Glumicic, 2008), and their confidence is lower when they give biased responses (De Neys et al., 2011; Mevel, Poirel, Rossi, Cassotti, Simon, Houdé, & De Neys, 2014; Thompson & Johnston, 2014).

In this study, we used the ratio-bias task to examine the process of conflict detection. The ratio-bias phenomenon is a tendency to judge the probability of a low-probability event as less likely when it is expressed as a ratio of small numbers (e.g. 2:10) than of large numbers (e.g. 20:100) (Kirkpatrick & Epstein, 1992). For example, when participants are asked to imagine winning a prize if they draw a red marble from one of two bags, bag A containing 1 red marble out of 10 marbles, and bag B containing 10 red marbles out of 100 marbles, they tend to choose bag B. Even in situations when bag B offers a smaller probability of winning (e.g. 9/100) than bag A (e.g. 1/10), reasoners tend to prefer bag B which contains the larger absolute number of red marbles. Although they understand that their choice is not in line with the laws of probability, they feel they have a better chance of winning if they draw from bag B (Denes-Raj & Epstein, 1994). The aim of this study was to examine the conflict sensitivity and the role of metacognitive experience (FOR) in the engagement of Type 2 processes, using conflict and no-conflict versions of ratio-bias task.

We used three measures of the engagement of Type 2 processes: normative accuracy of responses, probability of response change, and time of rethinking. We expected conflict problems to prompt analytic thinking to a larger extent than no-conflict problems. Therefore, we hypothesized a) higher increase in normative accuracy for conflict than for no-conflict responses between first and second response, b) higher probability of response change for conflict than for no-conflict problems, and c) longer rethinking times for conflict than for no-conflict problems. We also expected all measures of Type 2 processes to be correlated with FOR, with lower FOR being related to more Type 2 analytic engagement for both conflict and no-conflict problems.

Method

Participants

Thirty-three first-year psychology students (30 females, 3 males, mean age = 19) from the University of Rijeka participated in the experiment.

Materials

The participants solved a total of 18 ratio-bias problems adapted from the study of Mevel et al. (2014). In each task, participants saw pictures of two trays containing red and white balls. In each tray, there were always more white than red balls. A total number of balls and a number of red balls were written below each tray picture. The small tray contained 1, 2, or 3 red balls out of a total of 10 balls. The large tray contained a total of 100 balls, and the proportion of red balls differed from the small tray by 1%, 3%, or 5%. Nine of the problems were conflict problems and nine were no-conflict problems. In the conflict problems, the proportion of red balls was higher for the small tray than for the large tray. In the no-conflict problems, the proportion of red balls was higher for the large tray than for the small tray.

Procedure

At the beginning, instructions were presented on a computer screen, followed by two practice problems. The problems appeared on the screen one at a time. The two-response procedure was used. In each problem, the pictures of the two trays containing red and white balls were shown. The participants were told to imagine they would win a prize if they drew a red ball and had to choose a tray from which they would draw one ball to maximize the chance of winning the prize. First, the participants made their first response by pressing the left or right response key. They were told to give the first response that came to their mind, and the importance of giving the intuitive response was emphasized. Second, they made FOR judgments. They were asked to rate how certain they were of the correctness of their answer on a 6-point scale (from 50% = “not certain/I’m guessing” to 100% = “totally confident”). The problem reappeared on the screen and the participants were allowed as much time as they needed to give their final response. Finally, they made a final judgment of confidence using the same 6-point scale. Response times for both responses were collected.

Results

We examined the relationship between type of task (conflict or no-conflict), FOR, response time for the intuitive response (RT1), and three measures of analytic engagement: 1) the probability of providing a normatively correct final response, 2) the probability of response change from Time 1 (first response) to Time 2 (final response), and 3) the rethinking time (time for giving the final response, RT2). In all analyses response times were converted to \log_{10} . Descriptive data are presented in Table 1.

Table 1

Means and standard deviations for accuracy, probability of response change, response times and metacognitive judgments for conflict and no-conflict problems

	Conflict problems	No-conflict problems
Accuracy: first response	.62 (.26)	.80 (.24)
Accuracy: second response	.89 (.16)	.81 (.25)
Probability of response change	.31 (.26)	.13 (.17)
RT: first response (s)	3.00 (1.75)	2.79 (1.56)
RT: second response (s)	5.63 (4.00)	5.28 (3.30)
FOR	72.76 (11.10)	74.75 (10.39)
Final judgment of confidence	84.01 (11.55)	82.46 (12.13)

First, we analyzed the normative accuracy of the responses and its relationship with the type of task and FOR. A two-way repeated measures ANOVA was used to test the effect of response phase (Time 1 vs. Time 2) and type of task (conflict vs. no-conflict problems) on accuracy of responses. The main effect of response phase was obtained, with significantly lower accuracy at Time 1 ($M = .71$, $SD = .15$) than at Time 2 ($M = .85$, $SD = .16$), $F(1, 32) = 27.35$, $p < .01$, $\eta_p^2 = .46$. There was no significant effect of type of task on

response accuracy, $F(1, 32) = 0.97, p > .05$. The interaction between response phase and type of task on response accuracy was significant, $F(1, 32) = 21.03, p < .01, \eta_p^2 = .40$. The accuracy of responses to conflict problems was higher at Time 2 ($M = .89, SD = .16$) than at Time 1 ($M = .62, SD = .26$), but there was no difference in accuracy of responses to the no-conflict problems between Time 1 and Time 2. The accuracy of responses was lower at Time 1 for conflict problems ($M = .62, SD = .26$) than for no-conflict problems ($M = .80, SD = .24$), but there was no difference in the accuracy of final responses between conflict and no-conflict problems.

Second, we tested the predictions of the Metacognitive Reasoning Theory about FOR as the determinant of Type 2 engagement. For each participant, we identified items on which they changed their responses from Time 1 to Time 2 and items on which they accepted their intuitive responses, and we compared the mean FOR for changed and accepted responses. The FOR was lower for changed responses ($M = 66.42, SD = 9.78$) than for accepted first responses ($M = 75.61, SD = 10.93$), $t(28) = 4.04, p < .01$. We also identified items to which participants gave normatively inaccurate responses at both Time 1 and Time 2 and items to which they gave an inaccurate response at Time 1, but changed it to an accurate final response. The FOR for responses that were corrected at Time 2 ($M = 62.64, SD = 7.95$) was lower than the FOR for responses that were not corrected at Time 2 ($M = 71.71, SD = 13.03$), $t(14) = 3.65, p < .01$. Finally, for each participant we computed the correlation between FOR and RT2, and then computed the average correlation across participants. The correlation was small and negative; however, it was significantly different from zero in a one-sample t-test ($M_r = -.14, t(32) = 3.27, p < .01$).

Third, we analyzed the measures of conflict sensitivity. For each participant, we computed a mean FOR score for conflict and no-conflict problems. There was no difference in mean FOR between conflict and no-conflict problems; $t(32) = 1.39, p > 0.05$. We computed an average RT1 and RT2 for conflict and no-conflict problems. There was no difference in RT1 and no difference in RT 2 between conflict and no-conflict problems. However, the proportion of changed responses was higher for conflict ($M = .31, SD = .27$) than for no-conflict ($M = .13, SD = .17$) problems; $t(32) = 3.62, p < 0.01$. Furthermore, following the analysis by Mevel et al. (2014), we computed mean FOR for incorrect conflict problems, correct conflict problems, and correct no-conflict problems. We did not calculate mean FOR for incorrect no-conflict problems because of the high accuracy of no-conflict problems. We computed differences in mean FOR between these three conditions using repeated measures ANOVA. A significant main effect was revealed, $F(2,58) = 6.17, p < .01, \eta_p^2 = .18$. FOR was lower for incorrect conflict problems ($M = 68.83, SD = 12.97$) than for correct conflict problems ($M = 75.02, SD = 13.87$), and correct no-conflict problems ($M = 75.91, SD = 10.89$).

Discussion

In this study, we investigated the effects of type of task, response times for initial response, and FORs on three measures of analytic engagement: the normative accuracy of final response, the probability of response change, and the time spent to rethink the problem. Low FOR judgments were associated with higher probability of answer change from Time 1 to Time 2, with longer rethinking times and with a higher normative accuracy of final answers. The obtained results support the predictions of the Metacognitive Reasoning Theory (Thompson et al., 2011). According to this theory, the output of the Type 1 processes (initial response), is accompanied by FOR. This metacognitive judgment determines both the extent and the outcome of Type 2, analytic engagement. In this study, FOR was lower for responses that were changed (final response was different than initial) than for accepted initial responses (final response was the same as initial). The results also showed a negative average correlation across participants between FOR and rethinking time. Since the probability of response change and rethinking time are measures of engagement of Type 2 processes, the obtained results support the idea that FOR determines the extent of Type 2 engagement.

Previous studies demonstrated lower response confidence for conflict problems compared to no-conflict problems (e.g. Mevel et al., 2014; Thompson & Johnston, 2014) and longer response times (e.g. Bonner & Newell, 2010; De Neys & Glumicic, 2008) for conflict problems. We used FORs as a measure of confidence in the correctness of the intuitive response and found no difference in mean FORs between conflict and no-conflict problems. Also, no difference was found in RT1 between conflict and no-conflict problems. Both types of problems were processed with similar fluency and FOR. Response accuracy also emerged as an important variable. The accuracy of responses to conflict problems was higher for final responses than for intuitive responses, but there was no difference in the accuracy between the final and

intuitive responses for no-conflict problems. In addition, intuitive responses were more accurate for no-conflict problems than for conflict problems, but no such difference was found for the final responses.

Conflict sensitivity was tested by comparing FOR ratings when the intuitive response was normatively correct or normatively incorrect. FORs were lower for the incorrect responses to conflict problems than for correct responses to conflict problems and correct responses to no-conflict problems. However, there was no difference between FORs for the correct responses to conflict problems and correct responses to no-conflict problems. Mevel et al. (2014) measured confidence ratings in the correctness of the answers on ratio-bias problems presented in a booklet and found similar results. Confidence ratings were lower when heuristic (incorrect) responses were given. In line with Mevel et al. (2014), decreased FORs for the incorrect responses to conflict problems obtained in our study also indicate that reasoners are sensitive to the conflict. They detect the conflict that occurs between their intuitive heuristic response to conflict problems and the cued normative correct response.

Regarding the Type 2 analytic engagement, no difference was found in rethinking time between conflict and non-conflict problems. However, consistent with Thompson and Johnson (2014), a higher proportion of changed answers for conflict than for no-conflict problems indicates more analytic engagement while solving conflict problems.

Conclusions

Using the ratio-bias problems, we have demonstrated that the metacognitive judgment about a first, intuitive response to a problem is important for signaling whether we should accept the intuitive response, as an output of Type 1 processes, or whether we should engage more analytical thinking by engaging Type 2 processes. Response times did not differ for the conflict and no-conflict versions of problems. However, conflict sensitivity was demonstrated by decreased FORs when heuristic responses were given to conflict problems. Reasoners detect the conflict which occurs between their heuristic intuitive response and normative response. They also engage in more Type 2 thinking (i.e., they change more responses) for conflict than for no-conflict problems.

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References

- Bonner, C., & Newell, B. R. (2010). In conflict with ourselves? An investigation of heuristic and analytic processes in decision making. *Memory & Cognition*, *38*(2), 186–196.
- De Neys, W., & Glumicic, T. (2008). Conflict monitoring in dual process theories of thinking. *Cognition*, *106*(3), 1248–1299.
- De Neys, W., Cromheeke, S., & Osman, M. (2011). Biased but in doubt: Conflict and decision confidence. *PLoS ONE*, *6*(1), e15954.
- Denes-Raj, V., & Epstein, S. (1994). Conflict between intuitive and rational processing: When people behave against their better judgment. *Journal of Personality and Social Psychology*, *66*(5), 819–829.
- Evans, J. S. B. (2008). Dual-processing accounts of reasoning, judgment, and social cognition. *Annual Review of Psychology*, *59*, 255–278.
- Franssens, S., & De Neys, W. (2009). The effortless nature of conflict detection during thinking. *Thinking & Reasoning*, *15*(2), 105–128.
- Kirkpatrick, L. A., & Epstein, S. (1992). Cognitive-experiential self-theory and subjective probability: Further evidence for two conceptual systems. *Journal of Personality and Social Psychology*, *63*(4), 534–544.
- Mevel, K., Poirel, N., Rossi, S., Cassotti, M., Simon, G., Houdé, O., & De Neys, W. (2014). Bias detection: Response confidence evidence for conflict sensitivity in the ratio bias task. *Journal of Cognitive Psychology*, *27*(2), 227–237.
- Thompson, V. A. (2009). Dual process theories: A metacognitive perspective. In J. St. B. T. Evans & K. Frankish (Eds.), *In two minds: Dual processes and beyond* (pp. 171–195). New York: Oxford University Press.
- Thompson, V. A., & Johnson, S. C. (2014). Conflict, metacognition, and analytic thinking. *Thinking & Reasoning*, *20*(2), 215–244.
- Thompson, V. A., Prowse Turner, J. A., & Pennycook, G. (2011). Intuition, reason, and metacognition. *Cognitive Psychology*, *63*, 107–140.

15

Implicit attitudes towards the adoptive parents and their children: What does it matter how we become a family?

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Abstract

Literature suggests that adopted children are at a higher risk of behavioral, psychological and academic problems. Adoption experts think that a higher rate of adoptees among help-seeking and referrals is not just related to the intensity/frequency of problems but also to community's sensitivity/reactivity. Since this behavior may be the reflection of the community's attitudes, the aim was to investigate implicit attitudes of the (future) experts towards the adoptive family members and to see whether these attitudes are information-dependent. The hypothesis was that the adopted child, especially the one with the implication of externalizing problems, would be assessed more negatively than the biological child. Since adoption is often perceived as an altruistic act, the hypothesis was that the adoptive parents would be assessed more positively than the biological parents.

Female psychology (N=52) and early-childhood-and-preschool-education (N=58) students read two vignettes (about a boy with the indication of a) externalizing and b) internalizing problems) and rated the child and his parents on semantic differential scales. Vignettes referred to the biological or adoptive family, randomly rotated. Data analysis revealed that implicit attitudes towards the adoptive family members are context-dependent. The adopted and the biological child differed only in the externalizing-problems context; the adoptee was described as sadder, with lower learning-motivation, more inefficient, emotionally unstable and unsuccessful at school than the biological child. Differences between the biological and adoptive parents followed only the internalizing-problems context; they were rated as more proud, unselfish, active, strong, competent and reliable than the biological parents. Results suggest the need for an adoption-related education for future experts in child-directed professions.

Keywords: adoptive parents, adopted children, implicit attitudes, internalizing problems, externalizing problems

An adoption is a special form of family law care for and protection of children without proper parental care that creates a permanent relationship between the parent and the child (Obiteljski zakon, 2015). As in many other countries, in the Republic of Croatia, adoptive families are legally equalized with biological ones, having equal rights and duties. However, experiences gathered from different members of adoptive families (Kralj, Modić Stanke, & Topčić-Rosenberg, 2014) suggest that society, not only notices the differences between the two but also makes them. Their general impression is that the community sees and treats adoptive family members differently: perceiving the adoptive parents as “the good guys” – noble saviors willing to sacrifice, and the adopted children as “the bad guys” – a potential problem that needs monitoring. Since data gathered from the adoption community are by default subjective and – particularly in stressful and emotional situations – may be somewhat distorted, the present research was designed to investigate more objectively the community’s attitudes towards adoptive family members in Croatia.

Results of many studies suggest that adopted children are at a greater risk of behavioral (Swinton, 2011), educational (Van Ijzendoorn, Juffer, & Poelhuis, 2005) and psychological (Behle & Pinguart, 2016) problems. However, we can also find meta-analytic evidence for the traditional view of adoption as a successive intervention into the lives of the abandoned children, leading to massive catch-up (Van Ijzendoorn & Juffer, 2006), along with the studies that found no difference between adoptees and their non-adopted peers (Benson, Roehlkepartain, & Sharma, 1994; Borders, Black, & Pasley, 1998). Some authors emphasize that it is difficult to draw firm conclusions about the adoption-associated vulnerabilities from the existing studies because of many methodological difficulties – size and type of sample, lack of control/contrast groups, no distinctions regarding past experience, just to name a few (Brodzinsky, 1993). Nonetheless, it seems the community has already delivered the verdict and acts upon it – in comparison with the biological children, adoptees are significantly more likely to get a referral to seek help when they display few problems (Warren, 1992).

Adoption is often perceived as an altruistic act (Morrison, 2004), but also as a highly risky option which is, due to “less optimal genetic backgrounds” and “adverse prenatal experiences”, likely to produce troubled children (Fisher, 2003). According to the National Adoption Attitudes Survey (2002) almost half of Americans believe that adoptees are more likely than their non-adopted peers to have behavioral problems and troubles at school while more than a third believe that adoptees are more likely to have medical issues and drug/alcohol problems and are less likely to be well-adjusted, happy and self-confident. It is noteworthy to mention that these negative biases are not limited to the community, but are also found among the professionals involved in adoption research and practice (Wegar, 2000; Kriebel & Whitten, 2014). In contrast, the community generally perceives adoptive parents more favorably; e.g. Americans generally see adoptive parents as caring, compassionate, loving and generous, as well as lucky, advantaged, and unselfish (National Adoption Attitudes Survey, 2002).

Similar attitudes and reactions to adoptive family members are also found in Croatia. When describing their experience with social reactions to adoption (Kokorić & Birovljević, 2015), adoptive mothers indicated encountering positive stereotypes related to adoptive parents (glorifying the act of adoption and thinking of adopting parents as “saviors”) and negative stereotypes related to adoptees (negative expectations of the adoptee’s developmental outcomes). Since subjectivity and socially desirable responding may significantly influence the validity of the conclusions, this study took an experimental approach using a vignette technique to reveal the community’s implicit attitudes towards the adoptive vs. biological family members. Specifically, the goal was to investigate the implicit attitudes of the (future) experts in child development and education towards the adoptive family members. Additionally, present research aimed to find out whether implicit attitudes towards the adoptive family members are information-dependent and for this reason, two types of vignettes were formed – describing a child with the *implication* of a) externalizing problems and b) internalizing problems. The hypothesis was that the adopted child, especially the one with the implication of externalizing problems, would be assessed more negatively (profile would indicate a higher likelihood of behavioral, psychological and scholar problems) than the biological child. The hypothesis for adoptive parents was contrary – that they would be assessed more positively than the biological parents.

Method

Participants

A total of 58 students of Early Childhood and Preschool Education at the Faculty of Teacher Education in Zagreb and 52 students of Psychology at the Faculty of Humanities and Social Sciences in Zagreb volunteered to participate in the study. Students of Early Childhood and Preschool Education were a much more heterogeneous group concerning their age ($M = 24.30$; $SD = 7.56$), years of professional experience ($M = 5.10$; $SD = 0.90$) and also their marital (26% married) and parental (19% parents) status. Psychology students were generally a homogeneous group concerning their age ($M = 19.19$; $SD = 0.56$) and the other three variables – since none of them had any professional experience and were neither married nor had children.

Because of gender differences in attitudes towards adoption (Gibbons, Rufener, & Wilson, 2006) and a disproportionately larger interest of female students in these occupations in Croatia, all participants in this study were female. To control for the possible effects of the experimenter's characteristics (Argentino, Kidd, & Bogart, 1977) on participants' attitudes, the entire experiment was conducted by a 35-year-old single female experimenter.

Instruments and procedure

The research was designed and carried out in accordance with the ethical principles of conducting research (Kodeks etike psihološke djelatnosti, 2004). The collection of data occurred within the classroom and the participants took approximately 20 minutes to fill out a questionnaire. Data collection was anonymous and the participants were instructed to give their honest answers. At the beginning of the questionnaire the participants answered several socio-demographic questions, after which the experimental part of the study began. In this part, the participants' task was to read a vignette and then to estimate the characteristics of a child and his parents using semantic differential. To describe the child, participants used 13 characteristics, each on a bipolar continuum (e.g. reliable - unreliable). The continuum was set on a 7- point scale, with 4 representing the middle of the continuum. To avoid the left-right bias (Darnell, 1966), socially desirable poles were rotated in order to be equally represented on the left and on the right side of the continuum; the same strategy was used in the description of the parents that followed afterwards. To describe the parents, participants used 14 characteristics, each on a bipolar continuum (e.g. active - passive), also set on a 7- point scale. After having finished with the assessment of one child and his parents, participants were instructed to read the following vignette and repeat the procedure with the other boy and his parents.

Two types of vignettes were designed for the purpose of this study (see Table A1 in Appendix A). Both described a situation which is nothing out of the ordinary in a typical school environment, but one was *suggesting the possibility* of externalizing problems, and the other was *suggesting the possibility* of internalizing problems. Each vignette had two versions – one in which all actors were members of the biological family, and the other in which they were members of the adoptive family. Each participant had to read and rate both vignettes, but they always included different family type information. To avoid the order effects (Strack, 1992), the sequence of the vignette presentation (considering information about family and potential problems) was rotated between the participants.

Results

Having in mind that two samples clearly differed in their personal and professional experience with children (a potential moderator variable), 2 x 2 factorial MANOVAs (profession x family) were conducted for each type of vignette concerning a) assessment of the child and b) assessment of the parents. Separate ANOVAs on individual dependent variables were conducted only if the overall multivariate F test was significant; Benjamini & Hochberg (1995) approach to multiple testing was used to control the false discovery rate. Prior to calculating MANOVAs, a series of Pearson correlations were calculated between all the dependent variables (see Tables B1 to B4 in Appendix B); a meaningful pattern of correlations was observed amongst most of the dependent variables, suggesting the appropriateness of a MANOVA.

Externalizing problems

Two-way MANOVA results pointed out that family type had a significant effect (Wilks' $\lambda = 0.67$, $F = 3.52$, $p < 0.01$) on the community's attitudes towards the boy with the indication of externalizing problems, indicating a difference in the implicit attitudes towards the biological and the adopted child. The multivariate effect size was calculated as partial $\eta^2 = 0.33$, which implies that 33% of the variance was accounted for by the family type. No statistically significant effect of the future profession or its interaction with the family type was found. Further ANOVAs revealed that the adopted child that got into a fight is perceived as more inefficient ($F = 5.29$, $p = .023$; $\eta^2 = 0.05$), emotionally unstable ($F = 8.23$, $p = .005$; $\eta^2 = 0.07$), sad ($F = 10.63$, $p = .001$; $\eta^2 = 0.09$), unsuccessful at school ($F = 6.54$, $p = .012$; $\eta^2 = 0.06$) and with lower learning motivation ($F = 8.27$, $p = .005$; $\eta^2 = 0.07$) than the biological child (Figure 1).

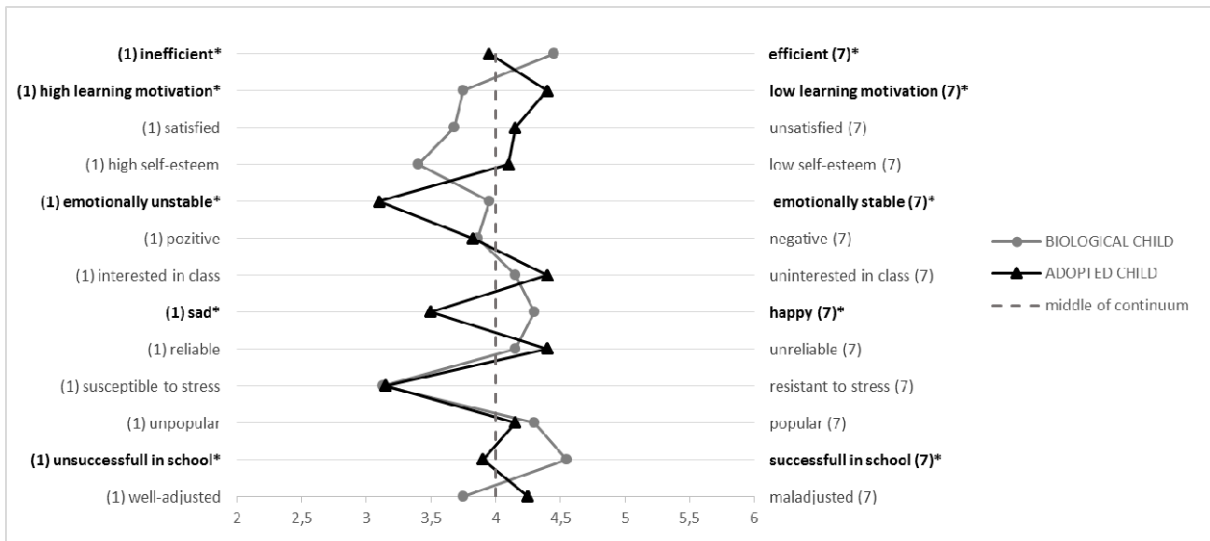


Figure 1. The profile of the child (biological and adopted) with the indication of externalizing problems created upon the assessments of future experts in child development and education ($N = 110$)

A two-way MANOVA revealed no significant effect of the family type, future profession or the interaction of the two on community's attitudes towards the parents of the boy with the indication of externalizing problems (Figure 2).

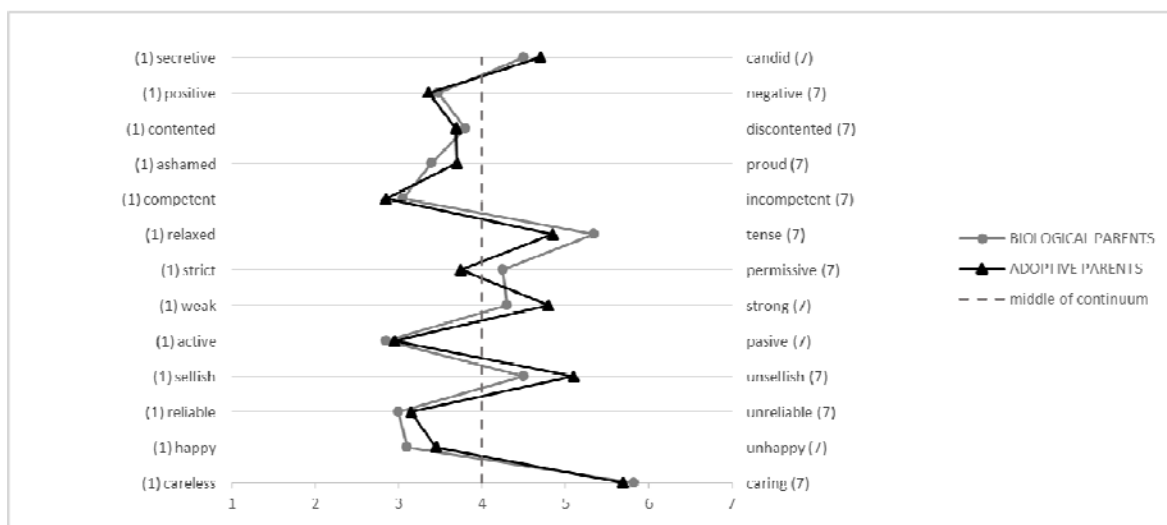


Figure 2. The profile of the parents (biological and adoptive) of the child with the indication of externalizing problems created upon the assessments of future experts in child development and education ($N = 110$)

Internalizing problems

No statistically significant multivariate effects were found on the community's attitudes towards the boy with the indication of internalizing problems, suggesting there is no difference in the implicit attitudes towards the described child, regardless of the type of family he belongs to and the future profession of the students who assessed him (Figure 3).

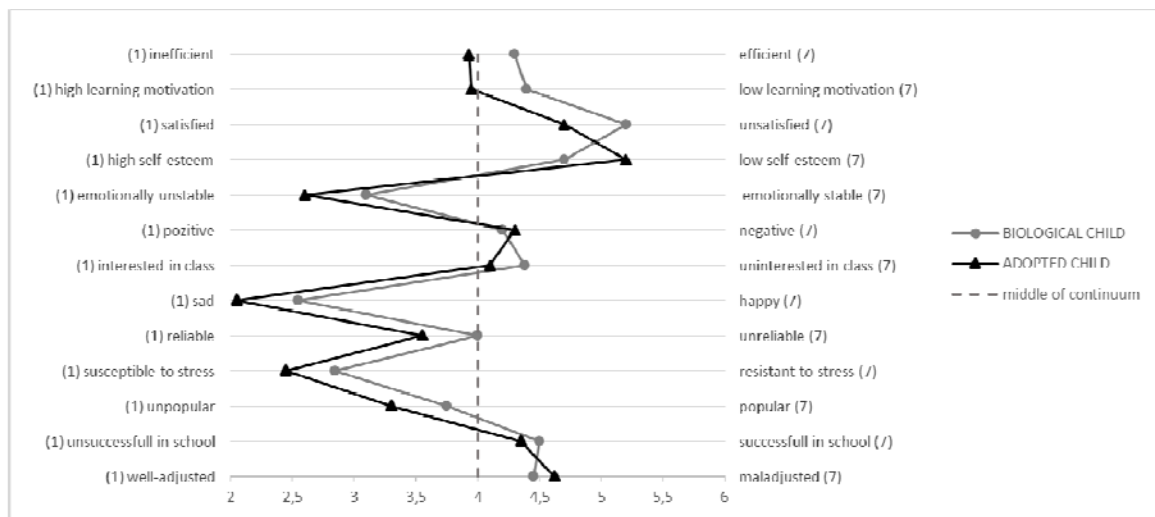


Figure 3. The profile of the child (biological and adopted) with the indication of internalizing problems created upon the assessments of future experts in child development and education ($N = 110$)

A two-way MANOVA was used to determine the effects of family type and the future profession on implicit attitudes towards the biological and adoptive parents of the child with the indication of internalizing problems. The MANOVA revealed a significant effect of the family type (Wilks' $\lambda = 0.69$, $F = 2.95$, $p < .01$) on the community's attitudes towards the parents of the boy with the indication of internalizing problems, indicating a difference in the implicit attitudes towards the biological and the adoptive parents. The multivariate effect size (partial $\eta^2 = 0.31$), suggests that 31% of the variance can be explained by the family type. Additionally, MANOVA indicated significant difference for future profession (Wilks' $\lambda = 0.76$, $F = 2.07$, $p < .05$; partial $\eta^2 = 0.24$). There was no statistically significant multivariate interaction effect.

Further ANOVAs indicated that the adoptive parents of the child that keeps to himself are perceived as more successful ($F = 8.93$, $p = .003$; $\eta^2 = 0.08$), proud ($F = 5.54$, $p = .020$; $\eta^2 = 0.05$), competent ($F = 9.08$, $p = .003$; $\eta^2 = 0.08$), active ($F = 11.45$, $p = .001$; $\eta^2 = 0.10$), unselfish ($F = 20.84$, $p = .001$; $\eta^2 = 0.17$) and reliable ($F = 10.05$, $p = .002$; $\eta^2 = 0.09$) than the biological parents (Figure 4). As for the further individual ANOVAs that followed the discovery of the significant main effect of future profession, the only two initially significant F -ratios (weak-strong, active-passive) after Benjamini & Hochberg (1995) approach that was used to control for the false discovery rate - were not proven to be statistically significant.

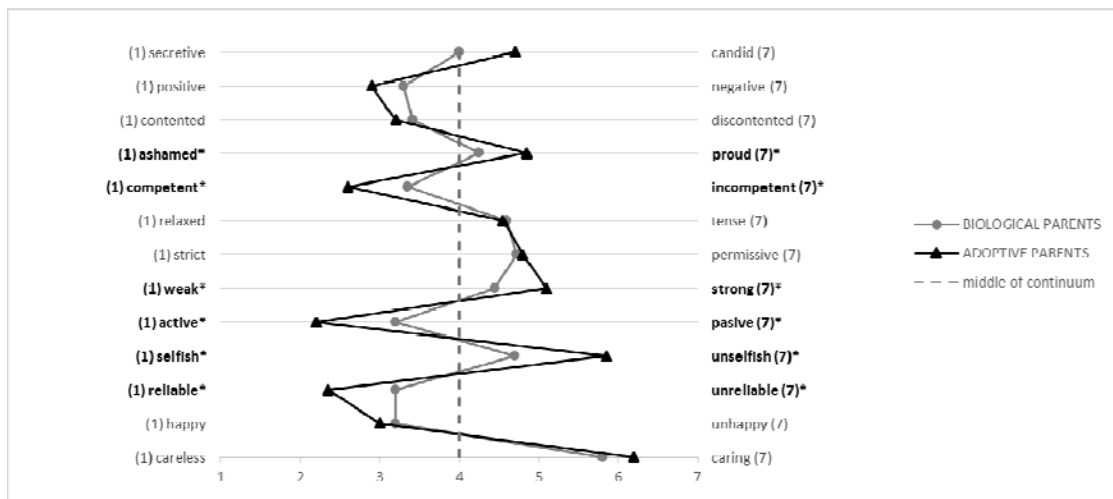


Figure 4. The profile of the parents (biological and adoptive) of the child with the indication of internalizing problems created upon the assessments of future experts in child development and education ($N = 110$)

Discussion

The present study demonstrated that implicit attitudes towards adoptive family members are context-dependent. This proved to be true for the adopted child - whom future experts in child development and education rated differently (more negatively) than the biological child only in the externalizing-problems context, and also for the adoptive parents - whom they rated differently (more positively) than the biological parents only in the internalizing-problem context. Throughout the rest of this section, some limitations of the current work will be discussed, the present findings with regard to prior studies will be commented and the practical contribution of the present work in the broader context will be annotated.

Several features of the present work limit the conclusions that can be drawn regarding the effect of the family type on the implicit attitudes of future experts in child development and education. First, the sample was convenient and therefore less generalizable; the results would be even more convincing if the study included a more heterogeneous group of experts - with a wider range of their professions (e.g. teachers, social workers, doctors) and greater diversity in the quantity and quality of personal and professional experience with children. Next, all participants were females and the targets in both vignettes were males; due to possible interaction effect of the participant's gender and the assessed child's gender (Condry & Condry, 1976), future studies should include both male and female subjects and also both male and female targets. Also, implicit attitude measures used in this study detected differences in the *perception* of adoptive family members, however, no additional measures of *behavior* towards them were used, which might prove beyond speculation that (future) experts behaved in accordance with their implicit attitudes. Finally, although vignettes were deliberately designed to be applicable for any child in everyday condition, the inclusion of different intensity levels of potential problems would provide higher external validity.

Results of present research are in accordance with the National Adoption Attitudes Survey (2002) that revealed more negative explicit attitudes of Americans towards the adoptees and more positive explicit attitudes towards the adoptive parents. This suggests that people - when presented with no "specific situation" (i.e. specific adoptive family member) - assess adoptive family members upon the existing stereotype of adopted children as "potential problem" and adoptive parents as "saviors". However, results of present research also suggest that - when faced with the specific adoptive family member - their attitudes depend on the information they gather (personally or from others). This finding presents a matter of great concern, particularly the negative trend related to adopted children - who are at risk of being underestimated in academic capacities, negatively perceived in social interactions and observed for potential psychological problems. If such perceptions of others are accompanied by congruent behaviors, negative outcomes for the adopted child could be far-reaching. As Brodzinsky pointed out in his multidimensional Stress and Coping Model of Children's Adoption Adjustment (1993), children's adjustment to adoption depends highly on how they view or appraise their adoption experience; if they - due to the reactions of others - perceive adoption as stigmatizing, this can trigger

negative emotions associated with stress and (if inadequate coping mechanisms are used) lead to increased adjustment problems.

The present results suggest that future psychologists tend to have negative implicit attitudes towards adoptees, and this poses a threat that they will act accordingly when working with an adoptee, contributing to an over-representation of adoptees in mental health settings. If these results were proven to be applicable for other child-related professions e.g. teachers, this would lead to a much higher percentage of adopted children being perceived more negatively or expected to underachieve, since externalizing behavior patterns disrupt the classroom environment, allowing even the most novice teachers to recognize and act upon it; unlike the internalizing behaviors that often stay undetected (Lane & Walker, 2015). And since the Golem effect (Babad, Inbar, & Rosenthal, 1982) implies that negative expectations placed upon individuals might actually lead to poorer performance – it is strongly advisable to include adoption-related topics in the formal education of future professionals that will work with children, raise public awareness regarding this problem and try to change negative attitudes by means of social influences as well as individual's reactions to cognitive dissonance.

Conclusion

Present research demonstrated that adoptive family members in Croatia accurately perceive other people's attitudes towards them. It seems that the implicit attitudes of the community are under the influence of the informational context; the negative stereotype of an adoptee as a "problematic child" emerges at the first sign of interpersonal conflict, while the positive stereotype of adoptive parents as "generous saviors" emerge when there is no sign of fight. Since favoring the troubling child over the one in trouble is not an option, adoption related topics should become mandatory in the education of future experts, raising awareness of the existing problem and fighting it at the same time.

References

- Argentino, C. M., Kidd, A. H., & Bogart, K. (1977). The effects of experimenter's sex and subject's sex on the Attitudes Toward Women of fraternity, sorority, and mixed dormitory residents. *Journal of Community Psychology*, 5(2), 186-188.
- Babad, E. Y., Inbar, J., & Rosenthal, R. (1982). Teachers' judgment of students' potential as a function of teachers' susceptibility to biasing information. *Journal of Personality and Social Psychology*, 42(3), 541-547.
- Behle, A. E., & Pinquart, M. (2016). Psychiatric disorders and treatment in adoptees: A meta-analytic comparison with non-adoptees. *Adoption Quarterly*, 19(4), 284-306.
- Benjamini, Y., & Hochberg, Y. (1995). Controlling the false discovery rate: a practical and powerful approach to multiple testing. *Journal of the Royal Statistical Society. Series B (Methodological)*, 57(1), 289-300.
- Benson, P. L., Roehlkepartain, E. C., & Sharma, A. R. (1994). *Growing up adopted: Portrait of adolescents and their families*. Minneapolis: Search Institute.
- Borders, L. D., Black, L. K., & Pasley, B. K. (1998). Are adopted children and their parents at greater risk for negative outcomes? *Family Relations*, 47(3), 237-241.
- Brodzinsky, D. M. (1993). Long-term outcomes in adoption. *The Future of Children*, 3(1), 153-166. d
- Condry, J., & Condry, S. (1976). Sex differences: A study of the eye of the beholder. *Child Development* 47(3), 812-819.
- Darnell, D. K. (1966). Concept scale interaction in the semantic differential. *Journal of Communication*, 16(2), 104-115.
- Fisher, A. P. (2003). Still "not quite as good as having your own"? Toward a sociology of adoption. *Annual Review of Sociology*, 29, 335-361.
- Gibbons, J. L., Rufener, C. A., & Wilson, S. L. (2006). Sex differences in adoption attitudes: The mediating effects of gender role attitudes. *Adoption Quarterly*, 9(2-3), 105-119.
- Kodeks etike psihološke djelatnosti [Ethical code of psychological profession] (2004). Retrieved from http://www.psiholoska-komora.hr/static/documents/dok_kodeks_etike.pdf
- Kokorić, S. B., & Birovljević, J. (2015). Posvojiteljske obitelji – izazovi prilagodbe i reakcije okoline [Adopting families – challenges of adaptation and reactions of the social environment] In D. Maleš (Ed.): *Kako smo postali obitelji: Posvojenje – dio moje priče* (pp. 33-60). Zagreb: Na drugi način.

- Kralj, S., Modić Stanke, K., & Topčić-Rosenberg, D. (2014). *Problemi i potrebe posvojiteljskih obitelji tijekom procesa prilagodbe i integracije posvojene djece u obitelj, odgojno-obrazovne institucije i okolinu* [Problems and needs of adoptive families during process of adjustment and integration of adopted children into families]. Zagreb: ADOPTA.
- Kriebel, D. K., & Whitten, K. (2014). Mental health professionals' attitudes and expectations about adoption and adopted children. *Adoption Advocate* 69, 1-7.
- Lane, K. J., & Walker, H. M. (2015). The connection between assessment and intervention: How can screening lead to better interventions? In B. Bateman, J. W. Lloyd, and M. Tankersley, (Eds.), *Enduring issues in special education: personal perspectives* (pp. 285-301). New York: Routledge.
- Morrison, A. (2004). Transracial adoption: The pros and cons and the parents' perspective. *Harvard BlackLetter Law Journal*, 20, 163-202.
- National Adoption Attitudes Survey (2002). Retrieved from Donaldson Adoption Institute website: http://www.adoptioninstitute.org/old/survey/Adoption_Attitudes_Survey.pdf
- Obiteljski zakon [Family law] (2015). *Narodne Novine*, 103/2015.
- Strack, F. (1992). "Order effects" in survey research: Activation and information functions of preceding questions. In N. Schwarz and S. Sudman, (Eds.). *Context effects in social and psychological research* (pp. 33-60). New York: Springer-Verlag.
- Swinton, J. J. (2011). *Adoptees and behavior problems: A meta-analysis* (Doctoral dissertation, Kansas State University). Retrieved from https://www.researchgate.net/publication/228444715_Adoptees_and_behavior_problems_A_meta-analysis
- Van Ijzendoorn, M. H., Juffer, F., & Poelhuis, C. W. K. (2005). Adoption and cognitive development: a meta-analytic comparison of adopted and nonadopted children's IQ and school performance. *Psychological Bulletin*, 131(2), 301-316.
- Van Ijzendoorn, M. H., & Juffer, F. (2006). The Emanuel Miller Memorial Lecture 2006: Adoption as intervention. Meta-analytic evidence for massive catch-up and plasticity in physical, socio-emotional, and cognitive development. *Journal of Child Psychology and Psychiatry*, 47(12), 1228-1245.
- Warren, S. B. (1992). Lower threshold for referral for psychiatric treatment for adopted adolescents. *Journal of the American Academy of Child and Adolescent Psychiatry*, 31(3), 512-517.
- Wegar, K. (2000). Adoption, family ideology, and social stigma: Bias in community attitudes, adoption research, and practice. *Family Relations*, 49(4), 363-369.

Appendix A

Table A1

Stimulus material used in the study

Vignette with the insinuation of externalizing problems of a biological / adopted child:
Marko is an 8.5-year-old boy that goes to the 3rd grade of elementary school. He is the first and long-desired child of Mr. and Mrs. Jurić, *born/adopted* 3.5 years after their wedding. A week ago, there was a fight on the school playground between Marko and one of his peers and this conflict resulted in an injury. Both boys accused “the other one” of starting the fight, but neither wanted to say what it was about. When they received a phone call informing them of the incident, Marko’s parents (Mr. and Mrs. Jurić) were notably upset.

Vignette with the insinuation of internalizing problems of a biological / adopted child:
David is a 7.5-year-old boy that goes to the 2nd grade of elementary school. He is the only child of Mr. and Mrs. Marić who had been trying to become parents for many years, and with his *birth/adoption*, they finally had their wish come true. Three days ago his teacher noticed his eyes were full of tears, he seemed distracted during the class and was avoiding the other children during the lunch break. When his teacher asked him what was wrong, David said nothing was bothering him. When David’s teacher met his parents (Mr. and Mrs. Marić) the next day and mentioned what she had noticed, they were really concerned.

Appendix B

Table B1

Correlation matrix between all 13 dependent variables / polar adjectives used to describe an 8.5 year-old boy (Marko), the target figure with the insinuation of externalizing problems in the vignette manipulation

	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	M13
M1	1	-.35**	-.29**	-.34**	.35**	-.36*	.44**	.55**	-.53**	.35**	.58**	.46**	-.49**
M2		1	.17	.15	-.15	.17	-.20*	-.29**	.29**	-.03	-.28**	-.38**	.33**
M3			1	.36**	-.25**	.38**	-.24*	-.23*	.36**	-.30**	-.25**	-.14	.24*
M4				1	-.11	.26**	-.03	-.18	.38**	-.06	-.18	-.06	.13
M5					1	.23*	.40**	.48**	-.33**	.39**	.57**	.38**	-.34**
M6						1	-.29**	-.48**	.50**	-.28**	-.42**	-.26**	.46**
M7							1	.49**	-.30**	.29**	.50**	.52**	-.42**
M8								1	-.44**	.36**	.72**	.54**	-.61**
M9									1	-.31**	-.54**	-.48**	.62**
M10										1	.59**	.36**	-.24**
M11											1	.59**	-.51**
M12												1	-.64**
M13													1

* $p < .05$; ** $p < .01$

Note. M1 = well-adjusted – maladjusted; M2 = unsuccessful at school – successful at school; M3 = unpopular – popular; M4 = susceptible to stress – resistant to stress; M5 = reliable – unreliable; M6 = sad – happy; M7 = interested in class – uninterested in class; M8 = positive – negative; M9 = emotionally unstable – emotionally stable; M10 = high self-esteem – low self-esteem; M11 = satisfied – unsatisfied; M12 = high learning motivation – low learning motivation; M13 = inefficient – efficient

Table B2

Correlation matrix between all 14 dependent variables / polar adjectives used to describe the parents of an 8.5-year-old boy (Marko), the target figure with the insinuation of externalizing problems in the vignette manipulation

	MP1	MP2	MP3	MP4	MP5	MP6	MP7	MP8	MP9	MP10	MP11	MP12	MP13	MP14
MP1	1													
MP2		1												
MP3			1											
MP4				1										
MP5					1									
MP6						1								
MP7							1							
MP8								1						
MP9									1					
MP10										1				
MP11											1			
MP12												1		
MP13													1	
MP14														1

* $p < .05$; ** $p < .01$

Note. MP1 = careless - caring; MP2 = happy - sad; MP3 = reliable - unreliable; MP4 = selfish - unselfish; MP5 = active - passive; MP6 = weak - strong; MP7 = strict-permissive; MP8 = relaxed - tense; MP9 = competent - incompetent; MP10 = ashamed - proud; MP11 = contented - discontented; MP12 = positive-negative; MP13 = secretive - candid; MP14 = successful - unsuccessful

Table B3

Correlation matrix between all 13 dependent variables / polar adjectives used to describe a 7.5-year-old boy (David), the target figure with the insinuation of internalizing problems in the vignette manipulation

	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	D11	D12	D13
D1	1												
D2		1											
D3			1										
D4				1									
D5					1								
D6						1							
D7							1						
D8								1					
D9									1				
D10										1			
D11											1		
D12												1	
D13													1

* $p < .05$; ** $p < .01$

Note. D1 = well-adjusted - maladjusted; D2 = unsuccessful at school - successful at school; D3 = unpopular - popular; D4 = susceptible to stress - resistant to stress; D5 = reliable - unreliable; D6 = sad - happy; D7 = interested in class - uninterested in class; D8 = positive - negative; D9 = emotionally unstable - emotionally stable; D10 = high self-esteem - low self-esteem; D11 = satisfied - unsatisfied; D12 = high learning motivation - low learning motivation; D13 = inefficient - efficient

Table B4

Correlation matrix between all 14 dependent variables / polar adjectives used to describe the parents of a 7.5-year-old boy (David), the target figure with the insinuation of internalizing problems in the vignette manipulation

	DP1	DP2	DP3	DP4	DP5	DP6	DP7	DP8	DP9	DP10	DP11	DP12	DP13	DP14
DP1	1	-.23*	-.50**	.56**	-.46**	.31**	.15	.10	-.25**	.36**	-.32**	-.37**	.43**	-.30**
DP2		1	.50**	-.29**	.36**	-.20*	.01	.07	.34**	-.32**	.72**	.51**	-.34**	.52**
DP3			1	-.53**	.64**	-.34**	-.10	-.13	.56**	-.27**	.57**	.54**	-.38**	.53**
DP4				1	-.56**	.42**	.31**	.04	-.39**	.45**	-.42**	-.53**	.52**	-.45**
DP5					1	-.46**	-.11	.04	.51**	-.32**	.45**	.59**	-.36**	.36**
DP6						1	.06	-.08	-.36**	.35**	-.31**	-.50**	.37**	-.24*
DP7							1	.00	-.14	.31**	-.23*	-.24*	.13	-.23*
DP8								1	-.01	-.02	.22*	.19*	-.11	.17
DP9									1	-.37**	.44**	.52**	-.30**	.40**
DP10										1	-.52**	-.47**	.45**	-.45**
DP11											1	.68**	-.46**	.67**
DP12												1	-.45**	.60**
DP13													1	-.34**
DP14														1

* $p < .05$; ** $p < .01$

Note. DP1 = careless - caring; DP2 = happy - sad; DP3 = reliable - unreliable; DP4 = selfish - unselfish; DP5 = active - passive; DP6 = weak - strong; DP7 = strict-permissive; DP8 = relaxed - tense; DP9 = competent - incompetent; DP10 = ashamed - proud; DP11 = contented - discontented; DP12 = positive-negative; DP13 = secretive - candid; DP14 = successful - unsuccessful

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The contribution of life stress, trait anxiety, anxiety sensitivity and perimenopausal complaints to depressive symptoms in middle-aged women

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Abstract

Objective: The menopausal transition is associated with physical and psychological changes in women, one of which is a higher risk of developing depressive symptomatology and depression. This study focused on the nature of the relationship between menopausal transition and the severity of depressive symptoms. Specifically, it aimed to establish the contribution of specific and non-specific perimenopausal complaints to predicting the development of depressive symptoms, while controlling for various psychosocial characteristics and women's menstrual cycles and bleeding.

Method: A sample of 660 women, 35-52 years of age, was selected from a wider sample from an online survey examining psychosocial changes in middle-aged women. A hierarchical regression analysis was conducted, in which the model included a number of severe life stress experiences, measures of various perimenopausal change-related variables and results from the STAI-T (Trait Anxiety Scale) and ASI (Anxiety Sensitivity Index). The outcome variable was the severity of depressive symptoms, as measured by the BDI-II.

Results: When controlling for severe life stress experience, changes in menstrual pattern and menstrual and premenstrual symptoms and the personality traits of anxiety and anxiety sensitivity, a five-step hierarchical regression analysis explained more than 64% of the variance in BDI-II scores, thus partially confirming our hypothesis concerning the contribution of specific and non-specific perimenopausal changes in predicting depressive symptoms among middle-aged women.

Conclusion: Perimenopausal middle-aged women were found to have elevated depressive symptoms when faced with more severe life stress events in the preceding year, when they were more prone to react to stress with anxiety and when they experienced more severe non-specific perimenopausal complaints (dysfunction of affective nature, reduced cognitive capacities and sexual difficulties and dysfunction) in the preceding year.

Keywords: middle-aged women, perimenopausal complaints, trait anxiety, anxiety sensitivity, depressive symptoms

Depression is the most prevalent mental disorder today, representing a heavy health burden in many countries (Kessler & Bromet, 2013; Lépine & Briley, 2011). In general, women are more likely to develop depressive symptoms and clinical depression than men. This gender difference is evident from puberty until the mid-50s, while no differences exist during childhood and old age (Cyranowski, Frank, Young & Shear, 2000; Albert, 2015). These gender differences coincide with the reproductive period in women's life and are consistent across different cultures and countries. As such, a considerable number of studies related to depressive symptomatology have focused on the periods of biological reproductive hormonal changes in the lives of women: puberty, postpartum and menopausal transition (MT).

Although most women in the midlife period do not experience depressive symptoms, clinical and epidemiological studies, as well as longitudinal and cross-sectional studies, have long demonstrated that the menopausal transition represents a vulnerable period for the development of depressive symptomatology and clinical depression. This risk increases gradually from early to late perimenopause and declines in postmenopause (Bromberger et al., 2001, 2007, 2011; Freeman, Sammel, Boorman & Zhang, 2014). Perimenopause encompasses the entire menopausal transition and early postmenopause period (staging system in women's reproductive life, STRAW + 10; Harlow et al., 2012). This period is marked by increased variability in the menstrual cycle, longer periods of amenorrhea, fluctuating hormone levels and anovulatory cycles. During perimenopause, women experience many physiological and psychological symptoms as a result of hormonal changes, such as vasomotor symptoms (hot flashes and night sweats) (Thurston & Joffe, 2011), sexual problems and vaginal dryness, sleep disturbances and depressed mood (Prairie et al., 2015) and increased anxiety (Bromberger et al., 2013; Bryant, Judd & Hickey, 2012). The majority of research examining depression among women in the menopausal transition has focused on depressive symptomatology and less on the depressive disorder. Indeed, clinical depression is not considered to be a normal part of the menopausal transition. However, although it is much less common, it is nevertheless slightly more prevalent in the perimenopausal period. Studies have demonstrated an increased risk of depression when other predisposing factors are present, such as a history of depressive episodes, poor physical health or discomfort arising from the somatic symptoms associated with the transition (particularly vasomotor symptoms), severe life stressors, lack of or inadequate social support, etc. (Blake, 2006; Gyllstrom, Schreiner & Harlow, 2007; Schmidt & Rubinow, 2009; Bromberger et al., 2011). A recent meta-analysis (Weber, Maki & McDermott, 2014) that included two longitudinal studies examined the relationship between perimenopause and cognition as well as perimenopause and depression. Results of this analysis demonstrated that perimenopausal and postmenopausal women are more likely to experience symptoms of depression and meet the criteria for a diagnosis of major depression in comparison with premenopausal women.

The nature of the relationship between depression and perimenopause has not yet been fully explained. Furthermore, attempts at understanding this relationship are complicated by the influence that hormonal changes have on mental health and vice versa, as well as the effect of mental health on hormones and on physical health in general. Perimenopause is a heterogeneous period with respect to whether and which complaints and symptoms women will experience. However, because increased depressive symptoms in perimenopause have been positively related to reduced quality of life (Avis et al., 2009.), they remain an important subject of scientific interest, as does the examination of the specific characteristics that increase women's vulnerability to increased depressive symptoms.

Studies have shown that various psychosocial factors increase the likelihood of experiencing depressive symptoms during the menopausal transition and are, in some cases, more important than menopausal status (Bromberger et al., 2007.). The psychosocial factors examined in these studies were mainly indicators of certain characteristics and life experiences before or during the menopausal transition (e.g. stressful events and inadequate social support). There is currently a lack of studies examining the contribution of more stable psychological traits related to women's emotional or cognitive functioning. In one longitudinal study, Bromberger & Matthews (1996) confirmed that midlife stress, optimism and trait anxiety are important predictors of depressive symptoms during midlife.

Anxiety sensitivity has also been associated with depression. Depressed individuals tend to report higher levels of anxiety sensitivity than non-depressed controls (Otto, Pollack, Fava, Uccello & Rosenbaum, 1995) and more psychological (rather than physical or social) concerns, such as fear of losing control when anxious, in particular (Cox, Enns & Taylor, 2001).

The aim of this study was to verify the contribution of specific and nonspecific perimenopausal symptoms to explaining depressive symptom severity in middle-aged women when controlling for personality traits (specifically, anxiety and anxiety sensitivity) and other characteristics and features of the reproductive period. Research has suggested that elevated depressive symptoms prior to transition may increase vulnerability (Avis, Brambilia, McKinlay & Vass 1994) and that experiences in the early stage of menstrual transition shape expectations and attitudes towards menopause, and therefore the manner

in which women adjust to later change experiences during and after the menopausal transition (Avis & McKinley, 1991). As such, this study included younger women who were predominantly in the early menopausal transition stage and who were still menstruating. We hypothesized that all psychosocial predictors of stressful life circumstances, personality traits as well as physical and psychological changes and disturbances over the last year related to menstruation and menopausal transition would make a significant and independent contribution to the explanation of depressive symptom severity in the sample of middle-aged women. In addition, we anticipated that the early physical and psychological changes associated with menopausal transition represent a distress-provoking situation, especially for women with elevated trait anxiety and psychological worries, as well as severe life stress experiences and severe changes in the menstrual pattern and menstrual and premenstrual symptoms.

Method

Participants and procedure

The present study included 660 premenopausal and early perimenopausal women selected from a larger sample of 3184 women who had participated in an online survey examining biopsychosocial changes among middle-aged women. The women in the sub-sample used in the present study were selected according to sociodemographic and other characteristics that might influence menopausal transition. Specifically, because biological hormonal changes and reproductive aging preceding menopause begin much earlier than when the first observable signs are perceived, only women above the age of 35 were selected (Muslić & Jokić-Begić, 2016). Additionally, because certain diseases and reproductive history can affect menopausal transition, women with no psychological or physical illness (such as hormonal disorders or reproductive system or breast cancers) and with a history of at least one birth were eligible for this study. In order to investigate the early perimenopausal period specifically, the majority (91%) of women included in the sample reported regular periods or had had at least three periods in the previous six months.

The final sample consisted of 660 women aged 35-52 years ($M=42.6$; $SD=4.5$) who had at least one child and no psychological or physical illness that might affect the menopausal transition. The majority of women were married (77.6%), had a post-secondary level of education and were employed (93.5%).

Measures

In order to measure various variables that might contribute to the development of depressive symptomatology in middle-aged women, the following measures were used:

The severe life stress check list (SLE), a measure included in the *Socio-demographic and Anamnestic Questionnaire (SAQ)*, constructed for the purpose of a broader study of biopsychosocial changes in middle-aged women (Muslić & Jokić-Begić, 2016), was used to measure the number of severe life stress experiences in the last year (e.g. death of a loved one, divorce, losing a job). The Socio-demographic and Anamnestic Questionnaire also contains general questions regarding demographic and socioeconomic characteristics, as well as questions related to health status, hormonal and other medications, prenatal and antenatal experiences, and menstruation pattern in the last year.

Trait Anxiety Scale (STAI-T), a sub-scale of the widely used *State-Trait Anxiety Inventory (STAI)* (Spielberger, 1989), was employed to measure the level of anxiety as a personality trait. This sub-scale consists of 20 items that evaluate how a participant generally feels (e.g. *I worry too much over something that really doesn't matter*), with response values ranging from never (1) to almost always (4) for each item. Higher scores indicate a greater personal tendency to react with anxiety. A Cronbach's α coefficient ($\alpha=.93$) demonstrated excellent internal reliability in the sample used in the present study (Muslić & Jokić-Begić, 2016).

To measure anxiety sensitivity as a personality trait, or the stable tendency to fear anxiety-related symptoms due to a belief that they may be dangerous or harmful, the 16-item **Anxiety Sensitivity Index (ASI)** (Reiss, Peterson, Gursky & McNally, 1986; Peterson & Reiss, 1992) was used. On a 5-point scale ranging from very little (0) to very much (4), respondents rate the degree to which their experience corresponds to the experience described in each item (e.g. *When I am nervous, I worry that I might be mentally ill*). Higher scores indicate a higher level of anxiety sensitivity. Based on a psychometric evaluation of the ASI conducted with a large and diverse non-clinical sample of Croatian adults (Jurin, Jokić-Begić & Korajlija, 2011), the results from the three lower-order factors (Physical Concerns, Psychological Concerns or Mental incapacitation and Social Concerns) were used in this study. The results

in our sample also demonstrated satisfactory internal reliability, ($\alpha_{\text{social concerns}} = .57$, $\alpha_{\text{psychological concerns}} = .86$ and $\alpha_{\text{physical concerns}} = .90$) (Muslić & Jokić-Begić, 2016).

For a broader examination of biopsychosocial changes among middle-aged women, several specific scales were constructed to measure transition-related physical and psychological changes and disturbances. These scales were constructed by first conducting a mixed-method pilot study, followed by validity and reliability analysis (Muslić & Jokić-Begić, 2016): To measure the severity of changes in women's bleeding and menstrual pattern over the last year, the **Change in menstrual pattern rating scale (MP-C)** was used. This scale is composed of 11 statements describing various menstrual changes, such as the shortening or extension of the menstrual cycle, the unpredictability of the length of a period, small irregular bleeding, lighter and shorter bleeding and stronger blood loss (e.g. *My menstrual cycle is shorter*). Because the scale was used to measure the severity of overall bleeding and menstrual pattern changes experienced over the last year irrelevant of the type and quality of change, the result was expressed as a total sum of the reported severity of changes on a 5-point scale, ranging from not at all (0) to very strong (4), with possible results ranging from 0 to 44 points. The scale demonstrated acceptable internal consistency ($\alpha = .70$).

To measure the perceived severity of exacerbation of premenstrual and menstrual symptoms over the last year, the **Change in menstrual and premenstrual symptoms rating scale (PMS-C)** was used. Using a 5-point scale ranging from 0 (not at all) to 4 (very strong), respondents indicated the degree to which the symptoms described in 4 items had exacerbated over the previous year (e.g. *My periods have become exhausting*). The total result is the sum of all responses, with higher scores indicating higher perceived severity of exacerbation. This scale demonstrated good internal consistency ($\alpha = .81$).

The **Perimenopause distress rating scale (PeriM-D)** measures various specific and non-specific physical and psychological changes experienced by women during perimenopause. The scale consists of 33 items (e.g. *I am more restless and anxious over the last year or I experience sudden onset of night sweats*) that address 7 different dimensions of perimenopausal distress: affective disturbances (AD), vasomotor symptoms (VM), cognitive complaints (CC), urogenital problems (UP), sexual problems (SP), physical pain and discomfort (PhP&D) and sleep disturbances and fatigue (SD&F). The overall result is expressed as the total sum of scores on a 5-point scale ranging from 0 (not at all) to 4 (very strong). Total scores range from 0 to 132, with higher scores indicating the higher overall severity of experienced perimenopausal distress over the last year. The Cronbach's alpha result ($\alpha=.95$) demonstrates the scale's high internal consistency in the present sample. For the purpose of the present study, individual results were also calculated for each dimension. These results indicate the severity of different physical or psychological dimensions of perimenopausal distress in the present sample.

The **Beck Depression Inventory - Second Edition (BDI-II)** (Beck, Steer & Brown, 1996) was used to measure the severity of depressive symptomatology, the dependant variable in this study. It is one of the most commonly used self-rating scales to determine the severity of depression in adults and children older than 13 and demonstrates good internal consistency and reliability. The questionnaire consists of 21 items, each item measuring a mood range that is described in statements on a 4-point scale (e.g. *I do not feel sad* (0), *I feel sad* (1), *I am sad all the time and I can't snap out of it* (2) *I am so sad and unhappy I can't stand it* (3)). Participants are asked to choose the statement that best describes their mood in the last 2 weeks. Total scores range from 0 to 63, where a higher total score indicates the greater severity of depressive symptoms. The Croatian version of the BDI-II has been validated in a primary health care setting (Jakšić, Ivezić, Jokić-Begić, Surányi & Stojanović-Špehar, 2013) and demonstrates high internal consistency, with a Cronbach's $\alpha=.94$ in adult primary health care patients. In the sample from the present study, the BDI-II also demonstrated high internal consistency ($\alpha=.91$).

Results

Preliminary statistical consideration

In light of the sample selection criteria, mean scores on all study measures indicated expected values (Table 1). In accordance with the age range of the participants, their (mental) health status and reported perimenopausal experience, women demonstrated lower levels of overall changes related to the common menstruation pattern and cycles and physical and psychological perimenopausal distress. Over half of the women reported that they had experienced no severe stressful event during the preceding year. The data regarding trait anxiety indicated a normal distribution, while the measure of anxiety sensitivity demonstrated a slightly lower mean level. BDI-II scores indicated a very low level of depressive symptomatology in the sample, where 87% of women fell below the cut-off score of 16 (Jakšić, Ivezić, Jokić-Begić, Surányi & Stojanović-Špehar, 2013).

Table 1
Mean scores on study measures

MEASURES	<i>M</i>	<i>SD</i>	RANGE
Severe life stress experience	0.45	0.69	0-5
Menstrual Pattern Change	7.16	5.47	0-27
Premenstrual and Menstrual Symptoms Change	3.01	3.27	0-15
Trait Anxiety	41.19	9.91	20-75
Anxiety Sensitivity	31.30	10.73	16-69
Physical concerns	15.06	6.34	8-39
Psychological concerns	10.28	4.53	6-28
Social concerns	5.96	1.87	2-10
Perimenopausal Distress	24.34	19.94	0-117
Affective disturbances	6.87	7.1	0-32
Vasomotor symptoms	1.19	2.11	0,12
Cognitive complaints	4.78	4.18	0-20
Urogenital problems	2.47	2.98	0-20
Sexual problems	2.42	2.5	0-11
Physical pain and discomfort	4.34	4.33	0-24
Sleep disturbances and fatigue	2.25	2.42	0,12
Depressive symptoms	7.16	7.49	0-58

In line with the current recommendations for conducting multiple regression analysis (Tabachnik & Fidell, 2007; Field, 2009), preliminary analysis indicated that all assumptions for regressions were met. Preliminary analysis of intercorrelations (Table 2) indicated that almost all predictors were significantly correlated, ranging from $r=.10$ to $r=.70$. Perceived menstrual pattern change and menstrual and premenstrual symptom exacerbation showed no significant correlations with anxiety and anxiety sensitivity personality traits, although they correlated significantly with depressive symptomatology.

Depressive symptomatology was most highly correlated with trait anxiety ($r=.74, p<.01$), the psychological component of anxiety sensitivity ($r=.56, p<.01$) and the following types of perimenopausal complaints: affective disturbances ($r=.63, p<.01$) and cognitive complaints ($r=.55, p<.01$).

Predicting depressive symptomatology

In order to explore the contribution of specific perimenopausal complaints on depressive symptomatology, a five-step hierarchical multiple regression (HMR) was carried out. This analysis is presented in Table 3.

In order to control for stressful life circumstances, *Step 1* of the analysis included the number of reported stressful life events in the preceding year. Because the sample included women who were still menstruating, changes in menstrual pattern characteristics over the last year were included in *Step 2*. In this step, these changes were further divided into menstrual pattern change and premenstrual and menstrual symptom changes.

In order to explore the unique contribution of specific personality traits, *Step 3* of the HMR included the trait anxiety variable. The three dimensions of anxiety sensitivity were included in *Step 4*. Because the main goal in the final model was to explore the role of specific and non-specific perimenopausal complaints, these variables were included in the last step (*Step 5*).

An analysis of collinearity indicated results within acceptable limits.

Table 2
Correlations among study variables

Variables	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.
1. Severe life stress experience	1													
2. Menstrual Pattern Change	.10**	1												
3. Premenstrual and Menstrual Symptoms Change	.11**	.48	1											
4. Trait Anxiety	.20***	.23	.39	1										
5. Anxiety sensitivity - physical concerns	.16***	.22	.29	.46***	1									
6. Anxiety sensitivity - psychological concerns	.15***	.28	.39	.62***	.70***	1								
7. Anxiety sensitivity - social concerns	.05	.15	.22	.31***	.35***	.40***	1							
8. Perimenopausal affective disturbances	.21***	.40	.63	.62***	.45***	.58***	.29***	1						
9. Perimenopausal vasomotor symptoms	.08*	.38	.45	.22***	.22***	.27***	.15***	.42***	1					
10. Perimenopausal cognitive complaints	.13***	.46	.52	.46***	.32***	.46***	.23***	.66***	.41***	1				
11. Perimenopausal urogenital problems	.12***	.39	.45	.29***	.26***	.34***	.17***	.52***	.47***	.54***	1			
12. Perimenopausal sexual problems	.12**	.35	.36	.27***	.18***	.27***	.16***	.46***	.34***	.53***	.49***	1		
13. Perimenopausal physical pain and discomfort	.16***	.43	.55	.35***	.31***	.37***	.21***	.58***	.49***	.63***	.59***	.47***	1	
14. Perimenopausal sleep disturbances and fatigue	.13***	.46	.50	.32***	.26***	.29***	.14**	.52***	.56***	.53***	.52***	.42***	.57***	1
Depressive symptoms	.25***	.28**	.39***	.74**	.40***	.56***	.28***	.63***	.25***	.55***	.37***	.40***	.39***	.38***

Note: * $p < .05$; ** $p < .01$; *** $p < .001$

Table 3

Results of a five step hierarchical regression model predicting depressive symptomatology

Predictors	R ² Change	β
Step 1	.06	
Severe life stress experience		.25**
Step 2	.14	
Severe life stress experience		.21**
Menstrual Pattern Change		.1
Premenstrual and Menstrual Symptoms Change		.32**
Step 3	.37	
Severe life stress experience		.1**
Menstrual Pattern Change		.07
Premenstrual and Menstrual Symptoms Change		.08
Trait Anxiety		.68**
Step 4	.01	
Severe life stress experience		.1***
Menstrual Pattern Change		.06
Premenstrual and Menstrual Symptoms Change		.06
Trait Anxiety		.61**
Anxiety sensitivity - physical concerns		-.02
Anxiety sensitivity - psychological concerns		.14**
Anxiety sensitivity - social concerns		.01
Step 5	.05	
Severe life stress experience		.08**
Menstrual Pattern Change		-.08
Premenstrual and Menstrual Symptoms Change		-.04
Trait Anxiety		.52**
Anxiety sensitivity - physical concerns		-.02
Anxiety sensitivity - psychological concerns		.08
Anxiety sensitivity - social concerns		.01
Perimenopausal affective disturbances		.15**
Perimenopausal vasomotor symptoms		-.03
Perimenopausal cognitive complaints		.14**
Perimenopausal urogenital problems		.02
Perimenopausal sexual problems		.11**
Perimenopausal physical pain and discomfort		-.04
Perimenopausal sleep disturbances and fatigue		.04
Total R²	.64**	

** $p \leq .01$

This model accounted for 64% of the BDI-II variance, with all steps of the hierarchical regression model resulting in significant additional changes. The number of stressful events in the preceding year explained 6.4% of the variance in depressive symptoms ($F(1.597)=41.013$, $p=.000$). Menstrual pattern changes and premenstrual and menstrual symptom changes explained an additional 14.1% of the variance ($F(3.595)=53.816$, $p=.000$), while trait anxiety explained another 37.3% ($F(4.594)=525.442$, $p=.000$). Anxiety sensitivity explained an additional 0.7% ($F(7.591)=4.408$, $p=.004$), while specific and non-specific perimenopausal complaints another 4.7% ($F(14.584)=11.844$, $p=.000$). As shown in Table 3, some specific and nonspecific perimenopausal complaints had an impact on depressive symptomatology in middle-aged women after controlling for all other variables. Specifically, the explanation of the variance of depressive symptomatology in the final step of HMR indicates that affective disturbances, cognitive complaints and sexual problems were significantly related to the menopausal transition along with the number of stressful events in the preceding year and trait anxiety. In other words, the results confirmed that specific and nonspecific perimenopausal symptoms significantly contributed to explaining depressive symptom severity in women of middle age when controlling for personality traits (anxiety and anxiety sensitivity specifically) and other characteristics and features of the reproductive period. Middle-aged women who experienced pronounced affective disturbances, cognitive complaints and sexual problems

related to menopausal transition, those who had a higher trait anxiety and those who had experienced more severe life stressors in the year preceding the study were at greater risk of developing increased depressive symptomatology.

Discussion

For decades, studies have demonstrated a relationship between the menopausal transition and depressive symptoms in middle-aged women. However, the nature of this relationship is not yet completely understood, especially with regard to the contribution of various specific and nonspecific menopausal complaints prior to and in the early stages of menopausal transition, when the risk of developing depressive symptoms is increasing. Therefore, the diversity of women's perimenopausal experiences and their vulnerability to increased depressive symptoms was the focus of this study.

The present study included premenopausal and early perimenopausal women who, at the time of the study, were still menstruating. A hierarchical multiple regression analysis was carried out to investigate how life stress events, trait anxiety, anxiety sensitivity, changes in the bleeding pattern and premenstrual symptoms and different specific and nonspecific menopausal complaints were associated with the severity of depressive symptoms. Because current depressive symptoms were used as the outcome measure, the interpretation of the results only allowed for conclusions regarding depressive symptoms, and not the diagnosis of clinical depression.

The results in the final model demonstrated that nonspecific perimenopausal complaints related to affective and cognitive disturbances and sexual problems predicted the development of depressive symptomatology over and above the effect of stress experiences and anxiety. Specifically, affective disturbances, cognitive complaints and sexual problems were found to have a statistically significant contribution to explaining depressive symptoms in perimenopausal women. In contrast, vasomotor symptoms, urogenital problems, physical pain and discomfort and sleep difficulties and fatigue did not demonstrate this kind of contribution when stress level, trait anxiety and anxiety sensitivity were controlled for. Consistent with other existing data (Blake, 2006; Gyllstrom, Schreiner & Harlow, 2007; Schmidt & Rubinow, 2009; Bromberger et al., 2011), these findings support the conclusion that psychosocial factors play a greater role than physical problems and disturbances in the development of depressive symptomatology during early menopausal transition. In contrast, some studies have suggested that physical symptoms (primarily vasomotor) may represent important risk factors for depressed mood and the onset of major depression during menopausal transition (Hunter & Rendall, 2007; Gyllstrom, Schreiner & Harlow, 2007; Hunter & Mann, 2010; Bromberger et al., 2015). These findings are primarily from longitudinal studies and include women above the age of 45 years. As such, this difference might be explained by age difference, where women in the present study were younger and had low levels of perceived and visible signs of perimenopause, such as vasomotor symptoms.

In the present study, trait anxiety was shown to have an important contribution to explaining the variance in depressive symptoms. This result was expected because anxiety has frequently been associated with depressive symptomatology and depression. Anxiety has been found to contribute highly to depressive symptomatology, not only among perimenopausal women (Kravitz, Schott, Joffe, Cyranowski & Bromberger, 2014) but also among men and in other life periods (Potvin et al., 2013). Higher trait anxiety has also been found in women with subsequent MDD episodes during midlife, a finding that is true in groups with and without baseline lifetime MDD (Bromberger et al., 2015.).

Elevated anxiety sensitivity, i.e. the psychological component of fear of losing cognitive control, has also been associated with depression (Naragon-Gainey, 2010). However, the present study indicated no contribution of anxiety sensitivity to depressive symptomatology after perimenopausal complaints were entered into the model. Similar to previous findings examining the contribution of anxiety sensitivity to perimenopausal distress in middle-aged women (Muslić & Jokić Begić, 2016), highly anxiety sensitive women in the present study reported more intense changes related to emotional and cognitive capacities that might, in turn, increase worry and reduce self-perception, thus leading to a more depressive mood. However, when symptoms that had the potential to trigger such worries were entered in the next step of the prediction model, they canceled out the contribution of anxiety sensitivity. This suggests that the symptoms themselves increased distress and led to higher depressive symptomatology among women with lower stress tolerance (affected by previous severe life stress and an individual predisposition to react with anxiety symptoms in stressful situations). These findings should be further verified among women who are more highly affected by perimenopausal changes.

The main limitation of the present study is the research design. Specifically, the cross-sectional design made it impossible to draw conclusions regarding the causal relationship between affective

problems, cognitive complaints and sexual problems during menopausal transition and depressive symptomatology. It is possible that women who experience these problems more severely are more likely to subsequently experience depressive symptoms. However, it is also possible that women who are more prone to depression are more likely to experience more affective, cognitive and sexual problems. For a better insight into this relationship, future studies should use longitudinal designs that would follow women from the time at which no perimenopausal symptoms were present until late perimenopause. This form of longitudinal research was conducted by Freeman et al. (2006), who demonstrated that, among women with no history of depression, there was an increase in depressive symptoms and an increased likelihood of developing a depression disorder during menopause, as compared with the premenopausal period. Another longitudinal study (Cohen, Soares, Vitonis, Otto & Harlow, 2006) that followed premenopausal women for six years obtained similar results, in which women entering perimenopause were found to be twice as likely to meet the diagnostic criteria for depressive disorder as those who remained premenopausal. It should be noted that a longitudinal design should preclude the use of retrospective statements from women about the regularity and number of menstrual cycles in the preceding year and six month period, as such recalls are often unreliable. The accuracy of measuring individual reproductive status within the perimenopausal period might be improved by determining related hormonal levels in blood samples.

In addition, future studies might examine other psychosocial factors possibly influencing the development of depressive symptomatology during the menopausal transition and implement more sensitive measures of life stress and coping mechanisms. Finally, the nature of the perimenopausal contribution to depressive symptomatology should be verified with both clinical and non-clinical samples of women of various menopausal statuses and ages.

Despite the above mentioned limitations, this study suggests that experts need to be aware of the potential vulnerability of women with a history and stable tendency to react with increased anxiety symptoms to stressful situations. Furthermore, women complaining of affective and cognitive disturbances and sexual problems related to the menopausal transition should be monitored more closely for elevated depressive symptoms during and after the menopausal transition. The results of this study also indicate that, when working with early perimenopausal women, health professionals should place more emphasis on the value of psychological interventions aimed at improving our understanding of how the menopausal transition affects cognition and emotion and strengthening capacities in dealing with changes directly or indirectly related to this period. Specifically, a standard part of women's health care should include initiating a dialogue about the menopausal transition and related changes at the age of 40 (and earlier) and being alert to the subtle signs of perimenopausal complaints, including depressive mood.

Conclusion

The risk of developing depressive symptoms increases among women in the perimenopausal period. Women who experience affective, cognitive and sexual problems related to menopausal transition, those who experienced severe life stress and those who tend to respond to difficult situations with anxiety seem to be at greater risk of increased depressive symptomatology. The findings from the present study suggest that, among menstruating women who have less experience with perimenopausal changes, perimenopausal complaints pertaining to psychological complaints and problems increase vulnerability to experiencing depressive symptoms. In contrast, complaints relating to physical problems and disturbances show no such contribution to depressive symptomatology. These findings suggest the need for preventive actions focused on psychological counseling prior to the period that precedes menopause. Longitudinal research and more precise measures of perimenopausal status might further improve our knowledge regarding the risk factors related to the development of depressive symptoms and depression in women entering the menopausal transition and beyond.

References

- Albert, P.R. (2015). Why is depression more prevalent in women?. *Journal of psychiatry & neuroscience: JPN*, 40(4), 219.
- Avis, N.E., Colvin, A., Bromberger, J.T., Hess, R., Matthews, K.M., Ory, M., & Schocken, M. (2009). Change in health-related quality of life over the menopausal transition in a multiethnic cohort of middle-aged women: Study of Women's Health Across the Nation (SWAN). *Menopause*, 16(5), 860-869.
- Avis, N.E., Brambilla, D., McKinlay, S.M., & Vass, K. (1994). A longitudinal analysis of the association between menopause and depression Results from the Massachusetts women's health study. *Annals of Epidemiology*, 4(3), 214-220.
- Avis, N.E., & McKinlay, S.M. (1991). A longitudinal analysis of women's attitudes towards menopause: Results from the Massachusetts Women's Health Study. *Maturitas*, 13, 65-79.
- Beck, A.T., Steer, R.A., & Brown, G.K. (1996). Beck Depression Inventory-II. *San Antonio, TX*, 78204-2498.
- Blake, J. (2006). Menopause: evidence-based practice. *Best Practice and Research Clinical Obstetrics and Gynaecology*, 20(6), 799-839.
- Bromberger, J.T., & Matthews, K.A. (1996). A longitudinal study of the effects of pessimism, trait anxiety, and life stress on depressive symptoms in middle-aged women. *Psychology and Aging*, 11(2), 207.
- Bromberger, J.T., Meyer, P.M., Kravitz, H.M., Sommer, B., Cordal, A., Powell, L., Ganz, P.A., & Sutton-Tyrrell, K. (2001). Psychologic distress and natural menopause: a multiethnic community study. *American Journal of Public Health*, 91(9), 1435-1442.
- Bromberger, J.T., Matthews, K.A., Schott, L.L., Brockwell, S., Avis, N.E., Kravitz, H.M., ... & Randolph, J.F. (2007). Depressive symptoms during the menopausal transition: the Study of Women's Health Across the Nation (SWAN). *Journal of Affective Disorders*, 103(1), 267-272.
- Bromberger, J.T., Kravitz, H.M., Chang, Y.F., Cyranowski, J.M., Brown, C., & Matthews, K.A. (2011). Major depression during and after the menopausal transition: Study of Women's Health Across the Nation (SWAN). *Psychological Medicine*, 41(09), 1879-1888.
- Bromberger, J.T., & Kravitz, H.M. (2011). Mood and Menopause: Findings from the Study of Women's Health across the Nation (SWAN) over ten years. *Obstetrics and Gynecology Clinics of North America*, 38(3), 609.
- Bromberger, J.T., Kravitz, H.M., Chang, Y., Randolph Jr, J.F., Avis, N.E., Gold, E.B., & Matthews, K.A. (2013). Does risk for anxiety increase during the menopausal transition? Study of Women's Health Across the Nation (SWAN). *Menopause*, 20(5), 488.
- Bromberger, J.T., Schott, L., Kravitz, H.M., & Joffe, H. (2015). Risk factors for major depression during midlife among a community sample of women with and without prior major depression: are they the same or different? *Psychological Medicine*, 45(08), 1653-1664.
- Bryant, C., Judd, F.K., & Hickey, M. (2012). Anxiety during the menopausal transition: a systematic review. *Journal of Affective Disorders*, 139(2), 141-148.
- Cohen, L.S., Soares, C.N., Vitonis, A.F., Otto, M.W., & Harlow, B.L. (2006). Risk for new onset of depression during the menopausal transition: the Harvard study of moods and cycles. *Archives of General Psychiatry*, 63(4), 385-390.
- Cox, B.J., Enns, M.W., & Taylor, S. (2001). The effect of rumination as a mediator of elevated anxiety sensitivity in major depression. *Cognitive Therapy and Research*, 25(5), 525-534.
- Cyranowski, J.M., Frank, E., Young, E., & Shear, M.K. (2000). Adolescent onset of the gender difference in lifetime rates of major depression: a theoretical model. *Archives of General Psychiatry*, 57(1), 21-27.
- Field, A. (2009). *Discovering statistics using SPSS* (3rd ed.). London, England: Sage.
- Freeman, E.W., Sammel, M.D., Lin, H., & Nelson, D.B. (2006). Associations of hormones and menopausal status with depressed mood in women with no history of depression. *Archives of General Psychiatry*, 63(4), 375-382.
- Freeman, E.W., Sammel, M.D., Boorman, D.W., & Zhang, R. (2014). Longitudinal pattern of depressive symptoms around natural menopause. *JAMA Psychiatry*, 71(1), 36-43.
- Gyllstrom, M.E., Schreiner, P.J., & Harlow, B.L. (2007). Perimenopause and depression: strength of association, causal mechanisms and treatment recommendations. *Best Practice & Research Clinical Obstetrics and Gynecology*, 21(2), 275-297.
- Harlow, S.D., Gass, M., Hall, J.E., Lobo, R., Maki, P., Rebar, R.W., ... & De Villiers, T.J. (2012). Executive summary of the Stages of Reproductive Aging Workshop+ 10: addressing the unfinished agenda of staging reproductive aging. *Climacteric*, 15(2), 105-114.
- Hunter, M., & Rendall, M. (2007). Bio-psycho-socio-cultural perspectives on menopause. *Best Practice & Research Clinical Obstetrics and Gynaecology*, 21(2), 261-274.

- Hunter, M.S., & Mann, E. (2010). A cognitive model of menopausal hot flushes and night sweats. *Journal of Psychosomatic Research*, 69, 491–501.
- Jakšić, N., Ivezić, E., Jokić-Begić, N., Surányi, Z., & Stojanović-Špehar, S. (2013). Factorial and diagnostic validity of the Beck Depression Inventory-II (BDI-II) in Croatian primary health care. *Journal of Clinical Psychology in Medical Settings*, 20(3), 311-322.
- Jurin, T., Jokić-Begić, N., & Lauri-Korajlija, A. (2011). Factor structure and psychometric properties of the Anxiety Sensitivity Index in a sample of Croatian adults. *Assessment*, 4, 145- 157.
- Kessler, R.C., & Bromet, E.J. (2013). The epidemiology of depression across cultures. *Annual Review of Public Health*, 34, 119–138.
- Kravitz, H.M., Schott, L.L., Joffe, H., Cyranowski, J.M., & Bromberger, J. T. (2014). Do anxiety symptoms predict major depressive disorder in midlife women? The Study of Women's Health Across the Nation (SWAN) Mental Health Study (MHS). *Psychological Medicine*, 44(12), 2593-2602.
- Lépine, J.-P., & Briley, M. (2011). The increasing burden of depression. *Neuropsychiatric Disease and Treatment*, 7(1), 3–7.
- Muslić, L., & Jokić-Begić, N. (2016). The experience of perimenopausal distress: examining the role of anxiety and anxiety sensitivity. *Journal of Psychosomatic Obstetrics & Gynecology*, 37(1), 26-33.
- Naragon-Gainey, K. (2010). Meta-analysis of the relations of anxiety sensitivity to the depressive and anxiety disorders. *Psychological Bulletin*, 136(1), 128.
- Otto, M.W., Pollack, M.H., Fava, M., Uccello, R., & Rosenbaum, J. F. (1995). Elevated Anxiety Sensitivity Index scores in patients with major depression: Correlates and changes with antidepressant treatment. *Journal of Anxiety Disorders*, 9(2), 117-123.
- Potvin, O., Bergua, V., Swendsen, J., Meillon, C., Tzourio, C., Ritchie, K., ... & Amieva, H. (2013). Anxiety and 10-year risk of incident and recurrent depressive symptomatology in older adults. *Depression and Anxiety*, 30(6), 554-563.
- Peterson, R.A., & Reiss, S. (1992). Anxiety sensitivity index revised test manual. Worthington, Ohio: International Diagnostic Services.
- Prairie, B.A., Wisniewski, S.R., Luther, J., Hess, R., Thurston, R.C., Wisner, K.L. & Bromberger, J.T. (2015). Symptoms of depressed mood, disturbed sleep, and sexual problems in midlife women: cross-sectional data from the study of women's health across the nation. *Journal of Women's Health*, 24(2), 119-126.
- Reiss, S., Peterson, R.A., Gursky, D.M., & McNally, R.J. (1986). Anxiety sensitivity, anxiety frequency and the prediction of fearfulness. *Behaviour Research and Therapy*, 24(1), 1-8.
- Schmidt, P.J., & Rubinow, D.R. (2009). Sex hormones and mood in the perimenopause. *Annals of the New York Academy of Sciences*, 1179, 70-85.
- Spielberger, C.D. (1989). *State-trait anxiety inventory: a comprehensive bibliography*. Palo Alto, CA: Consulting Psychologists Press.
- Tabachnick, B.G., & Fidell, L.S. (2007). *Using multivariate statistics*, 5th. Needham Height, MA: Allyn & Bacon.
- Thurston, R.C., & Joffe, H. (2011). Vasomotor symptoms and menopause: findings from the Study of Women's Health across the Nation. *Obstetrics and Gynecology Clinics of North America*, 38(3), 489.
- Weber, M.T., Maki, P.M., & McDermott, M.P. (2014). Cognition and mood in perimenopause: a systematic review and meta-analysis. *The Journal of Steroid Biochemistry and Molecular Biology*, 142, 90-98.

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Psychometric properties of the Expected/Experienced Emotions related to Menarche Scale

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Abstract

The first period or menarche indicates the beginning of puberty in girls. The experience of menarche is important because it is related to the experience of menstruation later in life. The goal of the study was to develop a new questionnaire of emotional reactions to menarche and to examine its psychometric properties.

In a cross-sectional study, 108 premenarcheal ($M=12.0$ years) and 246 postmenarcheal girls ($M=15.1$ years) filled out the Pubertal Development Scale, Preparedness for the Menarche, and new Expected/Experienced Emotions related to Menarche Scale (Emo-M) constructed for the purpose of this study. The Emo-M consists of 27 pleasant and unpleasant emotions that participants need to rate on a 5-point scale on how they expect they would feel (premenarcheal girls) or how they felt when they got menarche (postmenarcheal girls).

Using exploratory factor analysis, 5 items with unsatisfying factor loadings were excluded and two factors were extracted in both premenarcheal and postmenarcheal girls. Emo-M consists of Pleasant Emotions (11 items) and Unpleasant Emotions subscales (11 items). High reliability (Cronbach α for subscales from .86 to .92), divergent, and discriminant validity of Emo-M scale were demonstrated. Both premenarcheal and postmenarcheal girls reported a higher level of pleasant than unpleasant emotions.

The Emo-M questionnaire (22 items) is a reliable and valid instrument for assessment of emotions related to menarche in the adolescent girls. Future studies should focus on establishing the predictive validity of the Emo-M.

Keywords: menarche, menstruation, emotions, scale, questionnaire, validation

The first period or menarche indicates the beginning of puberty in girls and represents the transition from girl to woman. It occurs about two years after the first signs of puberty, usually between the ages of 11 and 15 (Bralić et al., 2012). The average age at menarche in Croatian girls is 12 years and four months (Keresteš, Brković, & Kuterovac Jagodić, 2010), but it depends on life circumstances, nutrition quality, and socioeconomic changes (Argnani, Toselli, & Gualdi-Russo, 2004; Khanna & Kapoor, 2004; Rebacz, 2009).

Previous studies show that experience of menarche is relevant for the subsequent menstrual experience. A prospective study that followed adolescent girls from 11 to 15 years old at several stages revealed that both expectations and initial menarcheal experience were related to long-term menstrual experience-related somatic, emotional, and behavioural changes (Koff & Rierdan, 1996). In a retrospective study among college women, based on their beliefs, expectations, feelings, and preparedness for menarche, two extreme groups were selected: women who reported extremely negative menarcheal experience and inadequate preparation for menarche and women who reported extremely positive menarcheal experience and proper preparation. It was shown that women who reported extremely negative menarcheal experience had a more negative attitude toward menstruation and experienced more negative premenstrual mood changes than women who had reported extremely positive menarcheal experience. They also had lower levels of satisfaction with body image (McPherson & Korfine, 2004).

A qualitative retrospective study with young and middle-aged women in Brazil showed that women had vivid memories about their menarche, like other significant events in woman's life such as weddings and childbirth. The first experience of menarche may affect different aspects of women's life, as well as a woman's attitude towards her own body and reproductive health (do Amaral, Hardy, & Hebling, 2011). Another qualitative study pointed out that in Western culture menstruation has been a source of shame and secrecy and attitudes towards menstruation have been rarely examined in relation to birth experience. The findings suggested that menstrual experience have a great impact on women's self-perception, which in turn can play a significant role in the experience of childbirth later in life. If women experience fear at menarche, they will alienate from their own body processes which will be reflected later on with childbirth experience (Moloney, 2010).

Although menarche is a normative event in the life of adolescent girls, a minority of adolescent girls feel ready for menarche (Marván & Molina-Abolnik, 2012; Marván & Alcalá-Herrera, 2014; Tang, Yeung, & Lee, 2003). Studies showed cultural differences in reactions to menarche. The first reaction to menarche among Chinese adolescent girls has been mostly negative, including feelings of embarrassment, worry, and fear (Tang et al., 2003). The most common reaction to menarche among Mexican girls has been worry, feeling odd, and confused (Marván & Alcalá-Herrera, 2014; Marván, Morales, & Cortés-Iniestra, 2006). Young and middle-aged women in Brazil reported feelings of shame and discomfort at menarche, despite the fact that they had heard about it in school (do Amaral et al., 2011). Among positive reactions to menarche were feelings of being more grown up and more feminine (Tang et al., 2003). Emotional reactions to menarche are related to the age of maturation. Adolescent girls with early maturation (menarche before 11 years) felt more scared and worried compared to girls with average maturation (12 or 13 years at menarche) or late maturation (13 years or more at menarche). In contrast, girls who had late menarche felt more excited and happy than girls who had early or average maturation (Marván & Alcalá-Herrera, 2014).

Given that negative menarcheal experience can have adverse effects on different aspects of a woman's life, it is important to focus on these early experiences. So far there have been developed and validated structured questionnaires for menstrual attitudes (Marván & Molina, 2002; Marván, Galvanovskis, & Vacio, 2001; Morse, Kieren, & Bottorff, 1993), but there is a lack of such instruments for measuring emotional reactions to menarche. Only three studies measuring emotional reactions by scales were found (Marván & Alcalá-Herrera, 2014; Marván et al., 2006; Tang et al., 2003). Marván et al. (2006) used a checklist of 10 items with a yes/no answer format where each emotion was analysed separately, without providing any psychometric characteristics. Based on that list, (Marván & Alcalá-Herrera, 2014) used a similar checklist of 9 items. Tang et al. (2003) used a 13-item list on a 4-point scale where a higher number indicates the higher intensity of particular emotion. Reliability was provided for positive and negative emotional responses subscales separately, but the other psychometric characteristics were not further analysed, nor was this distinction of two subscales empirically tested. Moreover, these lists of emotions are not complete lists of possible emotional response one can experience about menarche. Also, these scales were applicable for postmenarcheal girls only. Given that previous studies showed the importance of expectations of menarcheal experience for long-term menstrual-related changes (Koff & Rierdan, 1996), there is a need for a questionnaire of emotional reactions to menarche that would encompass a broad set of emotions which should assess them not only as experience but as expectancy as

well. Therefore, the goal of the study was to develop a new questionnaire of emotional reactions to menarche and to examine its psychometric properties.

Material and Methods

Procedure and Participants

The data for this study were collected as a part of a larger study on menstruation in adolescent girls. Six primary and secondary schools from urban and rural areas of Croatia participated in the study by convenience sampling (*High School for Health Professions, Split; Primary School Ljudevita Gaja, Osijek; Primary School Kamešnica, Otok; Primary School Petra Zoranića, Jasenice; Primary School Starigrad, Starigrad, Primary School Novigrad, Novigrad*). The school council and headmaster of each school approved the study, after which informed consent forms were distributed to the students and their parents. In total, 224 students from primary schools (aged 10 to 14 years) and 130 students from secondary level (aged 14 to 18 years) presented both their own and their parents' consent (N=354). During a class master lesson, the boys in the class were asked to leave the classroom, and the school psychologist distributed the questionnaires to the female participants. The participation was anonymous. The research was conducted at the beginning of the school year 2014/15.

Of the total sample, 55% lived in a rural area and 45% lived in an urban area. The majority of the participants lived with both parents (91.5%), 6.7% lived with their mother, 0.9% lived with their father, and 0.9% lived with neither of the parents but lived with the grandparents. In respect to the parents' education, 8.5% of the sample said that their mothers graduated from the primary school, 71.5% from high school, and 20.0% from the university. Similarly, 10.2% of the sample indicated that their fathers graduated from the primary school, 70.3% from high school, and 19.5% from the university. Almost half of the participants reported that both of their parents were employed (48.0%), 30.2% reported that only their father was employed, 13.6% reported that only their mother was employed, and 8.2% reported that both parents were unemployed. In respect to the perceived socioeconomic level, 3.7% of the sample reported that they lived worse, 86.4% said the same, and 9.9% better than their peers.

According to the menarcheal status, the sample was divided into the premenarcheal girls who still had not had their first period at the moment of participating in the study ($n=108$, average age 12.0 years) and the postmenarcheal girls who had already had their first period ($n=246$, mean age 15.1 years). The postmenarcheal girls had menarche on average at 12 years and five months ($SD=1.15$; range from 9 years and two months to 16 years and six months), which was on average 2 years and nine months before participating in the study (range from 0 months to 8 years).

Instruments

The *Expected/Experienced Emotional Reactions related to Menarche Scale* (Emo-M) was the authors' designed 27-item scale constructed for the purpose of the study. It consisted of both pleasant and unpleasant emotional reactions that girls can experience when expecting menarche or as an experience of menarche (e.g. *excited, ashamed, mature*). Ten emotions were identified in the study by Marván et al. (2006): *excited, ashamed, mature, scared, happy, sad, nervous, worried, confused, and calm*. Marván and Alcalá-Herrera (2014) used a checklist of nine emotions from which additionally *odd* was identified. Tang et al. (2003) used a list of 13 emotions from which additionally *proud, more feminine, more grown up, angry, surprised, sick, and annoyed* were identified. However, there was a need to combine these lists (18 items altogether) and to broaden them further to gain a wide list of possible emotional reactions one could expect or experience in relation to menarche. Therefore, this list was further extended by the authors based on the general literature on menarcheal experience, common knowledge, and personal experience as school psychologists working with adolescents (second and third author). Additional nine items were added: *natural, unpleasant, shocked, pleased, important, healthy, disgusted, indifferently, and relieved*. The premenarcheal girls were instructed to respond how they expected they would feel when they get menarche, while the postmenarcheal girls were instructed to respond how they felt when they got menarche. The participants' task was to rate each emotion on a 5-point scale from 1 (*not at all*) to 5 (*completely*). The complete scale is provided in the Appendix.

The *Pubertal Development Scale* (PDS; Petersen, Crockett, Richards, & Boxer, 1988) is a 5-item self-report scale on physical changes characteristic for puberty. The scale had been previously translated and validated for the Croatian language with the coefficient of internal consistency Cronbach $\alpha=.79$ in a sample of girls (Keresteš et al., 2010). For this study, only the item on menarcheal status (answer options: 'not yet menstruating' and 'menstruating') and the age at menarche were used.

The Preparedness for the Menarche (PM; Rodriguez White, 2013) has 7 items assessing the feeling preparedness for the start of menstruation, knowing what to do and expect. Each item is rated on a five-point scale, from 1 (*strongly disagree*) to 5 (*strongly agree*). Total score ranges from 7 to 35 where the higher score indicates the higher level of preparedness for menstruation. The Cronbach's α was at the acceptable level of .72. The original scale was constructed for postmenarcheal girls only. However, in the current study both premenarcheal and postmenarcheal girls filled out the questionnaire, and the postmenarcheal girls responded how prepared they had felt when they got the menarche, the premenarcheal girls had to report their level of preparedness for the upcoming menarche (e.g. item 'I felt ready when I got my first period' was modified into 'I feel ready for my first period'). In the current study, Cronbach's α were .86 and .87 in pre- and postmenarcheal girls, respectively.

The *Demographic Questionnaire* assessed the age (in years and months), grade, place of residence, household members, parental education level, employment status, and perceived socioeconomic status, which was assessed by the item: "How does your family live compared to your peers' families?" with answer options *worse, the same, or better*.

Statistical Analyses

To examine the factor structure of the new questionnaire, the exploratory factor analysis by Principal Axis Factoring with oblique rotation (Direct Oblimin) was performed. We wanted to examine the factor structure in both the premenarcheal and postmenarcheal subsamples, separately. There was some concern given that the premenarcheal subsample was somewhat smaller and included 108 participants (subjects-to-variable ratio 4:1). However, this (or even smaller) sample size is suitable (a) when commonalities are high (MacCallum, Widaman, Preacher, & Hong, 2001) and we obtained moderate mean commonalities of .61; (b) when there is a high degree of overdetermination with three to seven variables per factor, or preferably more (MacCallum, Widaman, Zhang, & Hong, 1999) and we had 11 variables per factor; and (c) when there are at least 5 strongly loading items with factor loadings of .50 or higher (Costello & Osborne, 2005) which we reasonably overcame.

A mixed-design ANOVA was used to test the differences in the level of pleasant and unpleasant emotions between groups according to menarcheal status (premenarcheal, postmenarcheal) or pubertal timing (early, average, late). To assess reliability, internal consistency Cronbach α coefficient, split-half reliability, and inter-item correlations were analysed. Pearson correlation coefficients were analysed to examine the relationship between the results of the Emo-M subscale scores and the scores on Preparedness for the Menarche scale.

Results

Item analysis

As can be seen from the results presented in Table 1, similar emotions were ranked as the most prominent in both premenarcheal and postmenarcheal girls. The premenarcheal girls reported that they expected to feel mature, more adult, natural, healthy, and surprised once they experienced the first menstruation. Similarly, the postmenarcheal girls reported that they experienced feeling natural, healthy, mature, more adult, and weird when they got their first menstruation. All items had a full range of scores from 1 to 5 in both groups.

Table 1

Descriptive results for items of the Expected/Experienced Emotional Reactions to Menarche Scale(Emo-M) in premenarcheal and postmenarcheal girls

Items	Premenarcheal girls (n=108)		Postmenarcheal girls (n=246)	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
1. excited	2.91	1.47	2.75	1.46
2. ashamed	2.56	1.49	2.21	1.33
3. mature	3.65 (1.)	1.32	3.46 (3.)	1.16
4. scared	2.88	1.56	2.70	1.50
5. happy	2.67	1.45	2.60	1.34
6. sad	2.13	1.35	2.17	1.27
7. nervous	2.92	1.47	3.11	1.34
8. worried	2.72	1.49	2.51	1.33
9. confused	2.97	1.54	2.63	1.42
10. calm	3.12	1.48	2.92	1.41
11. weird	3.03	1.44	3.30 (5.)	1.36
12. proud	2.42	1.43	2.49	1.37
13. feminine	3.09	1.51	3.11	1.44
14. more adult	3.62 (2.)	1.41	3.43 (4.)	1.37
15. sick	1.42	0.98	1.63	1.07
16. surprised	3.35 (5.)	1.55	3.25	1.48
17. natural	3.56 (3.)	1.55	3.68 (1.)	1.39
18. angry	1.68	1.24	1.88	1.29
19. unpleasant	2.44	1.48	2.64	1.45
20. shocked	2.50	1.56	2.49	1.50
21. pleased	2.63	1.51	2.46	1.31
22. important	2.58	1.48	2.44	1.39
23. indifferently	1.70	1.11	2.02	1.20
24. healthy	3.39 (4.)	1.59	3.47 (2.)	1.42
25. disgusted	2.06	1.37	2.49	1.49
26. annoyed	2.18	1.39	2.92	1.55
27. relieved	2.70	1.55	2.57	1.45

Note. Numbers in brackets represent the rank order of the top five most prominent emotional reactions to menarche

Exploratory factor analysis

The exploratory factor analysis (EFA) was performed in the whole sample. Based on Kaiser's criteria of eigenvalue higher than 1, initially, three components were extracted. However, the third factor was saturated with item 23 only. Therefore, EFA was repeated with forced 2-factor structure with oblique rotation, leaving a possibility that different factors could be in relation. The EFA was performed in the whole sample and in the premenarcheal and postmenarcheal subsamples separately. Pattern loadings after rotation can be seen in Table 2 for each subsample. The factor structure was similar in both groups. However, items 10 (*calm*), 15 (*sick*), and 26 (*annoyed*) were saturated in the premenarcheal group only, item 16 (*surprised*) was saturated with different factors in different subsamples, and item 23 (*indifferently*) was saturated with neither of the factors in both subsamples. Therefore, these five items were excluded from further analysis. The first factor was saturated by eleven items, i.e. item 1, 3, 5, 12, 13, 14, 17, 21, 22, 24, and 27, which reflect pleasant emotions. The second factor was saturated by eleven items, i.e. item 2, 4, 6, 7, 8, 9, 11, 18, 19, 20, and 25, which reflect unpleasant emotions. Two factors explained 44.7% of the total variance in the premenarcheal subsample, and 38.7% of the total variance in the postmenarcheal subsample.

The total score for each subscale was computed and divided by the number of items (i.e. 11), resulting in a score from 1 to 5. Descriptive statistics and normality tests for overall Emo-M subscale scores can be seen in Table 3. Skewness and kurtosis were non-zero values and Kolmogorov-Smirnov test for Unpleasant Emotions in postmenarcheal girls was significant. However, *z* values of skewness and

kurtosis imply that the distributions were not heavily different from normal distributions given that they were not above 2.58 (Field, 2009).

In the premenarcheal subsample, the two subscales were not correlated ($r(106) = .05, p > .05$), while in the postmenarcheal subsample they were in a significant, but low negative correlation ($r(244) = -.24, p < .01$). Scores on subscales were examined in respect to menarcheal status. A mixed-design ANOVA showed that there was no difference between the premenarcheal and postmenarcheal girls in emotions related to menarche ($F(1, 352) = 0.11, p > .05, \eta_p^2 = .00$). However, both premenarcheal and postmenarcheal girls reported more pleasant, than unpleasant emotions ($F(1, 352) = 26.74, p < .001, \eta_p^2 = .07$), as can be seen in Figure 1. The interaction effect was not significant ($F(1, 352) = 0.29, p > .05, \eta_p^2 = .00$). This analysis was repeated in the primary school students only (there was no premenarcheal participants among high school students), and the effects were the same.

Table 2

Summary of the Principal Axis Factoring with oblique rotation results for the Expected/Experienced Emotional Reactions to Menarche Scale (Emo-M) in premenarcheal and postmenarcheal girls (the pattern matrix is reported)

		Both groups (N=354)		Premenarcheal girls (n=108)		Postmenarcheal girls (n=246)	
		Factor 1	Factor 2	Factor 1	Factor 2	Factor 1	Factor 2
1.	excited	.628	-.111	.718	-.171	.600	-.064
2.	ashamed	.070	.554	-.006	.593	.090	.567
3.	mature	.634	.001	.694	.050	.600	-.008
4.	scared	.097	.665	.179	.515	.048	.734
5.	happy	.722	-.127	.716	-.127	.735	-.105
6.	sad	-.194	.529	-.195	.665	-.229	.441
7.	nervous	-.029	.620	.073	.715	-.117	.533
8.	worried	.116	.730	.122	.676	.093	.767
9.	confused	.151	.644	.230	.612	.089	.670
10.	calm	.326	-.330	.453	-.303	.254	-.367
11.	weird	.197	.541	.332	.548	.114	.513
12.	proud	.734	-.052	.723	-.096	.758	-.009
13.	feminine	.767	-.010	.790	.015	.758	-.004
14.	more adult	.750	.040	.717	.043	.770	.078
15.	sick	-.118	.394	-.041	.404	-.162	.361
16.	surprised	.379	.437	.520	.362	.300	.475
17.	natural	.616	-.070	.633	.003	.601	-.108
18.	angry	-.193	.527	-.194	.662	-.222	.437
19.	unpleasant	-.108	.676	-.200	.742	-.080	.649
20.	shocked	.083	.656	.024	.624	.104	.689
21.	pleased	.787	-.015	.838	-.009	.757	-.011
22.	important	.674	.109	.677	.044	.681	.163
23.	indifferently	-.047	.297	.187	.359	-.167	.222
24.	healthy	.624	.034	.687	.050	.590	.022
25.	disgusted	-.215	.545	-.187	.660	-.244	.477
26.	annoyed	-.262	.442	-.188	.600	-.319	.350
27.	relieved	.639	.056	.699	.124	.598	.018
Eigen-value		6.41	4.4	6.63	5.45	6.70	3.74
Explained variance (%)		23.74	16.1834	24.54	20.18	24.81	13.85

Note. Factor loadings higher than .40 are bolded.

Reliability

Reliability can be seen in the lower part of Table 3. The average inter-item correlations were in the range from .36 to .52 for pleasant and unpleasant emotions subscales. The internal consistency Cronbach's α was very high, .91-.92 for The Pleasant, and a little lower .86-.88 for The Unpleasant Emotions subscale. Split-half reliability of the subscales was also very high, in a range from .87 to .94.

Divergent and discriminative validity

To assess divergent validity, the relationship between Emo-M and Preparedness for the Menarche (PM) scale was analysed. PM scores were in a positive correlation with the Pleasant Emotions scores ($r = .35, p < .01$) and in a negative correlation with the Unpleasant Emotions scores ($r = -.24, p < .01$). Both correlations were statistically significant, but low.

Table 3

Descriptive statistics, normality tests, and reliability for overall Expected/Experienced Emotional Reactions to Menarche Scale (Emo-M) subscale scores in premenarcheal and postmenarcheal girls

	Premenarcheal girls (n=108)		Postmenarcheal girls (n=246)	
	Pleasant Emotions	Unpleasant Emotions	Pleasant Emotions	Unpleasant Emotions
M	3.02	2.54	2.95	2.56
SD	1.11	0.99	0.98	0.89
Median	3.09	2.41	3.00	2.55
Mode	3	3	3	4
Minimum-Maximum	1-5	1-5	1-5	1-5
Skewness	-0.134	0.414	0.011	0.185
SE of Skewness	0.233	0.233	0.155	0.155
z of Skewness	-0.58	0.002	0.07	1.19
Kurtosis	-0.959	-0.583	-0.776	-0.782
SE of Kurtosis	0.461	0.461	0.309	0.309
z of Kurtosis	-2.08	1.27	-2.51	-2.53
Kolmogorov-Smirnov test	$D(108) = 0.063$ $p > 0.05$	$D(108) = 0.081$ $p > 0.05$	$D(246) = 0.044$ $p > 0.05$	$D(246) = 0.063$ $p < 0.05$
Average inter-item correlations	.52	.41	.47	.36
Cronbach α	.92	.88	.91	.86
Split-half reliability	.93	.89	.94	.87

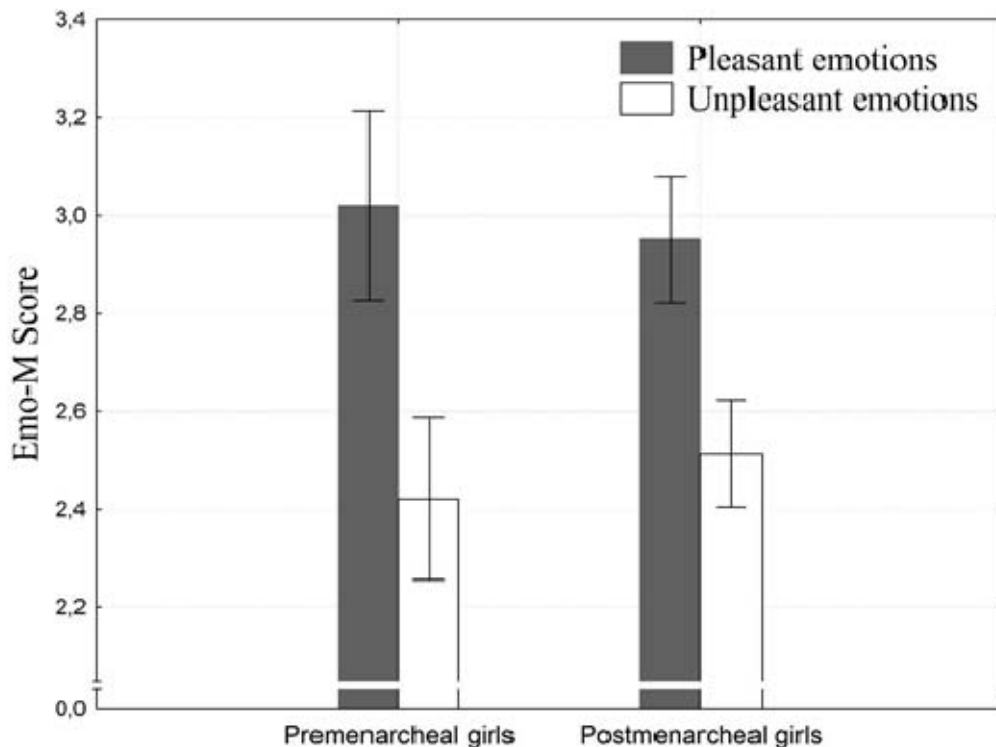


Figure 1. Average score on the subscales of Pleasant and Unpleasant Emotions related to menarche in premenarcheal (n=108) and postmenarcheal girls (n=246)

To assess discriminative validity, the postmenarcheal sample was divided based on the age at menarche into girls of early maturation (≤ 11 years; $n=68$; 27.6%), average maturation (12 years; $n=104$; 42.3%), and late maturation (≥ 13 years, $n=74$; 30.1%). The scores on the Pleasant and Unpleasant Emotions were analysed according to the age at menarche with a mixed-design ANOVA. The results showed that postmenarcheal girls, as previously reported, experienced more pleasant, than unpleasant emotions ($F(1, 243) = 18.71, p < .001, \eta_p^2 = .07$). Although there was no significant effect of pubertal timing ($F(2, 243) = 0.71, p > .05, \eta_p^2 = .00$), the interaction effect of the type of emotions and pubertal timing was significant ($F(2, 243) = 4.75, p < .01, \eta_p^2 = .04$), which can be seen in Figure 2. *Post-hoc* tests showed that postmenarcheal girls with late menarche reported lower levels of unpleasant emotions in comparison with early- and average-timing girls ($p < .001$).

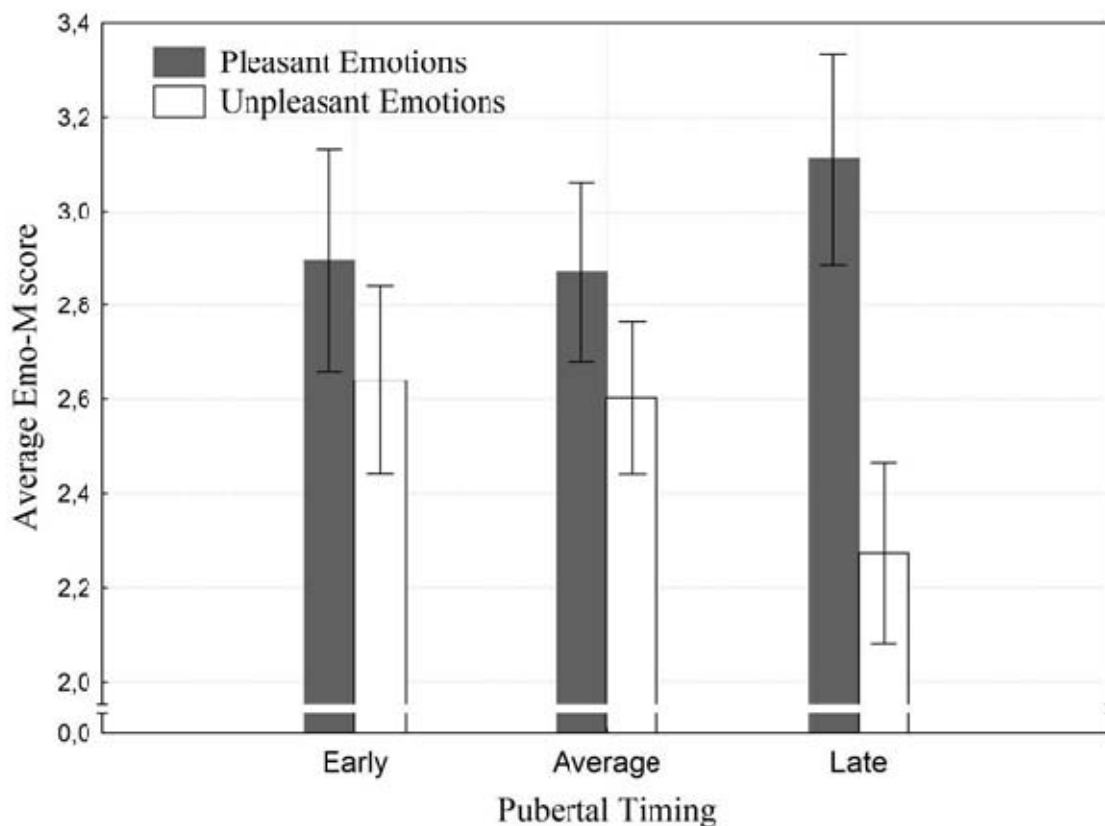


Figure 2. Average score on the subscales of Pleasant and Unpleasant Emotions related to menarche in postmenarcheal girls of early (≤ 11 years at menarche; $n=68$), average (12 years; $n=104$), and late maturation (≥ 13 years; $n=74$)

Discussion

The experience of the first period can have serious long-term consequences for different aspects of a woman's life, including menstrual experience, attitudes toward their own body, and other aspects of reproductive health (do Amaral et al., 2011; Koff & Rierdan, 1996; McPherson & Korfine, 2004). Subsequently, it is important to focus on these early experiences which are mostly neglected. Given that there was a lack of adequate tools for assessment of emotional reactions related to either expectancy or experience of the first period, the new Emo-M scale was developed. The results showed that it was a reliable and valid questionnaire for assessment of emotions related to menarche.

Exploratory factor analysis showed that the Emo-M has a two-factor latent structure in both premenarcheal and postmenarcheal girls. The first factor comprises pleasant emotional reactions and the second comprises unpleasant emotional reaction to menarche. Correlation between the two subscales was

non-significant or very low, therefore calculating separate scores for each subscale is recommended. It is difficult to compare these results to the literature given that this is, to the authors' best knowledge, the first questionnaire for this particular purpose. High reliability of the subscales was established. To demonstrate external validity, divergent and discriminant validity were assessed. The Emo-M subscales were in significant, but low correlations with the Preparedness for the Menarche (PM), where Emo-M and PM scores shared only up to 12% of the variance, meaning that these two instruments measured distinct constructs. Also, discriminative validity was demonstrated given that postmenarcheal girls of different pubertal timing (early, average, late) could be differentiated by their result on the Emo-M subscale, i.e. girls with late pubertal timing (menarche at 13 years or more) had lower levels of unpleasant emotions. Unfortunately, we could not estimate the convergent validity of the Emo-M because there was no other instrument measuring emotional reactions to menarche with known psychometric properties, except for one used in the study by Tang et al. (2003). However, the Emo-M comprises an extended list of emotions from the scale used in the latter study, and therefore, it would not be statistically justified to use it for convergent validity assessment.

Both premenarcheal and postmenarcheal adolescent girls reported similar emotional reactions related to menarche, including feeling more mature, more adult, natural and healthy as the most prominent emotions. Also, both groups reported higher levels of pleasant, than unpleasant emotions. This was an unexpected result, given that previous studies in other countries showed that postmenarcheal girls and young women report mostly negative emotional reactions. Postmenarcheal Mexican girls reported worry, feeling odd, and confusion as the first reactions to menarche (Marván & Alcalá-Herrera, 2014; Marván et al., 2006). Postmenarcheal Chinese girls reported feelings of embarrassment, worry, and fear. However, they did report some positive reactions, such as being more grown up and more feminine, but these were less frequent than unpleasant emotions (Tang et al., 2003). This discrepancy could be because girls who had negative expectations or experience of menarche were less likely to participate in the study in the first place. Although students learn about the human body and puberty in the 4th and 5th grade of the primary school in Croatia, they usually do not discuss the topics of menstruation in detail. However, a new health education syllabus had been introduced in the curriculum a year before the research was conducted. A series of lectures was given on different topics, some of which were held by the school doctor, and menstruation might have been addressed. The new health education also prompted parents to include themselves more in discussions on specific topics at home, so it may be that the students communicated with their parents more. However, this can only explain the positive expectations in premenarcheal girls, but it would not have such an impact on the memory of menarche in postmenarcheal adolescents. Research in other cultures was conducted more than 10 years ago, and perhaps experience of girls in those countries changed in the meantime. There are some indications that menstrual attitudes and emotional reactions in adolescent girls from India changed from 1985 to 1999 (Chakrabarti, Chaudhuri, & Maid, 2000), probably due to the influence of the media, which diminished the secrecy of menstruation. A qualitative study conducted more than 30 years ago showed that there were some cultural differences in menarcheal experiences (Logan, 1980), therefore, it would be interesting to apply the same questionnaire in different cultures to see if there are some current cultural differences in emotional reactions to menarche. Also, it would be necessary to conduct the same research in Croatia in 5-10 years to see possible changes, perhaps as a consequence of the new health education syllabus.

Differences between premenarcheal and postmenarcheal in the levels of pleasant and unpleasant emotions related to menarche were not established. In other words, emotional reactions were not related to menarcheal status, but were related to other aspects of pubertal development. Girls who were late maturers (13 years or older at menarche) reported significantly lower levels of unpleasant emotions than early or average maturers. This goes in line with the literature showing that girls with early maturation (menarche before 11 years) felt more scared and worried compared to girls with average or late maturation. Girls who had late maturation had the most positive reaction to menarche, i.e. they were more likely to report reactions of excitement and happiness, in comparison with early and average maturers (Marván & Alcalá-Herrera, 2014). Girls with early maturation are at risk of having more difficult adjustment and are more likely to engage in delinquent behaviours based on their teachers reports (Carter, Jaccard, Silverman, & Pina, 2009). Also, early-timing puberty is a risk factor for depression in middle adolescence (Kaltiala-Heino, Kosunen, & Rimpela, 2003). However, the relationship between age at menarche and psychological consequences is not so simple. Both early and late age at menarche can have negative consequences on psychological development in girls. Girls with early maturation are prone to internalised (depression, anxiety, low self-esteem) and externalised problems (sexual behaviour, delinquency), which are then reflected in academic (under)achievement. On the other hand, girls with late maturation get anxious and worried about whether everything is all right with them. They feel different

than their peers and there is a possibility to develop the same internalised and externalised problems as girls with early maturation (Carter et al., 2009).

Several limitations of the study should be considered. The high school participants were from the High School for Health Professions where future medical nurses, pharmacists, and physical therapists are trained. Girls from this school might have more positive attitudes towards body changes, including menstruation, which could, in turn, affect more positive emotional reactions. However, higher pleasant than unpleasant emotions were also established on the subset of primary school participants. Still, these findings should be further explored in other samples of different educational background.

Next, postmenarcheal girls reported their first emotional reactions to menarche retrospectively, which could, therefore, be biased by memory. Predictive validity of the Emo-M questionnaire for psychological adjustment and menstrual experience later in life should be tested. Additionally, this was a cross-sectional study. Given that previous study showed that differences in attitudes towards menstruation between early and late maturers were present only in those girls who got the menarche in less than two years (Marván & Alcalá-Herrera, 2014), it would be necessary to follow girls from puberty throughout adolescence. A longitudinal design would give an opportunity to consider changes in memory of the first emotional reactions and their possible effect on current menstrual attitudes.

Conclusion

It is recommended to use the shorter 22-item version of the new Expected/Experienced Emotional Reactions related to MenarcheScale (Emo-M) as a valid and reliable questionnaire. It is applicable in both premenarcheal and postmenarcheal girls for a quick assessment of emotions related to menarche for research and practical purposes. The two-factor structure of the Emo-M questionnaire revealed that adolescent girls report more pleasant than unpleasant emotional reactions related to menarche.

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References

- Argnani, L., Toselli, S., & Gualdi-Russo, E. (2004). Chinese Women in Italy - Menarche, Pregnancy and Maternity. *Collegium Antropologicum*, 28(2), 885–890.
- Bralić, I., Tahirović, H., Matanić, D., Vrdoljak, O., Stojanović Špehar, S., Kovačić, V., & Blažeković-Milaković, S. (2012). Association of early menarche age and overweight/obesity. *Journal of Pediatric Endocrinology and Metabolism*, 25(1-2), 57–62.
- Carter, R., Jaccard, J., Silverman, W. K., & Pina, A. A. (2009). Pubertal timing and its link to behavioral and emotional problems among “at-risk” African American adolescent girls. *Journal of Adolescence*, 32(3), 467–481.
- Chakrabarti, I., Chaudhuri, A. N., & Maid, B. (2000). Attitudinal variation towards menarche over a decade. *International Journal of Gynecology & Obstetrics*, 70, A127.
- Costello, A.B., & Osborne, J.W. (2005) Best practices in exploratory factors analysis: Four recommendations for getting most from your analysis. *Practical Assessment, research & Evaluation*, 10(7), 1-9. Retrieved from <http://pareonline.net/getvn.asp?v=10&n=7>
- do Amaral, M. C. E., Hardy, E., & Hebling, E. M. (2011). Menarche among Brazilian women: Memories of experiences. *Midwifery*, 27(2), 203–208. doi:10.1016/j.midw.2009.05.008
- Field, A. (2009). *Discovering statistics using SPSS* (3rd ed.). London, UK: Sage Publications Ltd.
- Kaltiala-Heino, R., Kosunen, E., & Rimpela, M. (2003). Pubertal timing, sexual behaviour and self-reported depression in middle adolescence. *Journal of Adolescence*, 26(5), 531–545.
- Keresteš, G., Brković, I., & Kuterovac Jagodić, G. (2010). Prikladnost nekoliko subjektivnih mjera pubertalnoga sazrijevanja za primjenu u nekliničkim istraživanjima razvoja adolescenata [Suitability of several subjective measures of pubertal maturation for application in non-clinical research on adolescent development]. *Društvena istraživanja*, 19(6), 1015–1035.
- Khanna, G., & Kapoor, S. (2004). Secular trend in stature and age at menarche among Punjabi Aroras residing in New Delhi, India. *Collegium Antropologicum*, 28(2), 571–575.
- Koff, E., & Rierdan, J. (1996). Premenarcheal expectations and postmenarcheal experiences of positive and

- negative menstrual related changes. *Journal of Adolescent Health*, 18(4), 286–291
- Logan, D. D. (1980). The menarche experience in twenty-three foreign countries. *Adolescence*, 15(58), 247–256.
- MacCallum, R.C., Widaman, K.F., Preacher, K.J., & Hong, S. (2001). Sample size in factor analysis: The role of model error. *Multivariate Behavioral research*, 36(4), 611-637.
- MacCallum, R. C., Widaman, K. F., Zhang, S., & Hong, S. (1999). Sample size in factor analysis. *Psychological Methods*, 4, 84-99.
- Marvan, L., & Molina, M. (2002). Validación en México de un cuestionario de actitudes hacia la menstruación dirigido a adolescentes posmenarcas. *Psicología Y Salud*, 12(2), 173–178.
- Marván, M. L., & Alcalá-Herrera, V. (2014). Age at menarche, reactions to menarche and attitudes towards menstruation among Mexican adolescent girls. *Journal of Pediatric and Adolescent Gynecology*, 27(2), 61–66.
- Marván, M. L., Galvanovskis, A., & Vacio, A. (2001). Cuestionario de actitudes hacia la menstruación en adolescentes premenarcas: Validación de una escala [Questionnaire de attitudes toward menstruation in premenarcheal adolescent girls]. *Psicología Y Salud*, 11(2), 15–22.
- Marván, M. L., & Molina-Abolnik, M. (2012). Mexican Adolescents' Experience of Menarche and Attitudes toward Menstruation: Role of Communication between Mothers and Daughters. *Journal of Pediatric and Adolescent Gynecology*, 25(6), 358–363.
- Marván, M. L., Morales, C., & Cortés-Iniestra, S. (2006). Emotional reactions to menarche among Mexican women of different generations. *Sex Roles*, 54(5-6), 323–330.
- McPherson, M. E., & Korfine, L. (2004). Menstruation across time: Menarche, menstrual attitudes, experiences, and behaviors. *Women's Health Issues*, 14(6), 193–200.
- Moloney, S. (2010). How menstrual shame affects birth. *Women and Birth*, 23(4), 153–159. doi:10.1016/j.wombi.2010.03.001
- Morse, J. M., Kieren, D., & Bottorff, J. (1993). The adolescent menstrual attitude questionnaire, part I: Scale construction. *Health Care for Women International*, 14(1), 39–62.
- Petersen, A. C., Crockett, L., Richards, M., & Boxer, A. (1988). A self-report measure of pubertal status: reliability, validity, and initial norms. *Journal of Youth and Adolescence*, 17, 117–133.
- Rebacz, E. (2009). Age at menarche in schoolgirls from Tanzania in light of socioeconomic and sociodemographic conditioning. *Collegium Antropologicum*, 33, 23–29.
- Rodriguez White, L. (2008). *Newly postmenarcheal adolescents' understanding of menarche and menstruation across race and income level as defined by qualification status for free or reduced lunches* (Unpublished doctoral dissertation). University of Pittsburgh, Pittsburgh, USA.
- Tang, C. S. K., Yeung, D. Y. L., & Lee, A. M. (2003). Psychosocial correlates of emotional responses to menarche among Chinese adolescent girls. *Journal of Adolescent Health*, 33(3), 193–201.

Appendix A: Emo-M

Here is the list of emotions that girls can experience when they get their first menstruation.

If you **still have not got** your first menstruation, try to imagine how you would feel when you get it.

If you **have already got** your first menstruation, try to recall how you felt when you got it.

Read a list and for each emotion circle the number that describes your feelings the best.

	Not at all	Slightly	Moderately	Very true	Completely
1. excited	1	2	3	4	5
2. ashamed	1	2	3	4	5
3. mature	1	2	3	4	5
4. scared	1	2	3	4	5
5. happy	1	2	3	4	5
6. sad	1	2	3	4	5
7. nervous	1	2	3	4	5
8. worried	1	2	3	4	5
9. confused	1	2	3	4	5
10. calm	1	2	3	4	5
11. weird	1	2	3	4	5
12. proud	1	2	3	4	5
13. feminine	1	2	3	4	5
14. more adult	1	2	3	4	5
15. sick	1	2	3	4	5
16. surprised	1	2	3	4	5
17. natural	1	2	3	4	5
18. angry	1	2	3	4	5
19. unpleasant	1	2	3	4	5
20. shocked	1	2	3	4	5
21. pleased	1	2	3	4	5
22. important	1	2	3	4	5
23. indifferently	1	2	3	4	5
24. healthy	1	2	3	4	5
25. disgusted	1	2	3	4	5
26. annoyed	1	2	3	4	5
27. relieved	1	2	3	4	5

Appendix B: Emo-M

Ovdje je opis kako se djevojke sve mogu osjećati kad dobiju prvu menstruaciju.

Ako još **nisi dobila** prvu menstruaciju, pokušaj zamisliti kako ćeš se osjećati kad je dobiješ.

Ako si **već dobila** prvu menstruaciju, pokušaj se prisjetiti kako si se osjećala kad si je dobila.

Pročitaj popis i za svaki osjećaj zaokruži koliko se odnosi na tebe.

	uopće se ne odnosi na mene	uglavnom se ne odnosi na mene	niti se odnosi niti se ne odnosi na mene	uglavnom se odnosi na mene	u potpunosti se odnosi na mene
1. uzbuđeno	1	2	3	4	5
2. posramljeno	1	2	3	4	5
3. zrelo	1	2	3	4	5
4. prestrašeno	1	2	3	4	5
5. sretno	1	2	3	4	5
6. tužno	1	2	3	4	5
7. nervozno	1	2	3	4	5
8. zabrinuto	1	2	3	4	5
9. zbunjeno	1	2	3	4	5
10. smireno	1	2	3	4	5
11. čudno	1	2	3	4	5
12. ponosno	1	2	3	4	5
13. ženstvenije	1	2	3	4	5
14. odraslije	1	2	3	4	5
15. bolesno	1	2	3	4	5
16. iznenađeno	1	2	3	4	5
17. prirodno	1	2	3	4	5
18. ljuto	1	2	3	4	5
19. neugodno	1	2	3	4	5
20. šokirano	1	2	3	4	5
21. zadovoljno	1	2	3	4	5
22. važno	1	2	3	4	5
23. nezainteresirano	1	2	3	4	5
24. zdravo	1	2	3	4	5
25. gadilo mi se	1	2	3	4	5
26. išlo mi je na živce	1	2	3	4	5
27. osjetila sam olakšanje	1	2	3	4	5

18

Differences in sexual behaviour, and sexual satisfaction among female and male undergraduate students

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Abstract

One of the aspects of reproductive health implies a satisfying and safe sex life. The period of adolescence and emerging adulthood is a time of exploring and experimenting; therefore, it is not surprising that these age groups are often assumed to be more prone to risky sexual behaviours. Sexuality is an important aspect of every person's identity, and young people explore their sexuality as a natural process in achieving sexual maturity and sexual satisfaction.

This study aimed to determine sexual behaviour, attitudes toward condom use, and sexual satisfaction among students. The study was conducted on 360 students (63% of females and 37% of males). Sexual satisfaction was assessed with the New Sexual Satisfaction Scale –a short version (NSSS-S), attitudes about condom use were measured with the Index acceptance of condom use, while the other relevant constructs of sexual behaviour were assessed with one question.

As expected, in comparison with male participants, female students have more positive attitudes toward condom use, but, they masturbate less, have fewer sex partners and less often achieve orgasm during sexual intercourse. The results show that the main reason for sexual initiation was infatuation/love in the female students, while curiosity and sexual arousal in the male participants. Furthermore, there is a significant difference between genders in their satisfaction with their first intercourse, and in sexual satisfaction– male students are more sexually satisfied.

For female and male students, more frequent use of contraceptives reflects a greater level of acceptance of condom use and sexual satisfaction. And finally, the certain information is that a higher frequency of orgasms leads to a higher sexual satisfaction.

Keywords: emerging adults, sexual behaviour, sexual satisfaction, contraception, condom use

The period of adolescence and emerging adulthood is the time for discovering and exploring sexuality; therefore, the fact that the mentioned age groups are commonly associated with the tendency towards risky sexual behaviour does not come as a surprise. Furthermore, some authors consider early sexual initiation (before the age of 15), sexual experience with different partners, and inconsistent use of contraceptives to be forms of risky sexual behaviour (Kangas et al. 2004). Despite more emphasised risky sexual behaviour during the period of adolescence and emerging adulthood, Tolman and McClelland (2011) claim that sexuality is an important aspect of every person's identity, and young people explore their sexuality as a natural process in achieving sexual maturity (SIECUS, 2004).

Despite the efforts made by public health services, students are still proven to be a group of young people who engage in the risky sexual behaviour, such as failing to use condoms consistently during sexual intercourse or to discuss safe sex with their partner (Fehr, Vidourek and King, 2015). Some earlier studies conducted in Croatia have also depicted the problem of failing to use condoms among sexually active male and female students (Štulhofer, Anterić and Šlosar, 2004a, Štulhofer et al. 2006). The results of the research conducted by the American College Health Association (ACHA, 2012) show that every other student uses condoms during sexual intercourse, but not on a regular basis. This form of risky sexual behaviour endangers the reproductive health and commonly makes young people face unwanted consequences, such as sexually transmitted diseases or unwanted pregnancy.

The attitude of young people towards various aspects of sexuality is a very important dimension of sexuality. An example of such attitude is the attitude when it comes to the use of condoms, which represents the person's opinion on this specific method of protection (Thornton and Camburn, 1987). Furthermore, research on Croatian adolescents and students, like the study conducted by Hodžić and Bijelić (2003) shows that young people form attitudes towards condoms within their gender norms. This fact leads to an unequal division of responsibility, which means greater concern about the adverse effects of a sexual intercourse and reduced control and influence on the course of the sexual intercourse for young women. This often consequently means putting the needs and desires of male participants as a priority.

The research conducted by Štulhofer, Jureša and Mamula (2000) on a representative sample of students has shown that those participants who used contraceptives (mostly condoms) during their first sexual intercourse use them more frequently. However, the importance of preventive forms of behaviour on future sexual behaviour was previously stressed by Abraham and Sheeran (2004). These results indicate that not just the attitude on the use of condoms, but also the previous experiences of their use will have a significant effect on the frequency and the regularity of the use of contraceptives (Fehr et al. 2015, Ratliff-Crain, Donald and Dalton, 1999). Along with the previously mentioned indicators of responsible behaviour, the use of contraceptives during the last sexual intercourse is also often considered as a form of safe sexual behaviour in the studies. Therefore, some research conducted on Spanish, Italian and Canadian participants have determined that around 70% of young people have used a condom during their last sexual intercourse (Castro Martin, 2005, Rotermann, 2008, Trani et al. 2005). Also, it must be taken into consideration that the frequency of the use of contraceptives, especially condoms, reduces as the relationship lasts longer. Namely, Hodžić and Bijelić (2003) have demonstrated in their research that adolescents are more likely to use condoms or coitus interruptus during the sexual initiation in the context of a serious relationship. In contrast, the participants engaged in "one-night stand" relationships are significantly more reluctant to use contraceptives, which can result in negative consequences. In longer relationships, after "trust" has been established, the use of condoms becomes less and less frequent, because "*trust becomes the most powerful contraceptive*" (Hodžić and Bijelić, 2003; p. 124).

When discussing sexual development of young people, researchers mostly target the study of sexual behaviour, namely the age of their first sexual intercourse, the number of their previous sexual partners, the frequency of sexual intercourse, the assessment of the level of sexual satisfaction etc. The results of these studies, in particular, provide us with a general sexual profile of young people (Sanrock, 2014).

The results of the studies regarding the age of the first sexual intercourse (or sexual initiation) prove that this particular experience is crucial and may affect the future sexual behaviour of a person, and in some cases, other areas of life as well (Lacković-Grgin, 2006). The results of the research carried out in Croatia show a stability of sexual behaviour, contrary to the generally accepted perception that young cohorts are more prone to early sexual initiation and risky sexual behaviour (Landripet et al. 2010). Wellings et al. (2006) support this claim with their research conducted on young people in 59 countries, in which they concluded that there was no universal trend in the age reduction during the first sexual intercourse. Even though, when we talk about sexual development as a normative aspect of the development of young people, it does not mean that there is a certain time limit or a referent point, such as an ideal time for sexual initiation, but we still must ask ourselves at what age do young people become

sexually active? The results of the study conducted by Traen, Štulhofer, and Landripet (2011) on adolescents indicate certain cultural differences. Namely, the research conducted in Croatia and Norway concluded that young men and women in Croatia engaged in their first sexual intercourse later than their peers in Norway. The average age of sexual initiation for young women in Croatia was 18.2, and the young men 17.9, while in Norway the age of sexual initiation for young women was lower (17 years old) than for young men (17.9 years old). Furthermore, Landripet et al. (2010), while conducting their research on first-year students, determined that male students engaged in their first sexual intercourse earlier than female students (a six-month difference), and this ratio did not change throughout the entire research period, from 1998 to 2008. The age of sexual initiation for young women was 17.1-17.2, while for young men, it was slightly lower, 16.7-16.8 years old. The authors concluded that there was a trend of convergence of the sexual behaviour of young people in Europe regarding smaller gender differences regarding the age of sexual initiation.

There are clear distinctions between young men and women relating to the context and reasons for the first sexual intercourse. Namely, young women are much more prone to experience the first sexual intercourse in the framework of a serious relationship, and the most common reason for engaging in sexual initiation is the emotional closeness (Hodžić and Bijelić, 2003). On the other hand, young men often perceive the first sexual intercourse as an adventure or curiosity (Lacković-Grgin, 2006). Accordingly, Korobov (2006), while examining male sexuality, found that the experience of one night stands is one of the sources for the creation of masculine identity for young men.

Besides the differences in the motives and the context of the first sexual intercourse between young men and women, Čorkalo and Renić (1999) found gender differences in the number of sexual partners. Among the participants of the research there were three times more female students with one sexual partner than male students, while accordingly, there were significantly more male students with several sexual partners. Štulhofer et al. (2006) have determined that the average number of sexual partners is 5.5 for young men, and 3.3 for women. In comparison with Croatian students, Canadian students have reported a significantly larger number of sexual partners (men = 7.6; women = 4.5) (Netting and Burnett, 2004).

Furthermore, the longitudinal survey conducted on first-year students by Landripet et al. (2010) also determined that young men reported a larger number of sexual partners than young women, and the difference was significant in all points of measurement (3.6 for young men and 2.3 for young women). During the adolescent period and the emerging adulthood, masturbation is also considered as a common form of sexual activity as opposed to the sexual intercourse with a partner (Herbenick et al. 2010). The research conducted on all age groups shows that the frequency of masturbation is significantly higher in men than in women in the ratio of 86% to 66%. According to Kaestle and Allen (2011), masturbation can be observed as an important aspect of sexual expression during the period of adolescence.

It is previously mentioned that young people can engage in sexual intercourse as a one night stand or as a deeper emotional relationship. The research shows that the frequency of romantic encounters increases the physical intimacy among partners in a romantic relationship. As in previous cases, young men demonstrate a higher level of desire for sexual intimacy than young women even on first dates, but those differences decrease as the relationship deepens (Lacković-Grgin, 2006). Therefore, it is a known fact that with age and frequency of romantic encounters, the frequency of various forms of sexually intimate activities increases (from kissing and hugging to vaginal coitus and oral sex), The fact, however, which the previous studies failed to find out is the information on how often young people engage in the mentioned sexual relations.

Even though sexual satisfaction is a more common topic in the studies on adults in long-term relationships, results of the research based on the adolescent participants and the emerging adults provide us with a wider image of sexuality in young people, which is not merely restricted to risky sexual behaviour. Sexual satisfaction is one of the central dimensions of an intimate relationship, it is important for the quality of life, and it contributes to the physical and psychological wellbeing (Štulhofer et al. 2004b). To what extent are young people satisfied with their sex life is usually observed through gender differences. Several studies on sexual satisfaction of young people showed that young women perceived their first sexual experience as less satisfying than young men (Bernik and Hlebec, 2000; Hodžić and Bijelić, 2003; Štulhofer et al. 2004a).

Even though most research on the sexuality of young people includes the study of risky sexual behaviour, it is important to bear in mind that sexuality is a normal and expected aspect of the development of adolescents and emerging adults. Therefore, the purpose of this research was to examine gender differences in various aspects of sexual behaviour and the attitude toward the use of condoms, as well as the level of sexual satisfaction in the sample of undergraduate students. This study is somewhat a replication of earlier studies in Croatian samples conducted more than ten years ago, so it will be

interesting to determine if there are any changes in the sexual behaviours of cohorts. Also, the basis of this research was a suggestion by Tolman and McClelland (2011), who emphasise that research on sexuality has to include both, positive and negative aspects of the sexuality of adolescents. Namely, only this way can provide a more extensive and clear frame in which the researchers can and should work, without the need to work within the binary system of risky or positive sexuality.

Regarding some previous studies, we expect to confirm the Mediterranean model of sexual initiation, in which women engage in sexual intercourse at the later age than men. Further, we assume that women would be more responsible regarding the use of contraceptives, such as condoms, as well as to experience their first intercourse in a committed romantic relationship and to masturbate less than men. Finally, we expect that both female and male students would not differ in sexual satisfaction but they would differ in satisfaction with the first sexual intercourse.

Method

Participants and procedure

The research included 360 undergraduate students from several Croatian universities. Out of the total number, 133 (37%) were male participants, and 227 (63%) were female. The average age of the participants was 22 (sd =1.12). All the participants included in this research were sexually active heterosexuals, and 78% of them were in a committed relationship, which lasted for 18 months on average (sd =4.56), while the others were dating. In this study, we had an additional sample of 31 students who declared themselves to be homosexual or bisexual, but we did not use their data in the study due to a small number.

The research was conducted at the end of the class as arranged with their teachers, who were not present during the filling out of the questionnaires. Before the beginning, the participants were informed that certain aspects of sexuality were targeted by the research and that their answers would be a contribution to an understanding of the sexual behaviour of students. It was emphasised that the research was anonymous and that they could withdraw at any moment, or if they chose not to answer certain questions, they did not have to. The completion of the questionnaires lasted for about 20 minutes, and none of the participants withdrew from the research. After they filled out their questionnaires, the students sealed them in a special envelope by themselves and submitted them.

Measurement

Different forms of sexual behaviour were included with one item, as conducted in similar studies (Landripet et al. 2010, Roterman, 2008, Traen et al. 2011).

The investigation of sexual behaviour included a series of questions which referred to:

The age of the first sexual intercourse – the sexual initiation,

The number of sexual partners,

How often do you masturbate? (from 1 – once a month or less, to 5 – every day),

How often do you engage in sexual intercourse with your partner? (from 1- once a month or less, to 5 – every day),

How often do you use contraception? (from 1 – never to 5 – always/every time),

How often do you achieve orgasm during sexual intercourse? (from 1 – never to 5 – always / every time),

The context of your first sexual intercourse (1 – committed relationship, 2 – one-night stand),

The main reason for sexual initiation (1 – love, 2 – excitement, curiosity)

Did you reach orgasm during your first sexual intercourse? (1 – Yes, 2 – No, 3 – I do not know)

Have you ever experienced a one night stand? (1 – Yes, 2 – No),

Which contraceptives do you mostly use? (1 – coitus interruptus, 2 – Condoms, 3 – Birth control pills, 4 – Other),

Did you use contraception during your last sexual intercourse? (1 – Yes, 2 – No),

Did you use contraception during your first sexual intercourse? (1 – Yes, 2 – No).

The level of sexual satisfaction was assessed with a short version of the New Sexual Satisfaction Scale (NSSS-S, Štulhofer, Buško and Broulliard, 2010). The scale consists of 12 items, rated from 1 to 5, with 1 marked as not at all satisfied, and 5 marked as extremely satisfied. This scale was constructed for including various dimensions of sexuality that derive from sex counselling and psychotherapy literature. Some of these dimensions were e.g. “Thinking about your sex life during the last six months, please rate your satisfaction with the following aspects”: “The balance between what I give and receive in sex”; “The

variety of my sexual activities". This scale is not gender, sexual orientation, or relationship specific, which makes it a useful measurement. In this study internal consistency coefficient was $\alpha=.90$.

Besides this measurement, the participants evaluated their general satisfaction with their sex life on a scale from 1 to 5 (1 – extremely dissatisfied, to 5 – extremely satisfied), and they also assessed the level of satisfaction with their first sexual intercourse.

The index of condom usage (Landripet et al, 2010) consists of five items rated from 1- strongly disagree, to 5 – strongly agree. This scale measures the relation of the participant to the use of this particular method of protection (e.g. "The use of the condom reduces pleasure"). The results were coded in a way that a higher score marks a higher level of condom usage. Internal consistency in this study was $\alpha=.79$.

Results

The first problem of the research was to examine gender differences in sexual behaviour, sexual satisfaction, and attitudes towards condom use. Generally speaking, when it comes to the verification of the distinctions between men and women in some aspects of sexuality, it is important to calculate the Cohen d index or the effect size. Namely, many authors emphasise that gender differences are overrated and that it is necessary to include the mentioned parameter into the result analysis (Petersen & Hyde, 2010). Therefore, the Table 1 consists of the data on mean standard deviations of the questioned variables, and the results of the t-test and effect size.

Table 1

Means, standard deviations, and the results of the t-test and effect size for gender differences in some aspects of sexual behaviours, sexual satisfaction, and attitude toward condom use.

	female		male		t	df	p	d
	M	sd	M	sd				
Sexual behaviour								
Age of first sexual intercourse	17.85	1.98	17.01	1.73	4.07	1	.00	.220
Number of sexual partners	2.74	1.02	4.25	1.55	-11.13	1	.00	.498
How often do you masturbate?	2.55	1.24	4.58	.88	-16.59	1	.00	.686
How often do you engage in sexual intercourse with your partner?	3.67	1.09	3.82	.88	-1.34	1	.17	.075
Frequency contraception usage	3.75	1.00	3.54	1.24	1.76	1	.08	.092
How often do you achieve orgasm?	3.60	1.22	4.65	1.00	-8.41	1	.00	.425
Sexual satisfaction								
NSSS-Short Version	3.02	1.11	3.33	1.17	-2.51	1	.01	.134
Satisfaction with sexual life	3.89	.89	4.01	1.00	-1.18	1	.24	.063
Satisfaction with first sexual intercourse	2.74	1.20	3.28	1.04	-4.32	1	.00	.233
The index of condom usage	4.10	.60	3.37	.71	10.40	1	.00	.485

Table 1 represents results of gender differences in various types of sexual behaviours, attitude to condom use, and sexual satisfaction. The results show that men engage in sexual intercourse at an earlier age ($M_M=17.01$, $sd_M=1.73$ vs $M_F=17.85$, $sd_F=1.98$, $p=.00$), and they perceive that they have had more sexual partners ($M_M=4.25$, $sd_M=1.55$ vs $M_F=2.74$, $sd_F=1.02$, $p=.00$). Furthermore, they masturbate more often ($M_M=4.58$, $sd_M=.88$ vs $M_F=2.55$, $sd_F=1.24$, $p=.00$), and, in general, they achieve orgasm during a sexual intercourse ($M_M=4.65$, $sd_M=1.00$ vs $M_F=3.60$, $sd_F=1.22$, $p=.00$) more often than women. Both men and women perceive that they almost always use a contraceptive ($t=1.76$, $p=.08$), and they engage in sexual intercourse with their partner several times a week ($t=-1.34$, $p=.17$). Young women perceive a lower level of sexual satisfaction measured by NSSS-S ($M_M=3.33$, $sd_M=1.17$ vs $M_F=3.02$, $sd_F=1.11$, $p=.01$), while there is no gender difference when it comes to assessing the level of satisfaction with their sexual life ($t=-1.18$, $p=.24$). A significant difference in the assessment of the level of satisfaction with their first sexual intercourse is evident, where women perceive that level significantly lower than men ($M_M=3.28$, $sd_M=1.04$ vs $M_F=2.74$, $sd_F=1.20$, $p=.00$). When it comes to accepting condom usage, despite the fact that both genders have scored above average, women scored significantly higher than men ($M_M=3.37$, $sd_M=.71$ vs $M_F=4.10$, $sd_F=.60$, $p=.00$). However, if we evaluate effect size, it is evident that in variables in which there is a significant gender difference, the range of these differences is small to medium. The most evident

differences are noted in the frequency of masturbation ($d=.686$), the number of sex partners ($d=.498$), the attitude towards condom use ($d=.485$), and the frequency of achieving orgasms during sexual intercourse ($d=.425$).

Table 2

Frequencies for the context of sexual experience and reasons for sexual initiation, the use of contraception, and the results of chi squared test for gender differences.

	female		male		χ^2	df	p
	f	%	f	%			
Sexual behaviour							
<i>The context of the first sexual intercourse:</i>							
Committed relationship	160	70.48	67	65.41	1.40	1	.24
One night stand	67	29.52	46	34.59			
<i>The basic reason for the first sexual intercourse:</i>							
Infatuation/Love	182	80.18	62	46.62	24.27	1	.00
Curiosity/Excitement	45	19.82	71	53.38			
<i>Did you achieve orgasm during the first sexual intercourse?</i>							
Yes	103	45.37	129	96.99	48.81	1	.00
No	89	39.21	4	3.01			
I do not know	35	15.42	-				
<i>Have you ever had a one nightstand?</i>							
Yes	146	64.32	123	92.48	23.33	1	.00
No	81	35.68	10	7.52			
<i>Which form of contraception do you use?</i>							
Coitus interruptus	84	37.00	80	60.15	14.78	2	.00
Condoms	111	48.90	31	23.31			
Birth control pills (female partners)	32	14.10	22	16.54			
<i>Did you use contraception during your last sexual intercourse?</i>							
Yes	68	29.96	35	26.32	.33	1	.57
No	159	70.04	98	73.68			
<i>Did you use contraception during your first sexual intercourse?</i>							
Yes	122	53.74	83	62.41	1.54	1	.21
No	105	46.26	50	37.59			

When it comes to the context of the first sexual experience or the sexual initiation, the results clearly show that both genders engaged in their first sexual intercourse while they were in a romantic relationship ($n_M=67$, 65.41%, $n_F=160$, 70.48%), although women's reason for engaging in sexual intercourse was infatuation ($n_M=62$, 46.62%, $n_F=182$, 80.18%), while young men were more prone to perceive excitement and curiosity as their reason for sexual initiation ($n_M=71$, 53.38% vs $n_F=45$, 19.82%, $p=.00$). Unlike female participants, a significantly higher number of male participants claim to have achieved orgasm during their first sexual intercourse ($n_M=129$, 96.99% vs $n_F=103$, 45.37%, $p=.00$). Even though more than half of the female participants claim to have had a one-night stand, a significantly larger number of male participants claim to have had this experience ($n_M=123$, 92.48%, $n_F=146$, 64.32%, $p=.00$). It can be noticed that women, compared to men, demonstrate a greater pattern of safe sexual behaviour; more women use condoms ($n_M=31$, 23.31%, $n_F=111$, 48.90%, $p=.00$), while more men use coitus interruptus ($n_M=80$, 60.15%, $n_F=84$, 37%) as a form of birth control. If we compare the use of contraceptives during the first sexual intercourse in both genders, it is evident that more than fifty percent of the participants used a form of contraception. The results also show that there had been a significantly larger number of men and women who used a condom during their first sexual intercourse ($n_M=83$, 62.41%, $n_F=122$, 53.74%), than during the last ($n_M=35$, 26.32%, $n_F=68$, 29.96%), which is in accordance with some earlier findings.

In general, the significant coefficients of correlation are from low to moderately high for both genders. The age of the first sexual intercourse has a positive correlation with the number of sexual partners ($r=.25$, $p<.01$), the frequency of masturbation ($r=.32$, $p<.01$) and the level of sexual satisfaction measured with NSSS-S ($r=.14$, $p<.05$) for the female participants. Women who have had more partners tend to use contraceptives more frequently, while the usage of contraceptives has a positive correlation with the frequency of orgasms ($r=.13$, $p=.05$), but also with a greater acceptance of condom usage ($r=.39$, $p<.01$). Furthermore, women who perceive that they achieve orgasm more frequently are more sexually

satisfied ($r=.33$, $p<.01$), which emphasises the importance of the physiological aspect of sexuality for female sexual satisfaction. It is interesting to notice that frequent sexual intercourse with partners decreases the frequency of masturbation ($r=-.20$, $p<.01$), and also causes a significant change in the level of sexual satisfaction ($r=.34$, $p<.01$) and leads to a higher probability of achieving an orgasm ($r=.23$, $p<.01$). The female participants have also shown that a greater acceptance of condom usage is significantly correlated to the perception of sexual satisfaction ($r=.15$, $p<.01$). Besides, the satisfaction with first sexual intercourse has a positive correlation with the current sexual satisfaction measured with NSSS-S ($r=.34$, $p<.01$) and with the perception of satisfaction with sexual life in general ($r=.26$, $p<.01$). Therefore, the fact that women had a more positive experience, or that they perceived that they had been more satisfied during their first sexual intercourse, reflected the perception of the current level of sexual satisfaction. Results in the male sample show similar patterns of correlation; therefore, there is also a positive correlation between the age of sexual initiation and the number of sexual partners ($r=.33$, $p<.01$). We can also notice the same patterns of correlation for the frequency of masturbation and other measured variables for both genders.

Table 3

The coefficients of correlation between some aspects sexual behaviour, sexual satisfaction and attitude toward condom use.

	1	2	3	4	5	6	7	8	9	10
1. Age of first sexual intercourse		.33**	.24**	.22**	.14	.09	.11	.14	.19*	.11
2. Number of sexual partners	.25**		.30**	.56**	.25**	.17*	.20**	.20**	.15	.10
3. Frequency of masturbation	.32**	.03		-.22**	.02	.33**	.25**	.18*	.04	.00
4. Frequency of sexual intercourse with partner	.12	.04	-.20**		.13	.38**	.55**	.48**	.17*	.24**
5. Frequency of contraception usage	.10	.22**	.05	.12		.10	.00	.02	.00	.48**
6. Frequency of orgasm	.11	.05	.19*	.23**	.13*		.61**	.48**	.12	.01
7. NSSS-SV	.14*	.10	.17*	.34**	.12	.33**		.41**	.18*	.09
8. Satisfaction with sexual life	.11	.10	.15*	.30**	.12	.29**	.51**		.05	.00
9. Satisfaction with first sexual intercourse	.12	.05	.11	.12	.09	.18**	.34**	.26**		.01
10. Index of condom usage	.12	.12	.04	.22**	.39**	.10	.15*	.13*	.10	

Note. Coefficients of correlation under the diagonal are for female students, for male students coefficients of correlation are above the diagonal; * $p<.05$, ** $p<.01$

In contrast to the female participants, in the male participants the number of partners has a positive correlation with a number of variables such as frequency of masturbation ($r=.30$, $p<.01$), frequency of sexual intercourses ($r=.56$, $p<.01$), frequency of orgasms ($r=.17$, $p<.05$), sexual satisfaction ($r=.20$, $p<.01$) and the perception of the satisfaction with sexual life ($r=.20$, $p<.01$). Similar as for female participants, more frequent usage of contraceptives reflects the greater acceptance of condom usage ($r=.48$, $p<.01$). And finally, the unavoidable information is that a higher frequency of orgasms leads to greater sexual satisfaction ($r=.61$, $p<.01$) and a more satisfied sexual life in general ($r=.48$, $p<.01$).

Discussion

The purpose of this research was to examine gender differences in certain forms of sexual behaviour, the level of acceptance of condom use and the level of sexual satisfaction among heterosexual undergraduate students. In addition, based on the suggestion of Fisher (2012) and Peterson and Hyde (2010) we also add data of the effect size because gender differences in sexuality are sometimes more a reflection of common stereotypical beliefs than they are real differences. This research is somewhat a replication of the previous studies that were conducted in Croatian samples of students more than ten

years ago, so it is interesting to see whether there are any differences in sexual behaviour and sexual satisfaction among cohorts.

The previous studies have taught us that most first-year students have experienced some form of sexual activity. The period of adolescence and emerging adulthood is a developmental period in which first romantic relationships are made, which eventually develops the quality of adult romantic relationships. During this period, exploring sexuality and forming a sexual identity is a very important developmental task. Most of the participants of this research have been in a romantic relationship that has lasted 18 months on average, and all the participants were sexually active.

Male participants engaged in their first sexual intercourse approximately one year earlier than female participants. These results confirm earlier claims of the existence of a Mediterranean model of sexual initiation for heterosexual youth in Croatia, in which women engage in sexual intercourse at a later age than men. The findings on the earlier sexual initiation of men can be explained that due to the social expectations some men claim to have had sexual intercourse earlier than they actually did, while women, in order to "protect their reputation", report a later age of sexual initiation (Hodžić and Bijelić, 2003, Traen et al. 2011). Nevertheless, Landripet et al. (2010) emphasise that, even though gender differences in sexual initiation exist, they are not so great, which is confirmed by the effect size data from this research. Petersen and Hyde (2010) also report that there had been a general reduction in the age of the first sexual intercourse for both genders.

Namely, the age of sexual initiation has positive correlation with the number of sexual partners for both genders. This information is expected due to the fact that young people use the period from sexual initiation to a serious relationship to explore their sexuality with different partners. Some authors explain the earlier sexual initiation of young people with the larger amount of information and materials on sexuality (Lacković-Grgin, 2006).

Furthermore, the expected difference in the number of partners was confirmed by this research. Men, unlike women, reported that they had had significantly more sexual partners, which was further confirmed by the mean effect size data. The difference in the number of sexual partners between male and female students is in an expected direction, which is confirmed by some other research (Čorkalo and Renić, 1999; Paul et al. 2010).

On the other hand, Smith (1992) explained that gender differences in the number of sexual partners are mainly unclear because male participants overestimated and female participants underestimated number of sexual partners. Specifically, these differences are probably a result of different sexual values, reflected in greater sexual permissiveness in men than in women.

It is also necessary to mention that there were differences in one-night stand experiences. Even though more than half of the female participants experienced this form of casual sexual relationship, over ninety percent of the male participants in this research have reported this experience. If we consider the fact that the number of sexual partners within a period of time and entering a relationship with no previous emotional attachment is an aspect of non-restrictive socio-sexual behaviour, we can indirectly conclude those male participants have proven to be less restrictive than the female participants in this research. Namely, before the research has shown that men have a more positive attitude towards casual sex than women (Simpson and Gangestad, 1992; Oliver and Hyde, 1993, Schmitt, 2005), and that they more often seek short-term sexual partners than women (Schmitt, 2005, Kardum, Gračanin and Hudek-Knežević, 2008; Grundler, Kardum, and Hudek-Knežević, 2013). The most common explanations for these gender differences are given through the postulations of evolutionary psychology and the theory of social structures (Buss, 2006; Birnbaum et al. 2006).

When it comes to the context of the first sexual intercourse, i.e. sexual initiation, the results show that both young men and women have experienced their first sexual intercourse while being involved in a romantic relationship, and young women claim infatuation and love as the reason for engaging in sexual intercourse while men say they found a motive in excitement and curiosity. Therefore, this research has again confirmed that young women are more often motivated by feelings of love to engage in sexual intercourse and that they seek safe, protected and emotional environment for their sexual initiation, which they perceive as a serious relationship, while young men more often experience their first sexual intercourse as a one-night stand. Young women perceive "losing their virginity" in terms of a serious relationship as a gift for a special person whom they are in love with. On the other hand, young men do not perceive their first sexual intercourse as losing but gaining their gender identity, because they perceive their sexual initiation as becoming adults and "successful, true men". This is the reason why young men more rarely romantically idealise their first sexual intercourse (Hodžić and Bijelić, 2003; Morić, 2012).

When it comes to the level of acceptance of condom use, despite the fact that male and female students scored above average, female participants had significantly higher estimates than male participants. Furthermore, the fact that female students accept condom use on a higher level than male

students does not come as a surprise, and it is in accordance with the findings that Landripet et al., (2010) obtained from a similar sample.

More than half of the participants of both genders who participated in this research behaved responsibly during their first sexual intercourse, in terms of contraception usage, e.g. condom use. Both genders report that they almost always use some form of a contraceptive, mostly condoms. Some research indicates that contraception use significantly decreases as the relationship evolves, which we can suppose was also the case in this research due to the fact that the percentage of participants of both genders who used contraception during their last intercourse is lower, and most of them have been in a romantic relationship that lasted 18 months on average.

The reason why young women use condoms more often than coitus interruptus probably derives from the fact that they engage in a risky sexual intercourse with a higher "cost", and they are consequently more worried about the eventual consequences. Hodžić and Bijelić (2003) also support this claim with their finding that young women perceive the negative consequences of an irresponsible sexual behaviour, such as unwanted pregnancy or sexually transmitted diseases, more than their male partners. Therefore, male and female participants differently perceive the risks of an accidental encounter, regarding the fact that young women are more worried about negative consequences, which can explain the fact that they significantly less participate in risky sexual activities, such as "one-night stand".

Furthermore, the correlation analysis indicates the existence of a strong positive correlation between contraception use and a positive attitude towards condom use in both genders, which could be expected because it confirms prior findings. Therefore, Sheeran, Abraham, and Orbell (1999), in their research on psychosocial correlations of condom use in heterosexual relationships, find that the attitudes towards condom use and the frequency of contraception use present important information which can help in undertaking adequate measures towards the development of preventive programs in reproductive health care.

An interesting, significant positive correlation was found between the frequency of contraception use, the acceptance of condom use, sexual satisfaction and the frequency of orgasms in female participants. Responsible behaviour is important for young women because it results in more frequent orgasms and sexual satisfaction, as noted in the research. Furthermore, Higgins et al. (2008) emphasise that contraception usage is important for young women because the protection against unwanted pregnancy and sexually transmitted diseases creates the so-called "eroticized safety", which helps women to relax and enjoy more in their sexuality.

Besides, the information that men more frequently masturbate than young women is a common finding in studies, regardless of age group. Petersen and Hyde (2010), based on the meta-analysis, found that men and women did not differ on attitudes towards masturbation, but there are significant gender differences in masturbation. They measured the effect size of 0.53, while our research noted the effect size of 0.49 for the frequency of masturbation. In their analysis of American participants, Herbenick et al. (2010) found that the emerging adult men masturbated significantly more often; more precisely 62.8% of them declared that they had masturbated during the previous week, compared to 43.7% of women. Fisher (2012) emphasises that most men will experience their first sexual satisfaction through self-stimulation. Therefore, for most men, physical satisfaction precedes the formation of an intimate relationship, while it is more probable for women that they will develop a close relationship before experiencing sexual satisfaction.

Both genders estimate that they have sexual intercourse with their partner several times a week, which is in accordance with the results of Global Sex Survey from 2005. Namely, according to the data from this research, couples in Croatia engage in sexual activity every third day. Furthermore, twice as many young men, compared to young women, report achieving orgasm during their first sexual intercourse. A higher frequency of achieving orgasms during a sexual intercourse in male students is not surprising, due to the fact that this finding is in accordance with the results of other research. Namely, the studies show that the satisfaction in the first sexual intercourse in young women is an important quality of their relationship with their partner (Higgins, Trussell, Moore and Davidson, 2013, Sprecher, Barbee and Schwartz, 1995). Due to the fact that we did not measure the quality of the intercourse with their first sexual partner, we can only assume that a lower level of sexual pleasure in young men is partly a product of (dis)satisfaction with their relationship with their partner.

Besides, the results of the correlation analysis indicate that the satisfaction with the first sexual intercourse has a positive correlation with the assessment of the current sexual satisfaction for both genders. The importance of sexual history on the present aspects of sexuality is important from the investigative and the preventive-therapeutic perspective. So, if we step aside from the mere investigation of risky sexual behaviour in young people, and focus on positive aspects of sexuality, we can broaden the

prevention programs with the topics of the importance of positive first sexual experiences and sexual satisfaction later in life.

Furthermore, even though the results on the NSSS-S scale for both genders is above average, female participants perceive a slightly lower level of sexual satisfaction. However, there are no gender differences regarding the level of satisfaction with their sexual life in general. The comparison of the results assessed by the scale such as NSSS-s and one item measure is important and interesting from the methodological point of view. Namely, Mark et al. (2014) emphasise that one item measure for sexual satisfaction has the lowest test-retest reliability, while the NSSS-S has the highest in comparison to other instruments. It is also important to emphasise that the results of this research have shown a moderate positive correlation between the results of the one item measure of the satisfaction with sexual life and the results of the NSSS-S. Therefore, if we seek an economical solution, one item measure can be a relatively justified way, while measurements like NSSS-S are a more reasonable solution in order to obtain more reliable results. Besides the NSSS-S include contents that relate both the psychological aspects (e.g. My partner's emotional opening during sex) and physical aspects (e.g. The quality of orgasms) of sexual satisfaction, which are important components of sexual satisfaction in general. Higgins et al. (2011) emphasise that the frequency of orgasms is important for the physical sexual satisfaction of young women, and a devoted relationship for the psychological (emotional) sexual satisfaction, while for young men the frequency of sexual intercourses is also important for their physical, and among other variables, with the quality of the relationship, self-respect is also important for their psychological sexual satisfaction.

The results of this research demonstrate that the frequency of orgasms, the frequency of sexual intercourses, as well as the frequency of masturbation are correlated to the level of sexual satisfaction for both genders. Therefore, according to Higgins et al. (2011), physical aspects of a sexual intercourse are equally important for the level of sexual satisfaction regardless of the gender.

Conclusion and future directions

First of all, we have to point out some limitations of this study such as cross-sectional data and that some measures of sexual behaviours were based on one item. This is not something new in this type of research but still is statistically limited because the reliability of these measures remains vague. We also have to mention that in sexuality studies participants may be prone to socially desirable responding, so this may have happened in this study as well. Sometimes the participants will not give a valid answer when it comes to sexual behaviours that deviate from gender norms and social expectations. Alexander and Fisher(2003) report that men often exaggerate sexual activity while women do the opposite. However, the authors stress out that in the bogus pipeline condition, gender differences in sexual behaviour are negligible. Although we have an unrepresentative sample of non-heterosexual students we did not include their responses in analyses because the number was too small. It would be crucial if future studies collected data from hetero and non-heterosexual young people for comparison and to test the interaction between gender and sexual orientation on different aspects of sexuality such as sexual initiation or sexual satisfaction. This is quite important at several levels because we need to determine the models of sexual behaviours among non-heterosexual youth while they are at a higher risk of being victimised and engaged in a variety of risk behaviours.

This research took into consideration both positive and negative aspects of sexuality of heterosexual young people, from risky sexual behaviour to sexual satisfaction, as recommended by authors Tolman and McClelland (2011). In general, the result of this research directs us to conclude that students use contraception relatively often, although the analysis has shown that they were more responsible during their first sexual intercourse than the last. Also, the students of both genders have positive attitudes towards condom use during intercourse, while a positive correlation between contraception usage and the acceptance of condom usage has been determined. While the majority of the examined variables have shown significant gender differences, a medium effect size was recorded for the number of sexual partners, the frequency of masturbation, the frequency of orgasms and the acceptance of condom use. Even though this research represents, in one way, a replication of previous studies in Croatia conducted more than six years ago, we still found similar gender differences in sexual behaviours. Although this research was cross-sectional these similarities in findings suggest that at least for a heterosexual male and female students the Mediterranean model explained differences in sexual behaviours.

Another interesting result of this research needs to be highlighted because it confirms the findings of Higgins et al. (2006) on the relation of contraception usage, frequency of orgasms and sexual satisfaction in young women. In female students, contraception usage most likely generates a feeling of

responsibility, safety, and relaxation, which reflects on the level of their sexual satisfaction and frequency of orgasms. As previously said, the information on the relation between contraception usage and the acceptance of condom usage can be a major topic of the prevention programs, as well as the programs on the importance of reproductive health care, which includes satisfying and safe sexual life.

References

- Abraham, C., & Sheeran, P. (2004). Implications of goal theories for the theories of reasoned action and planned behaviour. *Current Psychology, 22*, 218-233.
- Alexander, M.G., & Fisher, T.D. (2003). Truth and consequences: Using the bogus pipeline to examine sex differences in self-reported sexuality. *Journal of Sex Research, 40*, 27-35.
- American College Health Association. (2012). *American College Health Association-National College Health Assessment II: Reference Group Executive Summary Spring 2012*. Hanover, MD: American College Health Association.
- Bernik, I., & Hlebec, V. (2000). When is sex fun? Sexual satisfaction among Slovenian youth, *Društvena istraživanja, 9* (6), 847-866.
- Birnbaum, G.E., Reis, H.T., Mikulincer, M., Gillath, O., & Orpaz, A. (2006). When sex is more than just sex: attachment orientations, sexual experience, and relationship quality. *Journal of Personality and Social Psychology, 91* (5), 929-943.
- Buss, D. M. (2006). Strategies of Human Mating. *Psychological Topics, 15* (2), 239-260.
- Caron, S. L., Davis, C. M., Halteman, W. A., & Stickle, M. (1993). Predictors of condom-related behaviours among first-year college students. *Journal of Sex Research, 30*, 252-259.
- Castro Martin, T. (2005). Contraceptive use patterns among Spanish single youth. *The European Journal of Contraception & Reproductive Health Care, 10* (4), 219-228.
- Čorkalo, D., & Renić, D. (1999). Stavovi, znanja i ponašanja studenata u vezi sa AIDS-om (AIDS: Attitudes, Knowledge and Behaviour of University Students). *Društvena istraživanja, 8* (2-3), 287-304.
- Falah Hassani, K. (2010). Changes in Sexual Behaviour and Hormonal Contraceptives Use Among Finnish Adolescents. Unpublished dissertation. Tampere, FIN: University of Tampere.
- Fehr, S.K., Vidourek, R.A., & King, K.A. (2015). Intra- and Inter-personal Barriers to Condom Use Among College Students: A Review of the Literature. *Sexuality & Culture, 19* (1), 103-221.
- Fisher, T. (2012). What Sexual Scientists Know About Gender Differences and Similarities in Sexuality, the Society for the Scientific Study of Sexuality. Retrieved from www.sexscience.org/
- Grundler, P., Kardum, I., & Hudek-Knežević, J. (2013). Učestalost nekih aspekata preotimanja partnera i njihova povezanost sa socioseksualnosti (The Frequency of Some Aspects of Mate Poaching and Their Relationships with Sociosexuality), *Društvena istraživanja, 22* (1), 63-78.
- Halpern, C.T., Waller, M.W., Spriggs, A., & Hallfors, D. D. (2006). Adolescent predictors of emerging adult sexual patterns. *Journal of Adolescent Health, 39*, 926- 936.
- Herbenick, D., Reece, M., Sanders, S.A., Schick, V., Dodge, B., & Fortenberry, J.D. (2010). Sexual behaviour in the United States: Results from a national probability sample of males and females ages 14 to 94. *Journal of Sexual Medicine, 7* (5), 255-265.
- Higgins, J.A., Hoffman, S., Graham, C.A., & Sanders, S.A. (2008). Relationships between condoms, hormonal methods, and sexual pleasure and satisfaction: an exploratory analysis from the Women's Well-Being and Sexuality Study, *Sexual Health, 5* (4), 321-330.
- Higgins, J.A., Trussell, J., Moore, N.B., & Davidson, J.K. (2013). The Language of Love?-Verbal versus Implied Consent at First Heterosexual Intercourse: Implications for Contraceptive Use, *American Journal of Health Education, 41* (4), 218-230.
- Hodžić, A., & Bijelić, N. (2003). *Značaj roda u stavovima i seksualnom ponašanju adolescenata i adolescentica* (Role of gender in attitudes and sexual behaviour among adolescents). Zagreb, HR: CESI.
- Kaestle, C. E., & Halpern, C. T. (2005). Sexual intercourse precedes partner violence in adolescent romantic relationships. *Journal of Adolescent Health, 36*, 386-392.
- Kaestle, C.E., & Allen, K.R. (2011). The role of masturbation- in healthy sexual development: perceptions of young adults, *Archives of Sexual Behaviour, 40* (5), 983-994.
- Kangas, I., Andersen, B., McGarrigle, C.A., & Ostergaard, L. (2004). A comparison of sexual behaviour and attitudes of healthy adolescents in a Danish high school in 1982, 1996, and 2001. *Population Health Metrics, 2* (1), 5-10.

- Kardum, I., Gračanin, A., & Hudek-Knežević, J. (2008). Dimenzije ličnosti i religioznost kao prediktori socioseksualnosti kod žena i muškaraca (Personality Traits and Religiosity as Predictors of Sociosexuality in Women and Men). *Društvena istraživanja*, 3 (95), 505-528.
- Korobov, N. (2006). The management of nonrelational sexuality: Positioning strategies in adolescent male talk about (hetero)sexual attraction. *Men and Masculinities*, 8, 493-517.
- Lacković-Grgin, K. (2006). *Psihologija adolescencije* (Psychology of Adolescence). Jastrebarsko, HR: Naklada Slap
- Landripet, I., Šević, S., Car, D., Baćak, V., Mamula, M., & Štulhofer, A. (2010). Promjene u seksualnosti mladih? Rezultati longitudinalnog istraživanja u populaciji novoupisanih studentica i studenata Sveučilišta u Zagrebu u razdoblju od 1998. do 2008. godine (Changing Sexuality? Results from the University of Zagreb First-Year Students Studies, 1998-2008). *Društvena istraživanja*, 19 (6), 995-1015.
- Mark, K. P., Herbenick, D., Fortenberry, J. D., Sanders, S., & Reece, M. (2014). A psychometric comparison of three scales and a single-item measure to assess sexual satisfaction. *The Journal of Sex Research*, 51 (2), 159-169.
- Morić, A. (2012). Privrženost, samostišavanje i neki aspekti seksualnosti u relaciji sa seksualnim samopoimanjem (Attachment, self-silencing and some aspects of sexuality in relations with sexual subjectivity). Neobjavljeni diplomski rad. Zadar, HR: Odjel za psihologiju Sveučilišta u Zadru.
- Netting, N. S., & Burnett, M. L. (2004). Twenty years of student sexual behaviour: Subcultural adaptations to a changing health environment. *Adolescence*, 39, 19-38.
- Oliver, M.B., & Hyde, J.S. (1993). Gender differences in sexuality: A meta-analysis. *Psychological Bulletin*, 114, 29-51.
- Paul, E. L., McManus, B., & Hayes, A. (2000). "Hookups": Characteristics and correlates of college students' spontaneous and anonymous sexual experiences. *Journal of Sexual Research*, 37, 76-88.
- Petersen, J.L., & Hyde, J.S. (2010). A meta-analytic review of research on gender differences in sexuality, 1993-2007. *Psychological Bulletin*, 136, (1), 21-38.
- Ratliff-Crain, J., Donald, K.M., & Dalton, J. (1999). Knowledge, beliefs, peer norms, and past behaviours as correlates of risky sexual behaviours among college students. *Psychology and Health*, 14, 625-641.
- Rotermann, M. (2008). Trends in teen sexual behaviour and condom use. *Health Reports*, 19, (3), 53-57.
- Santrock, J. (2014). *Adolescence*. NYC, NY: McGraw-Hill.
- Schmitt, D. P. (2005). Sociosexuality from Argentina to Zimbabwe: a 48-nation study of sex, culture, and strategies of human mating. *Behavioural and Brain Sciences*, 28 (2), 247-311.
- Sexuality Information and Education Council of the United States (SIECUS). (2004). National guidelines task force: Guidelines for comprehensive sexuality education. Washington, DC: Author.
- Sheeran P., Abraham C., & Orbell S. (1999). Psychological Correlation of Heterosexual Condom Use: A Meta-Analysis. *Psychological Bulletin*, 125, 90-132.
- Simpson, J. A., & Gangestad, S. W. (1992). Sociosexuality and romantic partner choice. *Journal of Personality*, 60 (1), 31-51.
- Smith, T.W. (1992). Discrepancies between men and women in reporting number of sexual partners: a summary from four countries. *Social Biology*, 39, 203-211.
- Sprecher, S., Barbee, A., & Schwartz, P. (1995). "Was it good for you too?": Gender differences in first sexual intercourse experiences. *The Journal of Sex Research*, 3 (1), 3-15.
- Štulhofer, A., Ajduković, D., Božičević, I., & Kufirin, K. (2006). *HIV/AIDS i mladi – Hrvatska 2005.: informiranost o HIV/AIDS-u, stavovi i seksualno ponašanje u nacionalnom uzorku mladeži (18-24)*. Zagreb, HR: Ministarstvo zdravstva i socijalne skrbi.
- Štulhofer, A., Anterić, G., & Šlosar, S. (2004a). Seksualna permisivnost, egalitarnost i odgovornost: Longitudinalno istraživanje seksualnosti u kasnoj adolescenciji, 1998. – 2003. *Revija za sociologiju*, 35 (1-2), 31-44.
- Štulhofer, A., Buško, V., & Broulliard, P. (2010). Development and Bi-Cultural Validation of the New Sexual Satisfaction Scale. *Journal of Sexual research*, 47 (4), 257-268.
- Štulhofer, A., Jureša, V., & Mamula, M. (2000). Problematični užici: Rizično seksualno ponašanje u kasnoj adolescenciji. *Društvena istraživanja*, 9 (50), 867-893.
- Štulhofer, A., Zelenbrz, J., Landripet, I., Kutu, S., Gregurović, M., & Tiljak, H. (2004b). Spol, starenje i seksualnost: Struktura i dinamika seksualnoga zadovoljstva u heteroseksualnom uzorku urbanih žena i muškaraca. *Društvena istraživanja*, 13, (74), 1011-1029.
- Thornton, A., & Camburn, D. (1987). The Influence of the Family on Premarital Sexual Attitudes and Behaviour. *Demography*, 24 (3), 323-340.
- Tolman, D. L., & McClelland, S. I. (2011). Normative sexuality development in adolescence: A decade in review 2000-2009. *Journal of Research in Adolescence*, 21 (1), 242-255.

- Traen, B., Štulhofer, A., & Landripet, I. (2011). Young and Sexual in Norway and Croatia: Revisiting the Scandinavian Versus Mediterranean Gendered Pattern of Sexual Initiation. *International Journal of Sexual Health*, 23 (3), 196-209.
- Trani, F., Gnisci, F., Nobile, C.G.A., & Angelillo, I.E. (2005). Adolescents and sexual transmitted infections: knowledge and behaviour in Italy. *Journal of Pediatrics and Child Health*, 41, (5-6), 260-264.
- Wellings K., Collumbien M., Slaymaker E., Singh S., Hodges Z., Patel, D., & Bajos, N. (2006). Sexual and reproductive health 2 - Sexual behaviour in context: a global perspective, *Lancet*, 368, 1706–1728.

19

Students' engagement in learning physics: A subject-specific approach

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Abstract

Most of the existing conceptualizations of students' engagement explore the role of general engagement. However, if we are interested in understanding the process of learning specific school subjects, this approach is not suitable. The aim of the study was to explore the components of students' engagement in learning physics and to examine the differences in engagement in physics in respect of several variables: gender, grade, the expected grade in the subject at the end of the school year and the intention to choose physics as an elective subject in the national secondary general education final examination (The Croatian State Matura). The participants were 803 students from the second, third and fourth grade in five general-program grammar schools in Croatia. Confirmatory factor analyses confirmed the existence of three distinct, but related components of students' engagement in physics: cognitive, behavioral and emotional engagement, which all show satisfying to high reliability. Consistent with theoretical expectations, the results on the subscales measuring different components of engagement were positively associated, lowly or moderately, with the subjective task values and self-efficacy in physics. Our participants showed moderate engagement in physics on all three subscales. Gender differences were found only on the emotional subscale, with males having higher results than their female peers. Although students from the lower grades had higher cognitive and behavioral engagement, students from the fourth grade had higher emotional engagement. Students who expected a higher grade in physics had a higher level of engagement on each subscale, while students who did not intend to choose physics as an elective subject in the national final examination had lower levels of engagement.

Keywords: engagement, physics, secondary-school students, subjective task values, self-efficacy

Engagement is a construct linked to a broader area of motivation, wherein motivation represents intention, while engagement represents the component of action (Reeve, 2012). In the last two decades, the concept of engagement has been intensively researched because it has been proved to be the key factor in the achieving of educational expectations. Numerous studies have shown that the engagement is a positive predictor of the quality of learning, school grades, results in exams and, taking a long term-view, a positive predictor of regular school attendance, successful school graduation, resistance and life satisfaction (Appleton, Christenson, & Furlong, 2008; Finn & Rock, 1997; Fredricks, Blumenfeld, & Paris, 2004; Salmela-Aro & Upadyaya, 2014; Skinner, Zimmer-Gembeck, & Connell, 1998).

Among different authors, there is still no consensus over the definition and complexity of the construct of engagement. Researchers agree that it is a multidimensional construct that includes several components, but there is no agreement over the number of them. Constructs that comprise two, three or four components of engagement are dominant in the literature (Reschly & Christenson, 2012). Different authors agree that engagement at least consists of behavioral and emotional (or affective) components. Many researchers also add the cognitive component (Appleton, Christenson, Kim, & Reschly, 2006; Christenson & Anderson, 2002; Fredricks et al., 2004; Reeve & Lee, 2014), thus in this study, we started from the three-component conception of engagement.

Behavioral engagement can be identified in several ways (Fredericks et al., 2004): a positive conduct, as the following of rules, and as the maintaining of compliant behaviour through effort, persistence, concentration, attention and communicating, and as a school commitment. Emotional engagement is described as positive and negative emotions experienced while learning or in the classroom, such as interest, anxiety and frustration (Kong, Wong, & Lam, 2003). Cognitive engagement includes the way in which students attend to information, store it in memory, access knowledge and use it in thinking about problems and their solution. Kong et al. (2003) report several indicators of cognitive engagement: the use of surface strategies (memorization and practicing), the use of deep strategies (understanding the question, summarising learning, connecting new knowledge with the old one), and reliance (on parents and teachers).

Only a few studies have examined gender and age differences in engagement. Wang, Willett, and Eccles (2011) have found no differences between boys and girls; however, Lam et al. (2012) have found, in an international study, that girls reported higher levels of engagement in school. Amir, Saleha, Jelas, and Hutkemri (2014) have found in a sample of 12 to 16- year- old students that girls reported higher behavioural and emotional engagement, but there were no significant differences for cognitive engagement. In their study, the results for all components of engagement were lower for older age groups.

The most commonly used instruments for measuring the engagement are self-report scales (Fredricks & McColskey, 2012). Most of these questionnaires measure the general engagement, although there are some measures of specific engagement, for example in the area of mathematics (Kong, Wong, & Lam, 2003) or reading (Wigfield et al., 2008). The advantage of self-report scales is that they grasp, in the best way, a subjective perception of engagement, especially when it comes to emotional and cognitive engagement components, which are hard to observe objectively. Thus, Appleton et al. (2006) suggest that only self-report measures should be used for the measurement of emotional and cognitive components of engagement. Of course, these scales have the same advantages and disadvantages as other self-report scales: they can be easily applied in large samples at a relatively small cost, but the honesty of participants' answers can be questionable, and we cannot know whether the participants' answers reflect their actual behaviour. In addition to this, as we have mentioned earlier, the items in most scales are formulated in such a way that they relate to general engagement in school and not to the engagement in the specific tasks and situations. In the studies which examine the engagement under the influence of contextual factors, the items relating to the general engagement are not suitable (Fredricks & McColskey, 2012). Furthermore, none of the existing measures intended to measure situational students' engagement address all three dimensions of engagement (Fredricks, McColskey, Meli, Mordica, Montrosse, & Mooney, 2011). Thus, in this study, we developed a situation specific measure for the engagement in physics.

For the assessing of the concurrent validity of the scale, we examined two measures of motivation: subjective task values and self-efficacy. Engagement is also associated with motivation as a construct included in the broader area of motivation, so we expect that task values and self-efficacy will be in low or moderate positive correlations with different components of engagement. We will shortly describe each of these variables. Subjective task values are important components in the expectancy-value model (Eccles et al., 1983; Eccles, 2005; Eccles & Wigfield, 2002), one of the most prominent contemporary theoretical frameworks of motivation in education. According to this model, motivational beliefs – expectancies of success and subjective task values – are direct predictors of achievement performance and academic choices (Wigfield, Tonks, & Klauda, 2009).

Eccles et al. (1983) have proposed four components of subjective task values: attainment value or importance, intrinsic value or interest, utility value or usefulness of the task, and cost. Attainment value is the importance of doing well on a given task. Tasks are important when individuals view them as central to their own sense of themselves, or allow them to express or confirm important aspects of self. Intrinsic value or interest is the enjoyment one gains from doing the task. Utility value or usefulness refers to how a task fits into an individual's future plans. It can be similar to extrinsic motivation in some aspects. However, it also reflects some important goals that the person holds deeply, and is also connected to personal goals and sense of self (Wigfield & Cambria, 2010). Cost refers to what the person has to give up to do a task (e. g., "Will I do homework or see my friends?"), as well as the anticipated effort needed to finish the task.

Self-efficacy is one's belief in one's ability to succeed in specific situations or to accomplish a task (Bandura, 1997). According to Bandura's social cognitive theory, people with high self-efficacy are more likely to view difficult tasks as something to be mastered rather than something to be avoided (Bandura, 1997).

The study aimed to explore components of students' engagement in learning physics by examining several aspects of construct validity (Messick, 1995). Therefore, the following research problems were formulated: a) to test the structural aspect of validity; b) to assess the external aspect of validity (i.e. concurrent validity) by measuring the relationships between the results on the subscales that measure different aspects of engagement and theoretically relevant correlates (subjective task values and self-efficacy) and outcomes (expected grade in physics at the end of the school year and the intention to choose physics as an elective subject in national secondary general education final examination) and c) to explore the generalizability aspect by examining the differences in engagement in physics in respect of gender and grade.

Method and material

Participants

The participants were 803 students (61.5% female) from five general-program grammar schools (academically oriented high schools) in Croatia. The students were from the second ($n = 302$), third ($n = 381$) and fourth ($n = 120$) grade. Their age ranged from 15 to 19, with a mean of 16.5 years ($SD = 0.84$).

Procedure

The study was carried out with the approval of the Ethics Committee of the Department of Psychology, Faculty of Humanities and Social Sciences in Zagreb, and with the permission of the Ministry of Science, Education and Sports. School principals' approvals were obtained, and participants' parents were informed that the study would be carried out. All surveys were administered during the students' regular school classes. Participants were informed that their answers would be anonymous and that nobody except the researchers would see their surveys. They were told that completing the questionnaire would be considered as their consent to participate in the study and were given the standard option of opting out at any time. The participants completed the questionnaires in 15 to 20 minutes.

Measures

Engagement in physics scale. The scale was constructed according to the three-component conception of engagement (e.g., Fredricks, Blumenfeld, & Paris, 2004). It consisted of three subscales: cognitive engagement ("I learn physics until I become sure I understood everything"), behavioral engagement ("I am trying to do my best during the lecture") and emotional engagement ("I am nervous when I study physics"). Participants responded on a Likert-type scale ranging from 1 ("I do not agree") to 5 ("I agree"). Several items need to be recoded, and higher results indicate higher engagement. For each participant, the total score on each subscale is calculated as a mean of his/her ratings.

In addition to this, cognitive interviews (Willis, 2005) were carried out with 10 high school students, who were asked to read the items and explain how they understood them, as well as to express their opinion on different aspects of engagement in learning physics. All of this was taken into account during the formulation of items. The first version of the scale consisted of 26 items (cognitive engagement was represented with 9 items, behavioral engagement with 7 items, and emotional engagement with 10 items).

Subjective task values scale for physics (Putarek, Rován & Vlahović-Štetić, 2016). The scale consists of three subscales which measure subjective task values. Intrinsic value or interest in physics is represented with

five items, e.g. "I am very interested in physics". Utility value or usefulness of physics is also represented with five items (e.g., "Physics can be applied in everyday life"), and attainment value, or importance of physics, is represented with three items (e.g., "It is important for me to master physics"). Participants give answers on a Likert-type scale ranging from 1 ("I do not agree") to 5 ("I agree"), where a larger number means a greater value of physics. Although the three-factor model showed an acceptable fit for all indices, the correlations between the components of task values were high ($r = .58$ to $r = .72$), therefore the total result was used in the further analyses. For each participant, the total result was calculated as a mean of his/her ratings on all items. Cronbach's alpha coefficient was .92.

Self-efficacy in physics scale (Rovan, 2011). The scale was originally developed for the area of mathematics, but in this study, it was adapted for the area of physics. It consists of six items which measure participants' self-assessed competence in physics (e.g., "I am sure I can understand all topics I have to learn in physics"). Participants give their answers on a scale of 1 ("strongly disagree") to 7 ("strongly agree"). The total result is calculated as a mean of participants' ratings. Cronbach's alpha reliability coefficient for the scale was .92 in this study.

The participants' intention to choose physics as an elective subject in the national secondary general education final examination was assessed with one item (e.g., "Will you choose physics as an elective subject in the final examination?"), and the possible answers were "yes", "maybe" and "no". The participants were also asked what school grade for physics they expected at the end of the school year.

Results

In order to examine the factor structure of the Engagement on physics scale, the confirmatory factor analysis was performed, using the R statistical package, version 3.3.1. More precisely, we compared the one-factor model to the three-factor model described earlier in this paper. Firstly, Mardia Test was calculated to test multivariate normality and it showed nonnormality of our data (skewness = 6841.36, $p < .001$; kurtosis = 32.02, $p < .001$). Consequently, CFA was conducted with 775 participants using the robust maximum-likelihood estimation method with the Yuan-Bentler correction. Several goodness-of-fit measures were used in this study: (a) χ^2 test (value should not be statistically significant in order to confirm a good fit between model and data) (Brown, 2006); (b) χ^2/df (cutoff criterion of good fit: values less than 5) (West, Taylor, & Wu, 2012); (c) comparative fit index (CFI) (values greater than 0.95 showing a good fit) (Hu & Bentler, 1999); (d) a root mean square error of approximation (RMSEA) (values of less than .06 showing good fit) (Hu & Bentler, 1999); (e) a standardized root mean square residual (SRMR) (values of less than 0.08 showing a good fit) (West et al., 2012).

Three-factor model yielded better fit indices ($\chi^2 = 1995.713$, $p < .001$; $\chi^2/df = 6.742$; CFI = .784; RMSEA = .086, 90% CI = [.083, .089]; SRMR = .120) than one-factor model ($\chi^2 = 2863.705$, $p < .001$; $\chi^2/df = 9.578$; CFI = .675; RMSEA = .105, 90% CI = [.102, .109]; SRMR = .106), which was confirmed by the chi-square difference test ($\Delta\chi^2 = 320.47$, $\Delta df = 3$, $p < .001$).

According to the results of CFA, the three-factor model was superior to the one-factor model, so this model was modified in the further analysis to obtain a better fit between our data and model. Modification indices (i.e., an approximation of how much the overall χ^2 would decrease if the fixed or constrained parameter had been freely estimated; Brown, 2006) were taken into account in order to estimate which cross-loadings between an item and different factors would yield to the drop of overall χ^2 . Indices of 3.84 or greater indicate that the overall model fit could be significantly improved if the fixed or constrained parameter was freely estimated (Brown, 2006). In our model, items 5 and 12 (behavioral dimension), 6 (cognitive dimension), 3, 11, 16, 18, and 20 (emotional dimension) were deleted, because their cross-loadings with two or three factors would decrease the overall χ^2 and these cross-loadings were not theoretically valid.

Furthermore, the correlations between items errors (shown in Figure 1) were included into the model because some items had similar wording, which could result in associations between them. The final model fit indices are following: $\chi^2 = 367.348$, $p < .001$; $\chi^2/df = 2.893$; CFI = .954; RMSEA = .049, 90% CI = (.044, .055); SRMR = .063. Referring to West et al. (2012), all model fit indices, except the chi-square, had acceptable values. Thus, our modified three-factor model indicated that behavioral, cognitive and emotional dimensions are the underlying structure of the engagement in physics. Regarding significant chi-square, these statistics are influenced by the sample size, and with large N, like in our study, the results are rejected on the basis of the chi-square even when differences between data and the model are

negligible (Brown, 2006). The behavioral dimension has eight items, while cognitive and emotional factor have five items each. Factor loadings, residual variances and correlations are shown in Figure 1.

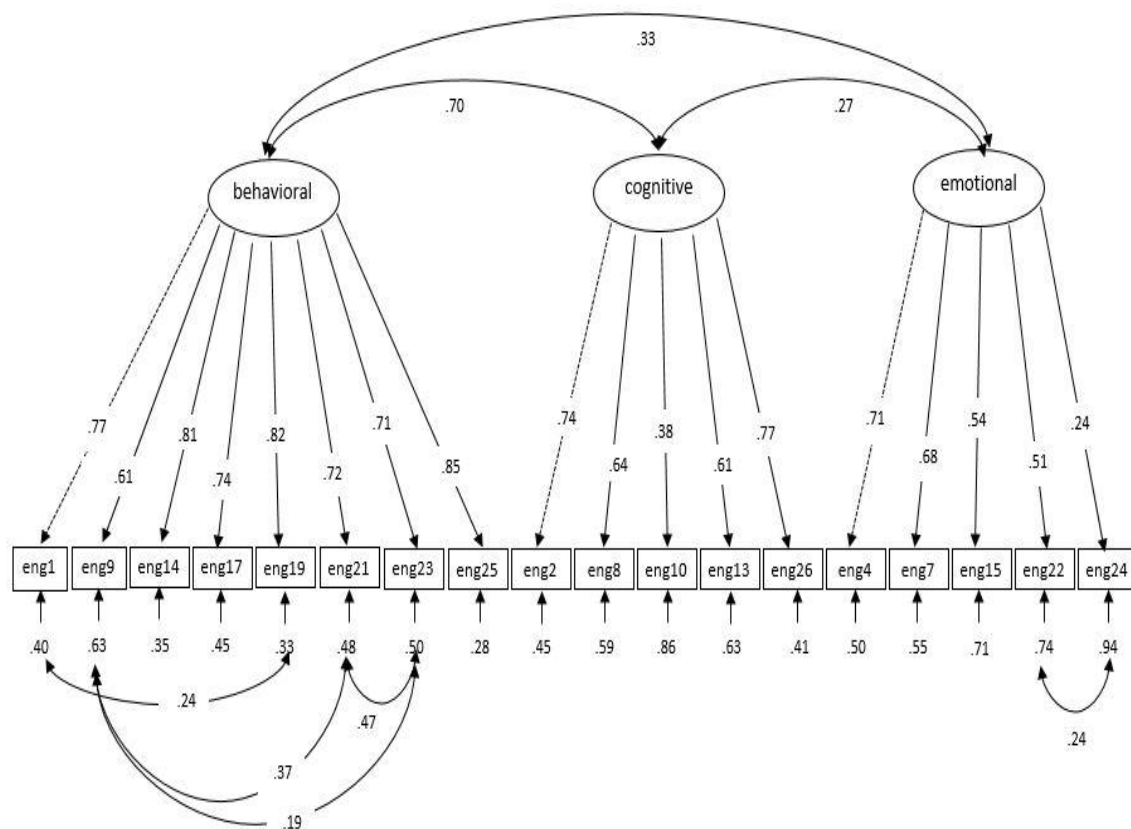


Figure 1. The results of CFA (robust maximum-likelihood estimation method) of the Engagement in physics scale: standardized path coefficients, residual variances and correlations (all statistically significant at $p < .001$).

As Figure 1 shows, almost all items have saturations higher than .30, which is usually the cut-off criterion for the interpretability of factor saturations (Brown, 2006). Item 24 (“I am frustrated when I’m unable to answer the question”) has lower saturation than the previously mentioned cut-off criterion, which can be the consequence of the item’s content that can be perceived not only as emotional (i.e., frustration), but also as cognitive (i.e., knowing the answer to the question). However, having a strong emphasis on emotions and a good theoretical basis, this item was included in our scale and loaded only on the emotional dimension.

Cronbach’s alpha was very good for the behavioral subscale ($\alpha = .92$) and acceptable for the cognitive subscale ($\alpha = .76$), but the alpha coefficient obtained for the emotional subscale ($\alpha = .65$) has the value lower than .70 which is usually used as the lower bond of acceptability (de Vaus, 2002). Therefore, the results on this scale should be interpreted more cautiously.

The correlation between behavioral and cognitive subscale was .58 ($p < .001$), the correlation between behavioral and emotional subscale was .22 ($p < .001$), while the correlation between cognitive and emotional subscale was .11 ($p < .001$), indicating a relative independence between dimensions. The items from each subscale are shown in Appendix A, in the Croatian and English language (the scale was validated for the Croatian language, so the translation is just for orientation).

Table 1 shows descriptive statistics and correlations between the variables.

Table 1
Descriptive results and correlations between variables (N = 794)

Variable	M	SD	Range	1.	2.	3.	4.	5.	6.
1. Expected grade in physics	3.83	0.98	1-5	-					
2. Cognitive engagement	3.16	0.97	1-5	.32*	-				
3. Behavioral engagement	2.83	1.04	1-5	.26**	.58**	-			
4. Emotional engagement	3.14	0.94	1-5	.35**	.11**	.22**	-		
5. Subjective task values	2.92	0.95	1-5	.56**	.50**	.47**	.45**	-	
6. Self-efficacy	4.34	1.35	1-7	.45**	.43**	.33**	.40**	.62**	-

** $p < .01$

In the whole sample, the levels of all three components of engagement were moderate. Their correlations with self-efficacy and subjective task values in physics were low to moderate.

Table 2 shows the differences among the students, regarding the expected grade in physics at the end of the school year for each component of engagement. Because a small number of students indicated that they expected grade 2 in physics, we joined the categories for grades 2 and 3. The results of the ANOVA's for each subscale were statistically significant and Scheffé's tests show between which subgroups there are significant differences. Generally, students who expect a higher grade have a higher level of engagement on each subscale. Effect sizes are medium to large (Cohen, 1988).

Table 2
Results of ANOVAs for differences between students with different expected school grades in physics in cognitive, behavioral and emotional engagement in physics

Variable	Expected grade	n	M	SD	F	df	Scheffé	η^2
Cognitive engagement	2 or 3	275	2.76	0.92	43.87**	2,764	2 or 3 < 4	0.114
	4	260	3.26	0.80			2 or 3 < 5	
	5	232	3.51	1.04			4 < 5	
Behavioral engagement	2 or 3	271	2.52	0.95	27.09**	2,763	2 or 3 < 4	0.071
	4	264	2.86	0.93			2 or 3 < 5	
	5	231	3.18	1.13			4 < 5	
Emotional engagement	2 or 3	274	2.85	0.85	70.80**	2,763	2 or 3 < 5	0.185
	4	261	2.97	0.82			4 < 5	
	5	231	3.70	0.90				

** $p < .001$

Table 3 shows the differences among the students regarding their answers to the question "Will you choose physics as an elective subject in the final examination?" The results show that students who did not intend to choose physics as an elective subject in the national final examination had lower levels of engagement than the students who chose answers "yes" or "maybe". Effect sizes are medium to large (Cohen, 1988).

Table 3

Results of ANOVAs for differences between students regarding their intention to choose physics as an elective subject on exit examinations, for cognitive, behavioral and emotional engagement in physics

Variable	Elective subject	<i>n</i>	<i>M</i>	<i>SD</i>	<i>F</i>	df	Scheffé	η^2
Cognitive engagement	Yes	119	3.61	0.90	20.45**	2,792	No < Yes No < Maybe	0.140
	Maybe	225	3.52	0.86				
	No	451	2.86	0.95				
Behavioral engagement	Yes	120	3.28	1.10	21.77**	2,791	No < Yes No < Maybe	0.102
	Maybe	224	3.15	0.97				
	No	450	2.56	0.97				
Emotional engagement	Yes	120	3.51	0.91	12.90**	2,792	No < Yes No < Maybe	0.056
	Maybe	223	3.29	0.87				
	No	452	2.96	0.93				

** $p < .001$

We examined whether there are any gender differences in different components of engagement. There were no significant differences in cognitive engagement ($M_{\text{male}} = 3.16$, $SD = 0.92$; $M_{\text{female}} = 3.16$; $SD = 1.01$; $t(792) = 0.01$; $p = .990$) and in behavioral engagement ($M_{\text{male}} = 2.82$, $SD = 1.04$; $M_{\text{female}} = 2.85$; $SD = 1.04$; $t(791) = 0.46$; $p = .646$), while the difference in emotional engagement was statistically significant ($M_{\text{male}} = 3.25$, $SD = 0.89$; $M_{\text{female}} = 3.06$; $SD = 0.95$; $t(792) = 2.85$; $p = .004$; $d = 0.21$).

We also examined for each component of engagement whether there were any differences between students from 2nd, 3rd and 4th grade. Table 4 shows the results of ANOVAs. Generally, students from higher grades show lower cognitive and behavioural engagement in physics, but a higher emotional engagement. Effect sizes are low to medium (Cohen, 1988).

Table 4

Results of ANOVAs for differences between students of different grades in cognitive, behavioral and emotional engagement in physics

Variable	Grade	<i>n</i>	<i>M</i>	<i>SD</i>	<i>F</i>	df	Scheffé	η^2
Cognitive engagement	2	300	3.34	0.97	20.45**	2,792	2 < 4 3 < 4	0.057
	3	377	3.18	0.92				
	4	118	2.65	0.98				
Behavioral engagement	2	299	3.12	1.02	21.77**	2,791	2 < 3 2 < 4	0.053
	3	378	2.72	0.99				
	4	117	2.48	1.05				
Emotional engagement	2	298	3.04	0.99	12.90**	2,792	2 < 4 3 < 4	0.038
	3	380	3.08	0.88				
	4	117	3.56	0.84				

** $p < .001$

Discussion

The aim of the study was to explore the components of students' engagement in learning physics and to examine the differences in engagement in physics in respect of several variables: gender, grade, expected grade in physics at the end of the school year and the intention to choose physics as an elective subject in national secondary general education final examination. Our results indicate that the Engagement in physics scale showed an adequate structural validity and reliability. In particular, the results revealed a significantly better fit for the three-factor model (where cognitive, behavioural, and emotional engagement are factorially distinct) compared with the one-factor model. This finding is in accordance with the models which suggest that engagement is a multidimensional construct; in this study, we started from the three-component conception (Appleton et al., 2006; Christenson & Anderson, 2002; Fredricks et al., 2004; Reeve & Lee, 2014), which was confirmed.

Concerning the concurrent validity, our findings indicate that, as expected theoretically, the subscales of the Engagement in physics scale are in positive, low to moderate correlations with subjective task values and self-efficacy in physics. All three constructs were measured at the specific subject level (i.e., physics), not as the general motivation measures and engagement. Moreover, as mentioned earlier, engagement is part of a broader motivation area, and subjective task values and self-efficacy are measures of motivation. Therefore, the obtained positive correlations between these variables are not surprising. However, the correlations were not high, which can be explained by the nature of the engagement on the one hand, and subjective task values and self-efficacy on the other. More specifically, subjective task values and self-efficacy are intentions that are not necessarily transferred to behavior, while engagement has a behavioral component.

Overall, the levels of all three components of engagement were moderate in our sample, which can be expected given that the participants were students from general-program grammar schools; the results would probably be different for students in mathematical-program grammar schools.

Results regarding the expected school grades in physics show that the students who expect a higher grade have a higher level of engagement on each subscale. The nature of our data does not allow any causal conclusions, so it is possible that more engaged students expect a higher grade, but also that the students who already have higher grades in physics (and therefore expect higher grades at the end of the year) are more engaged for that very reason.

Regarding the choice of physics in the final examinations, results on all subscales show that the students who do not intend to choose physics as an elective subject in the national final examination have lower levels of engagement. Here also the causation can go both ways. It should be also noted that the majority of students indicated that they did not intend to choose physics as an elective subject, which is not surprising having in mind that they are in general-program grammar schools; the results would probably be different for students in mathematical-program grammar schools. Of course, for students in the lower grades, it was probably more difficult to answer this question than for students in the fourth grade, who were much closer to the final examination; also, the expressed intention might not reflect the real choice. However, our results show that engagement in physics is related to some important outcomes such as school grade and choosing physics as an elective subject in the final examination (which can also be related to the choice of university).

Gender differences were found only for the emotional engagement, with female students being less emotionally engaged. This result is not in accordance with the results from Amir et al. (2014), whose study shows that female students report higher emotional and behavioral engagement than male students do. However, as the emotional engagement includes positive and negative emotions experienced while learning or when in the classroom (such as feeling well, relief, anxiety and frustration), our finding is in accordance with the studies which show that females generally report higher levels of anxiety about science learning than males (e.g., Udo, Ramsey, Reynolds-Alpert, & Mallow, 2001; Udo, Ramsey, & Mallow, 2004), although this finding might be due to biases of self-report measures (Moeller, Salmela-Aro, Lavonen, & Schneider, 2015). Specifically for physics, Gläser-Zikuda and Fuss (2003) have shown that girls experience more negative and less positive emotions than boys in physics classes.

Generally, our results show lower cognitive and behavioral engagement in physics in higher grades, but higher emotional engagement. Amir et al. (2014) report lower results for all three components of engagement in higher grades; however, a direct comparison is not possible because these authors measured general school engagement and the students in their sample were younger (12 to 16 years) than the students in our sample. It may be that students in higher grades of general-program high schools become less cognitively and behaviorally engaged in learning physics because most of them do not intend to choose physics as an elective subject in the final examination or to attend a college in the STEM area. However, with more experience in learning physics, or because a physics grade is not that important for

the college they might choose, they may feel less anxious and more relaxed in physics classes and thus report higher emotional engagement. Of course, these results should be interpreted with caution, because the data is not longitudinal.

In addition to the already mentioned limitations of this study, there are several others. The subsamples' size was uneven, e.g. there were more than 300 students in the second and third grade, but only 120 students in the fourth grade. The participants were only general-program high-school students. Thus, future studies should examine the results of mathematical- and language-program grammar school students, as well as those of vocational secondary school students. In addition, the present study was carried out in Croatia and, thus, cautiousness should be applied in generalizing the results to school contexts in other countries, although this new instrument could be used in other countries as well.

Finally, our scale has been so far the only instrument developed within a subject-specific approach using a three-component conception of engagement. Thus, we focused on the development of the scale specific for physics, and not on the development of a better instrument based on already existing instruments. However, in future studies, it would be useful to compare our scale also to the existing measures of engagement in order to provide evidence of its convergent validity.

Conclusions

Overall, our results showed that engagement in learning physics could be regarded as a multidimensional construct. The results revealed a significantly better fit for the three-factor model (with cognitive, behavioral and emotional engagement subscales) in comparison to the one-factor model, and high to the acceptable reliability of the subscales. Along with the contribution of developing a situation specific measure for engagement, our results also have practical implications for educators. In our sample, levels of all three components of engagement, as well as the levels of measures of motivation were moderate. In order to promote students' engagement, subjective task values and self-efficacy in physics, teachers should use a more problem-based and exploratory instruction (Taylor & Parsons, 2011), for example, conducting experiments in class. In higher grades, when student engagement decreases, attention should especially be paid to meaningful learning activities. In addition to this, teachers should also show students the utility value of physics by relating the subject matter to the world outside the classroom and students' own lives.

References

- Amir, R., Saleha, A., Jelas, Z. M., & Hutkemri, A. R. A. (2014). Students' engagement by age and gender: A cross-sectional study in Malaysia. *Middle-East Journal of Scientific Research*, *21*(10), 1886–1892.
- Appleton, J. J., Christenson, S. L., & Furlong, M. J. (2008). Student engagement with school: Critical conceptual and methodological issues of the construct. *Psychology in the Schools*, *45*, 369–386.
- Appleton, J. J., Christenson, S. L., Kim, D., & Reschly, A. L. (2006). Measuring cognitive and psychological engagement: Validation of the student engagement instrument. *Journal of School Psychology*, *44*, 427–445.
- Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: Freeman.
- Brown, T. A. (2006). *Confirmatory factor analysis for applied research*. New York: The Guilford Press.
- Christenson, S. L., & Anderson, A. R. (2002). Commentary: The centrality of the learning context for students' academic enabler skills. *School Psychology Review*, *31*, 378–393.
- Cohen, J. (1988). *Statistical power analysis for behavioral sciences* (2nd ed.). New Jersey: Lawrence Erlbaum associates.
- de Vaus, D. (2002). *Analyzing social science data: 50 key problems in data analysis*. Los Angeles, CA: Sage.
- Eccles, J. S. (2005). Subjective task values and the Eccles et al. model of achievement related choices. In A. J. Elliott, & C. S. Dweck (Eds.), *Handbook of competence and motivation* (pp. 105–121). New York: Guilford.
- Eccles, J. S., Adler, T. F., Futterman, R., Goff, S. B., Kaczala, C. M., Meece, J., & Midgley, C. (1983). Expectancies, values, and academic behaviors. In J. T. Spence (Ed.), *Achievement and achievement motivation* (pp. 75–146). San Francisco, CA: W. H. Freeman.
- Eccles, J. S., & Wigfield, A. (2002). Motivational beliefs, values, and goals. *Annual Review of Psychology*, *53*, 109–132.
- Finn, J. D., & Rock, D. A. (1997). Academic success among students at risk for school failure. *Journal of Applied Psychology*, *82*, 221–234.

- Fredricks, J. A., Blumenfeld, P. C., & Paris, A. H. (2004). School engagement: Potential of the concept, state of the evidence. *Review of Educational Research*, 74(1), 59–109.
- Fredricks, J. A., & McColskey, W. (2012). The measurement of student engagement: A comparative analysis of various methods and student self-report instruments. In S. Christenson, A. L. Reschy, & C. Wylie (Eds.), *Handbook of Research on Student Engagement* (pp. 763–782). New York: Springer.
- Fredricks, J. A., McColskey, W., Meli, J., Mordica, J., Montrosse, B., & Mooney, K. (2011). Measuring Student Engagement in Upper Elementary Through High School: A Description of 21 Instruments. (Issues & Answers Report, REL–No. 098). Washington, DC: U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance, Regional Educational Laboratory Southeast. Retrieved from <http://ies.ed.gov/ncee/edlabs>.
- Gläser-Zikuda, M., & Fuss, S. (2003). Emotionen und Lernleistungen in den Fächern Deutsch und Physik. Unterscheiden sich Mädchen und Jungen in der achten Klasse? *Lehren und Lernen*, 29(4), 5–11.
- Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling*, 6, 1–55.
- Kong, Q., Wong, N., & Lam, C. (2003). Student engagement in mathematics: Development and validation of construct. *Mathematics Education Research Journal*, 15(1), 4–21. doi:10.1007/BF03217366
- Lam, S. F., Jimerson, S., Kikas, E., Cefai, C., Veiga, F. H., Nelson, B., Hatzichristou, C., Polychroni, F., Basnett, J., Duck, R., Farrell, P., Negovan, V., Shin, H., Stanculescu, E., Wong, B. P., Yang, H., & Zollneritsch, J. (2012). Do girls and boys perceive themselves as equally engaged in school? The results of an international study from 12 countries. *Journal of School Psychology*, 50(1), 77–94.
- Messick, S. (1995). Validity of psychological assessment: Validation of inferences from persons' responses and performance as scientific inquiry into score meaning. *American Psychologist*, 50, 741–749.
- Moeller, J., Salmela-Aro, K., Lavonen, J., & Schneider, B. (2015). Does anxiety in science classroom impair math and science motivation? *International Journal of Gender, Science and Technology*, 7(2), 229–254.
- Putarek, V., Rován, D., & Vlahović-Štetić, V. (2016). Odnos uključenosti u učenje fizike s ciljevima postignuća, subjektivnom vrijednosti i zavisnim samopoštovanjem [The relationship between engagement in physics, achievement goals, subjective values and self-worth contingencies]. *Društvena istraživanja: časopis za opća društvena pitanja*, 25(1), 107–129.
- Reschly, A., & Christenson, S. L. (2006). Prediction of dropout among students with mild disabilities: A case for the inclusion of student engagement variables. *Remedial and Special Education*, 27, 276–292.
- Reeve, J. (2012). A self-determination theory perspective on student engagement. In S. Christenson, A. L. Reschy, & C. Wylie (Eds.), *Handbook of research on student engagement* (pp. 149–172). New York: Springer.
- Reeve, J., & Lee, W. (2014). Students' classroom engagement produces longitudinal changes in classroom motivation. *Journal of Educational Psychology*, 106(2), 527–540.
- Rován, D. (2011). *Odrednice odabira ciljeva pri učenju matematike u visokom obrazovanju* [Achievement goals in learning mathematics in higher education]. Unpublished doctoral dissertation. Zagreb: Odsjek za psihologiju Filozofskog fakulteta.
- Salmela-Aro, K., & Upadaya, K. (2014). School burnout and engagement in the context of demands-resources model. *British Journal of Educational Psychology*, 84, 137–151.
- Skinner, E. A., Zimmer-Gembeck, M. J., & Connell, J. P. (1998). Individual differences and the development of perceived control. *Monographs of the Society for Research in Child Development*, 63(2–3), 1–220.
- Taylor, L., & Parsons, J. (2011). Improving student engagement. *Current Issues in Education*, 14(1). Retrieved from <http://cie.asu.edu/>
- Udo, M. K., Ramsey, G. P., & Mallow, J. V. (2004). Science anxiety and gender in students taking general education science courses. *Journal of Science Education and Technology*, 13(4), 435–455.
- Udo, M. K., Ramsey, G. P., Reynolds-Alpert, S., & Mallow, J. V. (2001). Does physics teaching affect gender-based science anxiety? *Journal of Science Education and Technology*, 10, 237–247.
- Wang, M.-T., Willett, J. B., & Eccles, J. S. (2011). The assessment of school engagement: Examining dimensionality and measurement invariance by gender and race/ethnicity. *Journal of School Psychology*, 49(4), 465–480.
- West, S. G., Taylor, A. B., & Wu, W. (2012). Model fit and model selection in structural equation modelling. In R. H. Hoyle (Ed.), *Handbook of structural equation modeling* (pp. 209–231). New York: The Guilford Press.
- Willis, G. B. (2005). *Cognitive interviewing: A tool for improving questionnaire design*. Thousand Oaks, CA: Sage.
- Wigfield, A., & Cambria, J. (2010). Students' achievement values, goal orientations, and interest: Definitions, development, and relations to achievement outcomes. *Developmental Review*, 30, 1–35.

Wigfield, A., Guthrie, J. T., Perencevich, K. C., Taboada, A., Klauda, S. L., McRae, A., & Barbosa, P. (2008). Role of reading engagement in mediating the effects of reading comprehension instruction on reading outcomes. *Psychology in the Schools, 45*, 432–445.

Wigfield, A., Tonks, S., & Klauda, S. L. (2009). Expectancy-value theory. In K. R. Wentzel, & A. Wigfield (Eds.), *Handbook of motivation at school* (pp. 55–75). New York: Routledge.

Appendix A

Items from the final version of the Engagement in physics scale in Croatian and English

Kognitivna uključenost/Cognitive engagement:

2. Učim fiziku dok nisam siguran/na da sve razumijem. (I learn physics until I am sure I understood everything).
8. Kad dobijem lošu ocjenu iz fizike, nastojim razumjeti gdje sam pogriješio/la. (When I receive a poor grade in physics, I try to understand where I went wrong).
10. Kad učim fiziku, trudim se gradivo formulirati svojim riječima. (When I study physics, I try to elaborate the subject-matter in my own words).
13. Postavljam sam/a sebi pitanja iz fizike kako bih bio/la siguran/na da dobro razumijem gradivo. (I'm making questions about physics for myself, to make sure I understood the subject-matter well).
26. Rješavam više različitih zadataka kako bih bila/bio sigurna/sigurna da sam shvatila/shvatio gradivo. (I solve multiple problems in order to make sure I understood the subject-matter).

Bihevioralna uključenost/Behavioral engagement:

1. Pažljivo pratim nastavu. (I follow the lectures attentively).
9. Na satu fizike razgovaram s prijateljem iz klupe o stvarima nevezanim uz nastavu. (In physics class I chat with the neighboring classmate about things unrelated to the subject-matter).
14. Na satu radim najviše što mogu. (I'm trying to do my best during a lecture).
17. Ne trudim se previše na satu fizike. (I don't put much effort during a physics lecture).
19. Obraćam pažnju na nastavu. (I pay attention to the lectures).
21. Na satu razmišljam o drugim stvarima. (During a lecture, I think about other things).
23. Moje misli često lutaju tijekom sata. (My thoughts often wonder about during a lecture).
25. Slušam vrlo pažljivo na satu. (I listen very carefully during a lecture).

Emocionalna uključenost/Emotional engagement:

4. Općenito se osjećam dobro na satu fizike. (Generally, I feel well during a physics lecture).
7. Nervozan/nervozna sam dok učim fiziku. (I'm nervous when I study physics).
15. Osjećam olakšanje nakon sata fizike. (I feel relief after the physics lecture).
22. Nervozan/nervozna sam kad započinjemo obradu novog gradiva. (I am nervous when we start working on the new subject-matter).
24. Frustriran/a sam kad ne mogu odgovoriti na pitanje. (I am frustrated when I'm unable to answer the question).

20

Personality and engagement in learning physics: the mediating effect of achievement goals

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Abstract

To achieve expected learning outcomes, students must be actively engaged in the learning process. Studies have shown that engagement consists of three components: behavioral, cognitive, and emotional (Fredrics, Blumenfeld, & Paris, 2004). Students' engagement in learning depends on their relation to the subject of teaching and the quality of the educational process, but in this study, we have focused on personal determinants of engagement. In particular, we were interested in the extent to which individual differences in the personal characteristics of students and their motivational orientations reflect the level of their engagement in learning physics. Therefore, the purpose of this study was to explore the relationship of perfectionism and reinforcement sensitivity to different components of students' engagement in learning physics, and to examine whether achievement goals have a mediational role in this relationship. The participants were 224 students in Grades 7–8 (50.5% boys) from 12 classes in three elementary schools in Croatia. The participants filled out questionnaires that measured their engagement in learning physics, achievement goals, perfectionism, and reinforcement sensitivity. The results showed different patterns of relationships of different aspects of engagement to perfectionism, reinforcement sensitivity and achievement goals. The mediational analyses showed that achievement goals have a mediational role in the relationships of adaptive perfectionism, behavioral activation system and fight-flight-freeze system to behavioral and cognitive engagement but not to emotional engagement.

Keywords: students' engagement, learning physics, perfectionism, reinforcement sensitivity, achievement goals

To achieve the expected learning outcomes, students have to be actively engaged in the learning process. Numerous studies have shown that engagement is the key factor in achieving the educational expectations (Finn & Rock, 1997; Skinner, Zimmer-Gembeck, & Connell, 1998; Appleton, Christenson, & Furlong, 2008), but also that the engagement decreases during the years of schooling (Archambault, Janosz, Morizot, & Pagani, 2009). The decrease in engagement is particularly manifested in mathematics, natural sciences and engineering (Bøe, Henriksen, Lyons, & Schreiner, 2011). Hence, it is important to determine the antecedents and mechanisms underlying various aspects of engagement. Students' engagement in learning will depend on their attitude toward a subject, the quality of educational process and various contextual factors; however, in this study, we have focused on the personal determinants of engagement. As motivational beliefs and learning strategies are specific for particular courses (Bong, 2001; Metallidou & Vlachou, 2007), we were interested in the extent to which the individual differences in students' characteristics and their motivational orientations reflect the level of their engagement in learning physics.

Engagement in learning physics

Engagement is a construct related to motivation. More precisely, motivation represents an intention while engagement refers to the component of action (Reeve, 2012). Engagement is a multidimensional construct that consists of behavioral, cognitive, and emotional component (Fredrics, Blumenfeld, & Paris, 2004). Behavioral engagement includes participation in academic, social, educational and extra-curricular activities; cognitive engagement refers to the investment of effort in terms of cognitive and metacognitive strategies, self-regulation and aspirations of mastering the material, whereas the emotional engagement refers to the positive or negative affect in interaction with teachers, peers, school activities, tasks and school in a broad sense (Fredrics et al., 2004). Numerous studies have already shown that engagement is a positive predictor of the quality of learning, school grades, test scores, school attendance, graduation, resilience and life satisfaction (Finn & Rock, 1997; Skinner et al., 1998; Fredrics et al., 2004; Appleton, et al., 2008; Salmela-Aro & Upadyaya, 2014). However, only a few studies have addressed the antecedents of subject-specific engagement. Putarek, Rován, & Vlahović-Štetić (2016) showed that the academic contingency of self-worth predicts behavioral and cognitive engagement, but not the emotional engagement. On the other hand, when students perceive physics as useful and interesting, they are behaviorally, cognitively, and emotionally more engaged in learning physics. Further research is needed to examine the contributions of other aspects of students' personality to engagement in learning physics.

Achievement Goals

The achievement goals refer to reasons why individuals engage in activities related to achievement (Ames, 1992). The 2 x 2 taxonomy of achievement goals (Elliot & McGregor, 2001) distinguishes four goal orientations: mastery-approach; mastery-avoidance; performance-approach and performance-avoidance. The mastery-approach goals involve striving to learn as much as possible, to improve one's competencies. In contrast to this, the mastery-avoidance is motivated by a fear of not learning as much as it is possible. The performance-approach goals are motivated by a desire to demonstrate a superior competence or to outperform others, whereas the performance-avoidance is motivated by a fear of failure (Hulleman, Schrage, Bodmann, & Harackiewicz, 2010). Findings on the effects of individuals' goal orientations in the achievement settings show that the mastery-approach goals have largely positive effects, predicting a greater enjoyment and less boredom, lower levels of anxiety, a greater use of metacognitive learning strategies, lower task disengagement, and a greater use of critical thinking and cognitive elaboration as a learning strategy (for a review see Ranellucci, Hall, & Goetz, 2015). On the other hand, both avoidance goal orientations have mostly negative effects like higher levels of anxiety and surface processing (Elliot & McGregor, 2001; Pekrun, Elliot, & Maier, 2009). When it comes to the performance-approach orientation, the findings are not consistent. This goal orientation, besides positive effects, such as deep learning strategies and achievement (Diseth & Kobbeltvedt, 2010; Pekrun et al., 2009), also predicts anxiety and surface processing (Daniels et al., 2009; Fenollar, Román, & Cuestas, 2007). When it comes to the engagement in learning physics, Putarek et al. (2016) showed that when students are less concerned whether they will learn all they possibly could, or whether they will outperform others, they invest more cognitive and behavioral effort and enjoy learning.

Perfectionism

Perfectionism is a multidimensional personality trait characterized by striving for flawlessness and by the setting of exceedingly high standards of performance accompanied by tendencies for overly critical evaluations of one's own behaviors and striving for order (Flett & Hewitt, 2002; Slaney, Ashby, &

Trippi, 1995). Most authors make a distinction between adaptive and maladaptive perfectionism (Stoeber & Otto, 2006). The adaptive perfectionism, also described as positive, normal or healthy perfectionism, is characterized by strivings to high standards of performance and can be related to a higher motivation and a higher achievement (Bieling, Israeli, & Anthony, 2004; Einstein, Lovibond, & Gaston, 2000; Stoeber & Rambow, 2007; Zhang, Gam, & Cham, 2007). The maladaptive perfectionism, also known as an unhealthy or neurotic perfectionism, refers to feelings of discrepancy between performance and expectations, negative attitudes towards mistakes, and a harsh self-criticism (Stoeber & Rambow, 2007).

Reinforcement Sensitivity Theory

The Reinforcement Sensitivity Theory (Gray & McNaughton, 2000) is a neuropsychological theory of personality which explains the role of individual differences in fear and anxiety related behaviors, as well as behaviors of approach and avoidance (Stoeber & Corr, 2015). The theory postulates three emotional-motivational systems: behavioral activation system (BAS), fight-flight-freeze system (FFFS), and a behavioral inhibition system (BIS). The BAS is an approach system related to a positive affect which mediates reactions to appetitive stimuli (Corr, 2008). The FFFS is responsible for avoidance and escape behaviors related to the emotion of fear, which mediates reactions to all aversive stimuli. The BIS is also an avoidance system responsible for resolving a goal conflict in general. A goal conflict could occur between the BAS (approach) and FFFS (avoidance), and this process is related to the state of anxiety (Corr, 2004). In other words, the BAS, FFFS and BIS systems are mechanisms underlying the approach and avoidance behaviors. The approach and avoidance represent one of the two key dimensions in the achievement goals model. Several studies have shown that the behavioral inhibition system is related to achievement avoidance goals, while the system of behavioral activation is related to achievement approach goals (Bjørnebekk, 2007; Bjørnebekk & Diseth, 2010), which provides the basis for the assumption on the relationship between these constructs.

The present study

The aim of this study was to explore the relationship between perfectionism and sensitivity to reinforcement with different components of students' engagement in learning physics and to examine whether the achievement goals have a mediational role in this relationship. In his hierarchical model of achievement goals, Elliot (1999) defines the achievement goals as mid-level constructs, situated between global motivational dispositions and specific behaviors (e.g. engagement). Thus, in our research, we assumed that the achievement goals would be significant predictors of students' engagement in learning physics and that perfectionism and sensitivity to reinforcement would be important determinants of students' motivation and engagement in learning physics. More precisely, the perfectionism would be associated with the level of standards set by individuals for their accomplishments, while the sensitivity of reinforcement affects the tendency of individuals toward the achieving success and avoiding failure.

Hypothesis 1: Perfectionism and Engagement. Recent studies have shown that students who set high standards are more motivated and engaged than students who do not strive for perfection (Einstein, et al., 2000; Zhang, et al., 2007). Thus, it was expected that high standards would be positively related to all three aspects of engagement. On the other hand, as previous studies showed that maladaptive perfectionism is related to stress, anxiety, and depression (Chang, Watkins, & Banks, 2004; Einstein, et al., 2000; Stoeber & Rambow, 2007), it was primarily expected that the discrepancy between expectations and performance would be negatively related to emotional engagement. It was also expected that maladaptive perfectionism will be unrelated to cognitive and behavioral engagement (Damian, Stoeber, Negru-Subtirica & Băban, 2017; Shim, Rubenstein & Drapeau, 2016).

Hypothesis 2: Sensitivity to reinforcement and Engagement. According to the Reinforcement Sensitivity Theory (Gray and McNaughton, 2000), the BAS approach system is associated with emotions of 'anticipatory pleasure', hope, positive affect, the emotion to explore and to approach the interesting stimuli, so it was expected that the BAS would be positively related to all three aspects of engagement in learning physics. On the other hand, the two avoidance systems, FFFS and BIS, are related to fear and anxiety, so it was expected that these systems will be negatively related to emotional engagement. As we assume that learning physics does not represent a major threat to the FFFS and BIS prone students, we did not expect that it would trigger a strong avoidance reaction. Also, it is required of students to achieve learning outcomes in physics to get a satisfying grade, so the cost of cognitive or behavioral disengagement might be very high. Therefore, we expected that FFFS and BIS would be unrelated to behavioral and cognitive engagement in learning physics.

Hypothesis 3: Achievement goals and Engagement. Since previous studies showed that mastery-approach predicts greater enjoyment, less boredom, lower anxiety, greater use of metacognitive learning strategies, critical thinking and lower task disengagement (for review see Ranellucci et al., 2015), it was expected that mastery-approach orientation would be positively related to behavioral, cognitive, and emotional engagement. On the other hand, students with performance-approach goals, are motivated by the desire to demonstrate a superior competence or to outperform others (Hulleman et al., 2010). Therefore, we expected that this goal orientation would be positively related to behavioral engagement in learning physics. As for the relationship between performance-approach orientation and emotions, the research results are inconsistent. On the one hand, some studies showed that performance-approach orientation predicts anxiety (Daniels et al., 2009), while other studies showed that performance-approach goal orientation is positively related to emotional engagement in learning physics (Putarek et al., 2016). Therefore, no specific hypotheses were proposed regarding the emotional engagement. Likewise, due to mixed results related to the depth of processing which showed that the performance-approach orientation predicts both surface processing (Fenollar et al., 2007) and deep learning strategies (Diseth & Kobbeltvedt, 2010), no specific hypotheses were proposed regarding the cognitive engagement. Furthermore, as the avoidance goal orientations underlie negative emotions such as fear, it was anticipated that the two avoidance goal orientations would be negatively related to emotional engagement. Also, as the performance-avoidance goals are related to surface processing and disorganization (Moller & Elliot, 2006), it was expected that performance-avoidance goal would also be negatively related to cognitive and behavioral engagement. However, as the mastery goal orientation is characterized by striving to learn as much as possible to improve one's own competencies (Elliot & McGregor, 2001), it was also expected that the mastery-avoidance goal orientation would be positively related to behavioral and cognitive engagement in learning physics.

Hypothesis 4: Achievement goals as a mediator between personal characteristics and engagement. In accordance with Elliot's hierarchical model of achievement goals (1999), it was expected that achievement goals would mediate the relationship between students' personal characteristics and engagement. More specifically, it was anticipated that students who set high standards would endorse approach goal orientations and therefore invest more effort in terms of behavioral, cognitive, and positive emotional engagement to achieve these goals. Furthermore, it was expected that students who set high standards that could not be achieved (maladaptive perfectionism), would endorse the avoidance goal orientations and therefore invest less effort in terms of behavioral and cognitive engagement followed by negative emotions, such as fear or anxiety. When it comes to reinforcement sensitivity, as the BAS is an approach system related to positive affect, it was expected that approach goals would mediate the relationship between BAS system and behavioral, cognitive, and emotional engagement. On the other hand, as the FFFS and BIS are avoidance systems and related to negative affect, it was expected that avoidance goal orientations would mediate the relationship between the FFFS and BIS system and engagement.

Method

Participants and Procedure

The participants were 224 students in Grades 7–8 (50.5% boys) from 12 classes in three elementary schools in Croatia. The average age was 13.3 years ($SD = 0.67$). Students completed the questionnaires during two sessions that lasted about 20 min each. To link the questionnaires from the two sessions and to assure the anonymity, the respondents were asked to mark them with a code. The instruments were applied during the regularly-scheduled classes and students were given the information on the purpose and procedure of the study. The participation was voluntary. The necessary permissions by the Croatian Ministry of Science and Education, Ethics Committee, school principals and parents had been obtained before the research began. The students whose parents refused the permission for their children's participation in the research did not take part in the study.

Measures

Perfectionism. The Almost Perfect Scale - Revised (Slaney, Mobley, Trippi, Ashby, & Johnson, 1996) consists of 23 items and three subscales: High standards (e.g. "If you don't expect much out of yourself, you will never succeed."), Discrepancy between expectations and performance ("I often feel frustrated because I can't meet my goals.") and Order ("I am an orderly person."). High standards refer to the adaptive, and Discrepancy to maladaptive perfectionism. Order items were not analyzed in this study.

APS-R demonstrated good reliability and validity in several studies (Rice & Ashby, 2007; Rice, Ashby, & Gilman, 2011). The participants were asked to state how much they agreed with each statement and they responded on a scale from 1 (I disagree) to 5 (I agree).

Reinforcement sensitivity. The Reinforcement Sensitivity Theory Personality Questionnaire comprising of 64 items (RST-PQ; Corr & Cooper, 2015) was used for measuring the Behavioral activation system – BAS (e.g. „I am very persistent in achieving my goals “), FFFS („I often wake up overwhelmed with different thoughts “) and the BIS („I often think about the same things over and over again “). The RST-PQ demonstrated good reliability and validity (Corr & Cooper, 2015). The participants responded on a scale from 1 (not at all) to 4 (highly).

Achievement goals. The students' achievement goals were measured by the Achievement goal Questionnaire (Rovan, 2011) adapted from Elliot & McGregor's (2001) Achievement Goal Questionnaire (AGQ), using three items per each scale: the Mastery-approach (e.g. „It is important for me to understand the content of this course as thoroughly as possible“), the Mastery-avoidance („I am often concerned that I may not learn all there is to learn in this class“), the Performance-approach („It is important for me to do better than other students“), and the Performance-avoidance („I just want to avoid doing poorly in this class“). The Achievement Goal Questionnaire demonstrated very good reliability and validity (Rovan, 2011). The participants responded on the 5-point Likert scale ranging from 1 (disagree) to 5 (agree).

Engagement. The 18-item Engagement in learning physics scale was used in measuring the Behavioral (e.g. „I attentively follow lectures in class“), the Cognitive („I ask myself questions from physics to be sure that I understand the material“), and the Emotional engagement („I'm nervous while I study physics“). The Engagement in learning physics scales demonstrated a good reliability and validity (Pavlin-Bernardić, Rován, Putarek, Petričević, & Vlahović-Štetić, 2016). The participants responded on a scale ranging from 1 (I disagree) to 5 (I agree).

Results

Descriptive statistics and correlation analysis

The descriptive statistics and correlation matrix are reported in Table 1. As expected, the high standards were positively correlated with behavioral and cognitive engagement, but the correlation between the high standards and emotional engagement, contrary to our expectations, was not significant. As for the discrepancy between expectations and performance, it was positively correlated with the behavioral engagement, negatively with the emotional engagement, and no significant correlation was found with the cognitive engagement. Thus hypothesis 1 was partially confirmed. The correlational analyses also showed that the behavioral activation system was positively correlated with behavioral and cognitive engagement as expected, whereas the correlation with the emotional engagement was not significant. As expected, the two avoidance systems, BIS and FFFS, showed a significant negative correlation with the emotional engagement. Thus, hypothesis 2 was confirmed partially. Furthermore, the FFFS showed a positive correlation with the cognitive engagement in learning physics, whereas the correlation with behavioral engagement was not significant.

As anticipated, the mastery-approach orientation was positively correlated with all three aspects of engagement. The performance-approach goal orientation was positively correlated with behavioral and cognitive engagement, whereas the correlation with emotional engagement was not significant. On the other hand, the mastery-avoidance goal orientation was positively correlated with cognitive engagement, but no significant correlation was found with behavioral and emotional engagement. The performance-avoidance goal orientation was, as expected, followed by negative emotions, whereas no correlation was found with behavioral and cognitive engagement. Therefore, hypothesis 3 was also confirmed partially.

Table 1

Means, Standard Deviations, and Correlations between the Perfectionism, Reinforcement sensitivity, Achievement goals and Engagement (N = 224)

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
High standards (1)	(.70)	.17*	.54**	.27**	.30**	.45**	.25**	.51**	.28**	.28**	.35**	.08
Discrepancy (2)		(.86)	.21**	.49**	.16*	-.05	.28**	.14	.31**	.19**	.00	-.42**
BAS (3)			(.85)	.48**	.36**	.30**	.25**	.30**	.22**	.16*	.36**	-.05
BIS (4)				(.90)	.51**	.05	.28**	.16*	.34**	-.10	.05	-.36**
FFFS (5)					(.74)	.26**	.18**	.17*	.23**	.13	.26**	-.19**
Mastery-approach (6)						(.70)	.29**	.36**	.08	.54**	.58**	.24**
Mastery-avoidance (7)							(.67)	.23**	.53**	.05	.24**	-.13
Performance-approach (8)								(.67)	.46**	.19**	.33**	.03
Performance-avoidance (9)									(.80)	-.12	.06	-.20**
Behavioral engagement (10)										(.90)	.56**	.36**
Cognitive engagement (11)											(.70)	.15*
Emotional engagement (12)												(.73)
M	3.70	2.87	3.04	2.65	2.71	4.22	3.68	3.68	3.21	3.80	3.87	3.40
SD	0.72	0.83	0.46	0.58	0.56	0.81	0.99	1.01	1.23	0.92	0.80	1.01
Expected range	1-5	1-5	1-4	1-4	1-4	1-5	1-5	1-5	1-5	1-5	1-5	1-5
Actual range	1-5	1-5	1-4	1-4	1-4	1-5	1-5	1-5	1-5	1-5	1-5	1-5
Skewness (St. Error: 0.16)	-.04	.23	-.68	-.24	-.19	-1.10	-.63	-.52	-.30	-.71	-.94	-.32
Kurtosis (St. Error: 0.32)	.04	-.29	2.09	-.36	-.41	1.03	.09	-.35	-.97	-.14	.79	-.77

Note. Internal reliability coefficients (α) appear in parentheses along the main diagonal. * $p < .05$, ** $p < .01$ (two-tailed tests)

Mediation analyses

The mediation hypotheses (Hypothesis 4) were tested by using the SPSS macro, PROCESS (Hayes, 2012). The significance of each indirect effect was tested with 95% confidence-interval bootstrapping. All direct and indirect effects are specified in Tables 2 and 3. The mediation analyses showed that a direct effect of high standards on behavioral and cognitive engagement was not significant. However, an indirect effect of high standards on behavioral and cognitive engagement through mastery-approach occurred. Also, the results showed an indirect effect of high standards on the behavioral engagement through the performance-avoidance goal, and on the cognitive engagement through the performance-approach and the mastery-avoidance goal. As for the effect of the reinforcement sensitivity on behavioral engagement, the mediation analyses showed a significant indirect effect through the mastery-approach and performance-avoidance goal for BAS and FFFS. Also, there was a significant indirect effect of BAS and FFFS on the cognitive engagement through the mastery-approach goal and performance-approach goal. Furthermore, there was an indirect effect of FFFS on the cognitive engagement through the mastery-avoidance and performance-avoidance goals. As for the emotional engagement, the mediation analyses showed a significant direct effect of maladaptive perfectionism, BIS and FFFS, but no indirect effects through the achievement goals. Finally, we can conclude that achievement goals do not mediate the relationship between perfectionism and reinforcement sensitivity on the one hand (predictors) and emotional engagement on the other (criterion). Thus, hypothesis 4 was also confirmed partially.

Table 2

Mediation analyses: summary of total, direct and indirect effects in the relationship between aspects of perfectionism and engagement

Predictors Criterion	Adaptive perfectionism						Maladaptive perfectionism					
	Behavioral engagement		Cognitive engagement		Emotional engagement		Behavioral engagement		Cognitive engagement		Emotional engagement	
	Effect	SE	Effect	SE	Effect	SE	Effect	SE	Effect	SE	Effect	SE
Total effect	.36**	.09	.40**	.07	.11	.10	-.19*	.08	.01	.07	-.50**	.08
Direct effect	.10	.09	.07	.08	.07	.12	-.13	.07	.01	.06	-.43**	.08
Indirect effect												
Total	.26*	.08	.32*	.07	.04	.09	-.06	.05	-.00	.05	-.07	.04
MAP	.27*	.06	.24*	.06	.15*	.06	-.03	.04	-.02	.03	-.01	.02
MAV	.00	.03	.03*	.02	-.04	.04	.01	.02	.03*	.02	-.01	.03
PAP	.06	.05	.09*	.04	.01	.06	.02	.02	.02*	.02	.01	.01
PAV	-.08*	.04	-.03	.03	-.09*	.05	-.07*	.03	-.03	.02	-.06	.04

Note. SE - Standard error; MAP - Mastery approach; MAV - Mastery avoidance; PAP - Performance approach, PAV - Performance avoidance; * $p < .05$; ** $p < .01$

Discussion and Conclusion

The present study suggests that students' personality and motivational orientations are reflected in their engagement in learning physics. The results suggest mechanisms through which the students' perfectionism, sensitivity to reinforcement and achievement goals affect student engagement. Consistent with the prior research (Chang, Watkins, & Banks, 2004; Einstein, et al., 2000; Stoeber & Rambow, 2007; Zhang, et al., 2007), the students with high adaptive perfectionism tend to be more cognitively and behaviorally engaged in learning physics, while students with high maladaptive perfectionism tend to show a negative emotion towards learning physics. Contrary to expectations, maladaptive perfectionism was also positively related to behavioral engagement. This finding suggests that feelings of the discrepancy between performance and expectations may encourage students to engage behaviorally in learning physics. The results also support the hypothesis that students high in the BAS would be actively engaged in learning, both behaviorally and cognitively, while students high in the BIS and FFFS would be negatively emotionally engaged. We can conclude that different patterns of associations are related to different aspects of engagement. The behavioral and cognitive engagement is primarily related to positive dispositions – high standards and BAS. In contrast to this, the emotional engagement is related to characteristics important for dealing with conflicts – maladaptive perfectionism, BIS and FFFS.

The achievement goals mediate relationships of adaptive perfectionism, BAS and FFFS to cognitive and behavioral engagement. The mastery-approach goal has proven to be the key mediator strongly related to both types of engagement. In addition to this, the performance-approach goal showed an important mediational role in the relationship between personal characteristics and cognitive engagement. In other words, the students who set high standards and who are sensitive to rewards endorse the mastery-approach and performance-approach goals and invest more behavioral and cognitive effort to achieve these goals. The mediational role of the approach goals was expected for the adaptive perfectionism and BAS, but not for FFFS. Students sensitive to punishment, do not endorse avoidance goals, as expected, but strive to improve their competencies and to outperform others. They also worry that perhaps they will not learn as much as possible. Therefore, they are also engaged both behaviorally and cognitively in learning physics.

Contrary to our expectations, the achievement goals did not mediate the relationship between personal characteristics and emotional engagement. Hence, the results of mediation analyses were in accordance with the hierarchical model of achievement goals (Elliot, 1999) for behavioral and cognitive engagement, but not so for the emotional engagement. This result suggests that the personality and the emotional engagement could be related more directly, without the influence of mid-level motivational constructs.

This research has some limitations. We used the self-report instruments for the measuring of all constructs. The well-known shortcomings of self-report instruments are that students may not answer honestly under some conditions and that the answers do not reflect an actual behavior (Appleton, Christenson, Kim, & Reschly, 2006). Furthermore, one of this study's limitations is that all data were collected practically at a single time point, which restricts conclusions on possible causal relations. However, an important contribution of this research is its focus on a specific context of learning physics, thus providing some guidelines for the educational process in this domain. According to the findings, we can expect that teaching students to set high, achievable and realistic standards while emphasizing at the same time the importance of improving one's competence, will contribute to greater behavioral engagement. Moreover, students who are sensitive to reward and punishment will invest more behavioral and cognitive effort by striving to improve their competence and focusing on superior performance.

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References

- Ames, C. (1992). Classrooms: Goals, structures, and student motivation. *Journal of Educational Psychology*, 84(3), 261–271.
- Appleton, J. J., Christenson, S. L., Kim, D., & Reschly, A. L. (2006). Measuring cognitive and psychological engagement: Validation of the student engagement instrument. *Journal of School Psychology*, 44(5), 427–445.

- Appleton, J. J., Christenson, S. L., & Furlong, M. J. (2008). Student engagement with school: Critical conceptual and methodological issues of the construct. *Psychology in the Schools, 45*(5), 369–386.
- Archambault, I., Janosz, M., Morizot, J., & Pagani, L. (2009). Adolescent Behavioral, Affective, and Cognitive Engagement in School: Relationship to Dropout. *Journal of School Health, 79*(9), 408–416.
- Bieling, P. J., Israeli, A. L., & Anthony, M. M. (2004). Is perfectionism good, bad or both? Examining models of the perfectionism construct. *Personality and Individual Differences, 36*(6), 1373–1385.
- Bjørnebekk, G. (2007). Reinforcement sensitivity theory and major motivational and self regulatory processes in children. *Personality and Individual Differences, 43*, 1980-1990.
- Bjørnebekk, G., & Diseth, A. (2010). Approach and avoidance temperaments and achievement goals among children. *Personality and Individual Differences, 49*, 938–943.
- Bøe, M. V., Henriksen, E. K., Lyons, T., & Schreiner, C. (2011). Participation in science and technology: Young people's achievement related choices in late modern societies. *Studies in Science Education, 47*(1), 37–72.
- Bong, M. (2001). Between and within-domain relations of academic motivation among middle and high school students: Self-efficacy, task value, and achievement goals. *Journal of Educational Psychology, 93*, 23–34.
- Chang, E. C., Watkins, A. F., & Banks, K. H. (2004). How Adaptive and Maladaptive Perfectionism Relate to Positive and Negative Psychological Functioning: Testing a Stress-Mediation Model in Black and White Female College Students. *Journal of Counseling Psychology, 51*(1), 93–102.
- Corr, P. J. (2008). Reinforcement Sensitivity Theory (RST): Introduction. In: P. J. Corr (Ed.), *The Reinforcement Sensitivity Theory of Personality* (pp. 1-43). Cambridge, UK: Cambridge University Press.
- Corr, P. J., & Cooper, A. (2015). The Corr-Cooper Reinforcement Sensitivity Personality Questionnaire (RST-PQ): Development and validation. Unpublished manuscript, City University London, UK.
- Corr, P. J. (2004). Reinforcement sensitivity theory and personality. *Neuroscience and Biobehavioral Reviews, 28*, 317–332.
- Damian, L.E., Stoeber, J., & Negru-Subtirica, O., & Băban, A. (2017). Perfectionism and school engagement: A three-wave longitudinal study. *Personality and Individual Differences, 105*, 179–184.
- Daniels, L. M., Stupnisky, R. H., Pekrun, R., Haynes, T. L., Perry, R. P., & Newall, N. E. (2009). A longitudinal analysis of achievement goals: From affective antecedents to emotional effects and achievement outcomes. *Journal of Educational Psychology, 101*(4), 948–963.
- Diseth, Å., & Kobbeltvedt, T. (2010). A mediation analysis of achievement motives, goals, learning strategies, and academic achievement. *British Journal of Educational Psychology, 80*, 671–687.
- Einstein, D. A., Lovibond, P. F., & Gaston, J. E. (2000). Relationship between perfectionism and emotional symptoms in adolescent sample. *Australian Journal of Psychology, 52*, 89–93.
- Elliot, A. J. (1999). Approach and avoidance motivation and achievement goals. *Educational Psychologist, 34*(3), 169–189.
- Elliot, A. J., & McGregor, H. A. (2001). A 2×2 achievement goal framework. *Journal of Personality and Social Psychology, 80*(3), 501–519.
- Fenollar, P., Román, S., & Cuestas, P. J. (2007). University students' academic performance: An integrative conceptual framework and empirical analysis. *British Journal of Educational Psychology, 77*, 873–891.
- Finn, J. D., & Rock, D. A. (1997). Academic success among students at risk for school failure. *Journal of Applied Psychology, 82*, 221–234.
- Flett, G. L., & Hewitt, P. L. (2002). *Perfectionism: Theory, research, and treatment*. Washington, DC: American Psychological Association.
- Fredricks, J. A., Blumenfeld, P. C., & Paris, A. H. (2004). School engagement: Potential of the concept, state of the evidence. *Review of Educational Research, 74*, 59–109.
- Gray, J. A., & McNaughton, N. (2000). *The Neuropsychology of anxiety: an enquiry into the functions of the septo-hippocampal system*. Oxford: Oxford University Press.
- Hayes, A. F. (2012). PROCESS: A versatile computational tool for observed variable mediation, moderation, and conditional process modeling [White paper]. Retrieved from <http://www.afhayes.com/public/process2012.pdf>
- Hulleman, C. S., Godes, O., Hendricks, B. L., & Harackiewicz, J. M. (2010). Enhancing interest and performance with a utility value intervention. *Journal of Educational Psychology, 102*, 880–895.
- Metallidou, P., & Vlachou, A. (2007). Motivational beliefs, cognitive engagement, and achievement in language and mathematics in elementary school children. *International Journal of Psychology, 42*(1), 2–15.

- Moller, A. C., & Elliot, A. J. (2006). The 2 x 2 achievement goal framework: An overview of empirical research. In: A. V. Mitel (Ed.), *Focus on Educational Psychology Research* (pp. 307–326). New York: Nova Science Publishers.
- Pavlin-Bernardić, N., Rovan, D., Putarek, V., Petričević, E., & Vlahović-Štetić, V. (2016). Konstrukcija i validacija skale uključenosti u nastavu fizike [Construction and validation of Engagement in learning physics scale]. Paper presented at International conference 20th Psychology Days in Zadar, 19.-21. May, 2016. Zadar, Croatia.
- Pekrun, R., Elliot, A. J., & Maier, M. A. (2009). Achievement goals and achievement emotions: Testing a model of their joint relations with academic performance. *Journal of Educational Psychology, 101*, 115–135.
- Putarek, V., Rovan, D., & Vlahović-Štetić, V. (2016). Odnos uključenosti u učenje fizike s ciljevima postignuća, subjektivnom vrijednosti i zavisnim samopoštovanjem. *Društvena istraživanja, 25*, 107–129.
- Ranellucci, J., Hall, N. C., & Goetz, T. (2015). Achievement Goals, Emotions, Learning, and Performance: A Process Model. *Motivation Science, 1*(2), 98–120.
- Reeve, J. (2012). A self-determination theory perspective on student engagement. In: S. Christenson, A. L. Reschy, & C. Wylie (Eds.), *Handbook of Research on Student Engagement* (pp. 149–172). New York: Springer.
- Rice, K. G., & Ashby, J. S. (2007). An efficient method for classifying perfectionists. *Journal of Counseling Psychology, 54*(1), 72–85.
- Rice, K. G., Ashby, J. S., & Gilman, R. (2011). Classifying adolescent perfectionists. *Psychological Assessment, 23*, 563–577.
- Rovan, D. (2011). Odrednice odabira ciljeva pri učenju matematike u visokom obrazovanju. (Unpublished doctoral thesis). Zagreb: Department of Psychology, Faculty of Humanities and Social Sciences, University of Zagreb.
- Salmela-Aro, K., & Upadyaya, K. (2014). School burnout and engagement in the context of demands–resources model. *British Journal of Educational Psychology, 84*, 137–151.
- Shim, S. S., Rubenstein, L., & Drapeau, C. (2016). When perfectionism is coupled with low achievement: The effects on academic engagement and help seeking in middle school. *Learning and Individual Differences, 45*, 237–244.
- Skinner, E. A., Zimmer-Gembeck, M. J., & Connell, J. P. (1998). Individual differences and the development of perceived control. *Monographs of the Society for Research in Child Development, 63*(2–3), v–220.
- Slaney, R. B., Ashby, J. S., & Trippi, J. (1995). Perfectionism: Its measurement and career relevance. *Journal of Career Assessment, 3*, 279–297.
- Slaney, R. B., Mobley, M., Trippi, J. T., Ashby, J. S., & Johnson, D. P. (1996). The Almost Perfect Scale–Revised. Unpublished manuscript, The Pennsylvania State University.
- Stoeber, J., & Corr, P. J. (2015). Perfectionism, personality, and affective experiences: New insight from revised Reinforcement Sensitivity Theory. *Personality and Individual Differences, 86*, 354–359.
- Stoeber, J., & Otto, K. (2006). Positive conceptions of perfectionism: Approaches, evidence, challenges. *Personality and Social Psychology Review, 10*, 295–319.
- Stoeber, J., & Rambow, A. (2007). Perfectionism in adolescent school students: Relations with motivation, achievement and well-being. *Personality and Individual Differences, 42*, 1379–1389.
- Zhang, Y., Gan, Y., & Cham, H. (2007). Perfectionism, academic burnout and engagement among Chinese college students: A structural equation modeling analysis. *Personality and Individual Differences, 43*, 1529–1540.

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PAI-SF – Psychometric Properties and Evaluation in Croatia

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Abstract

Personality Assessment Inventory (PAI) is an objective, self-report inventory, consisting of 344 items. PAI Inventory allows the psychologist to estimate 20 of the 22 Inventory scales, based on the first 160 items. This possibility can be advantageous in situations in which the examinee is not cooperative, i.e. he refuses to answer after the first half of the Inventory or is responding randomly. Also, in some studies or triage procedures, the suitability of the application of the entire Inventory can be reduced, so the ability to estimate PAI results only on the first half of the Inventory is very useful.

The study aimed to examine the psychometric characteristics of the first part of the PAI Inventory (in the literature known as PAI short form, PAI-SF) on a normative sample (N = 432) of participants aged 18 to 88.

The results showed the consistency of the scales formed on the first half of the Inventory which is slightly lower than the one for the whole Inventory, but is still satisfactory for most of the scales. Also, in most cases, the requirements associated with the convergence and divergence of the items and Inventory scales are fulfilled. The correlations of the particular scales that can be achieved with short-forms and their equivalents in the whole Inventory range between 0.71 and 0.93.

The findings show that the results from the PAI-SF represent a good approximation of the results that would be obtained by applying the full-form Inventory.

Keywords: Personality Assessment Inventory, PAI, PAI-SF, assessment, psychometric properties

The Personality Assessment Inventory (PAI; Morey 1991, 2007, 2014) is self-report multiscale personality inventory, most commonly utilized for clinical purposes, in the assessment of psychopathology of adults. It is used in forensic, medicine, school or child custody assessment, but it can also be used in the personnel selection process. Items are written at a 4th-6th -grade reading level and answered on a four point Likert-scale.

The PAI has 22 non-overlapping scales: 4 Validity scales (Inconsistency, Infrequency, Negative Impressions, Positive Impressions), 11 Clinical scales (Somatic Complaints, Anxiety, Anxiety-Related Disorders, Depression, Mania, Paranoia, Schizophrenia, Borderline Features, Antisocial Features, Alcohol Problems, Drug Problems), 5 Treatment scales (Aggression, Suicidal Ideation, Stress, Nonsupport, Treatment Rejection) and 2 Interpersonal scales (Dominance, Warmth). All clinical scales (except Alcohol Problems and Drug Problems) have subscales that represent more specific aspects of the trait that scale measures. The development of the Inventory was based on a construct validation framework that stressed both rational and empirical methods of scale development and as such placed strong emphasis on the development and selection of items and on their stability and correlates. Syndromes were chosen on the basis of their historical importance within the nosology of mental disorders and their significance in contemporary diagnostic practice (Morey, 1991, 2007, 2014). These criteria were assessed through a review of the historical and contemporary literature and through survey of practicing diagnosticians, and items were written to provide an assessment of each component of the chosen syndromes. Many studies have supported the reliability and validity of the PAI scales (e.g., see Boone, 1998; Deisinger, 1995; Holden, 2000; Morey, 1991, 2007, 2014) in different countries and different languages.

PAI short form (PAI-SF) is composed of the first 160 items of the PAI full-form Inventory. Since items in PAI full-form Inventory are ordered in the way that items with the strongest item-scale correlations are located earlier in the Inventory, those 160 items are enough to assess 20 of the 22 scales found in the full-form (exceptions are validity scale Inconsistency and treatment scale Stress). This kind of item ordering intended to maximize the internal consistency and stability of the PAI-SF, and to optimize scale discrimination using fewer items (Morey, 1991).

Even though the use of the short form means that we cannot form results for all the scales and do not have results for subscales which can be calculated for ten scales in full-form, PAI-SF is commonly used when the time available for the examination is not enough for the utilization of the entire PAI Inventory. It is also very useful in situations where the respondent does not complete the latter items or when there is substantial evidence to suggest that the person did not answer reliably to the second part of the Inventory. In these situations, it is understandable to use the short-form as a screening measure for potential psychopathology. Manual for PAI Inventory (Morey, 2007, 2014) provides norms for both full- and short-form respectively, but PAI-SF should not be used when an important decision needs to be made on the basis of the results; scores on the short form are only estimates and should be treated as such.

We are aware of only a few studies that examined the psychometric characteristics of the PAI-SF to date (Morey, 1991; Frazier, Naugle and Haggerty, 2006; Sinclair et al., 2009). Morey (1991) used the normative sample from his initial PAI validation research and found high agreement between the clinical scales of the PAI-SF and the full-form of PAI (range of correlation was 0.81 to 0.95). Similar results were obtained in other evaluations, e.g. Sinclair et al. (2009) found correlations between clinical scales in full- and short-form in range from 0.92 to 0.97; Sinclair et al. (2010) in the range from 0.92 to 0.98.

The purpose of this study was to compare the PAI full-form Inventory and its short form, PAI-SF, to examine the psychometric characteristics of the PAI-SF in Croatia. In this study, only clinical scales (11 scales) were taken into consideration since they are of primary concern for diagnostic purposes. We analyzed item-scale correlations, the convergence of items within the scales (in order to see if all of the items were individually significantly more strongly related to the scale to which they belonged, than to any other scale) and also the differences on a particular scale between the results in the short-form and those in the full-form.

Method

Data for the presented study was gathered in the process of the standardization of the PAI Inventory, so all of the participants completed the full 344-item PAI. Participants were informed about the purpose of the research and signed consent forms before completing the PAI Inventory. The Inventory was administered individually, and all PAI scales were scored according to the Manual (Morey, 2014). Time of the administration in this study was not specifically measured, but completion of the full-form Inventory usually takes 40-50 minutes (which means that PAI-SF is usually completed in half of that time).

The profile validity was determined for the full-form Inventory using Morey's (1991, 2007, and 2014) critical cut-off scores for the validity scales and only those protocols that were considered valid were included in the study.

The final sample encompassed 432 participants (218 males and 214 females), aged between 18 and 88 years ($M=38.37$; $SD=13.87$), from different parts of the Republic of Croatia. More detailed structure by age and gender is shown in Table 1. The range of years of education was 7 to 21, with an average of 14.1 ($SD=2.1$).

Table 1
Demographic characteristics of the sample (N=432)

Age	Gender		Total
	M	F	
18-25	43	47	90
26-35	66	53	119
36-45	47	38	85
46-55	45	52	97
55+	17	24	41
Total	218	214	432

The Inventory was administered by 12 psychologists from health care institutions from different parts of the Republic of Croatia. Participants were divided into two groups. One group consisted of clients from institutions of occupational health that underwent testing as part of an examination for different kinds of licenses ($N=234$). The other group was friends, acquaintances and colleagues of psychologists ($N=198$). Results of those two groups were compared in order to see if clients gave answers that were socially desirable. However, analyses show that answers of the two groups did not significantly differ, so all the analysis and the norms were given for both groups together.

Results and discussion

Internal consistency of the PAI short-form (PAI-SF) scales was evaluated using the Cronbach alpha coefficient and compared to the coefficients of the full-form (Table 2). The range of internal consistency coefficients in the short-form was 0.47 (DRG) to 0.81 (ANX), while the range of coefficients in the full-form was 0.47 (DRG) to 0.86 (ANX). The short-form, in general, yielded lower internal consistency reliability coefficients compared to the full-form Inventory, but except for scales DRG (0.47) and ANT (0.58), which also had lower reliability, in the full-form, values of alpha coefficients exceeded the 0.70 standard suggested by Nunnally and Bernstein (1994). The proposed reason for these results is the smaller number of items in each of the scales that can result in their lower precision, reliability and validity. The same has been shown in previous research (Morey, 1991; Frazier, Naugle and Haggerty, 2006), which suggests that those scales are less reliable than is typically desired for making important clinical decisions so practitioners should have that in mind.

Correlations between the short- and full-form of the Inventory can be an indicator of content coverage of the short form. The range of correlations in this study was 0.73 to 0.93. Shrout and Fleiss (1979) suggest that in group comparisons of the results on the two forms of the Inventory, correlations greater than 0.80 are considered excellent. Correlations from 0.60 to 0.80 are moderate, 0.40 to 0.60 adequate and those under the 0.40 are considered low.

Table 2

Internal consistency reliability coefficients of the full- and the short-form of PAI Inventory and correlations between the scales of two forms

Scale	PAI Full-form		PAI Short-form		correlation between two forms
	No. items	alpha	No. items	alpha	
Somatic Complaints (SOM)	24	0.79	12	0.76	0.93
Anxiety (ANX)	24	0.86	12	0.81	0.92
Anxiety-Related Disorders (ARD)	24	0.73	12	0.71	0.88
Depression (DEP)	24	0.80	12	0.71	0.88
Mania (MAN)	24	0.82	12	0.78	0.93
Paranoia (PAR)	24	0.79	12	0.76	0.93
Schizophrenia (SCZ)	24	0.74	12	0.72	0.83
Borderline Features (BOR)	24	0.80	13	0.76	0.93
Antisocial Features (ANT)	24	0.69	12	0.58	0.85
Alcohol Problems (ALC)	24	0.69	4	0.73	0.73
Drug Problems (DRG)	24	0.47	7	0.47	0.91

The descriptive statistics of clinical scales in full- and short-forms of the PAI Inventory are shown in Table 3. For all the scales in full- and in the short-forms of the Inventory skewness, kurtosis and K-S are reported. As can be seen, most of the distributions significantly differed from the normal distribution, but these results are not uncommon in scales that focus on clinical symptoms and diagnosing pathology, especially considering that our sample was not clinical. Table 3 shows descriptive data as well as the percentage of short- and full-form scores elevated above the clinical *T*-score of 70, in order to evaluate the extent to which the PAI short-form clinical scales accurately reproduce the full-scale. The agreement between full- and short-form was met when both forms of Inventory were either below or over the clinical cut-off score of 70. The agreement was generally high in the Croatian sample (all of the clinical scales had agreement between two forms above 90%).

Table 3

Descriptive statistics for clinical scales of PAI full- and short- form, and comparisons between the results

Scale	PAI Full-form					PAI Short-form					% <i>T</i> ≥ 70 - full-form	% <i>T</i> ≥ 70 - short-form
	<i>M</i>	<i>SD</i>	K-S	skewness	kurtosis	<i>M</i>	<i>SD</i>	K-S	skewness	kurtosis		
SOM	9.23	6.62	3.23	1.51	2.94	4.20	4.04	4.07	1.90	4.70	5.1	4.6
ANX	15.21	8.36	1.91	0.91	1.76	5.53	4.58	2.96	1.27	2.32	2.8	3.9
ARD	16.85	7.06	1.78	0.64	0.34	7.91	4.22	2.87	0.99	1.15	4.2	4.6
DEP	11.56	6.76	2.49	1.07	1.67	3.96	3.72	3.13	1.36	2.39	3.9	5.1
MAN	20.45	8.90	1.67	0.69	0.66	9.19	5.14	2.15	0.80	0.82	4.4	3.7
PAR	23.09	7.61	1.04	0.34	0.47	11.76	4.74	1.51	0.50	0.79	2.8	2.8
SCZ	9.92	5.60	2.12	1.04	2.03	2.84	2.99	3.97	1.95	6.10	3.9	4.9
BOR	15.76	7.44	1.75	0.73	0.61	7.53	4.75	2.20	0.74	0.48	4.2	3.2
ANT	12.83	6.20	2.22	0.75	0.35	5.61	3.23	2.76	1.08	1.87	3.2	3.5
ALC	3.96	3.83	3.18	1.96	6.21	0.37	1.18	9.73	4.89	31.46	4.2	3.5
DRG	3.65	3.57	3.89	0.80	-0.04	2.43	2.87	5.93	0.95	-0.05	4.9	6.7

Inter-scale correlations of the clinical scales in the short-form of the Inventory are presented in Table 4. Most correlations are low, which indicates that each scale has a unique variance (highest correlation is 0.45). However, moderate correlations are not unexpected given the similarity in the underlying constructs and comorbidity between them.

Table 4
Inter-scale correlations of clinical scales of the PAI short-form

	SOM	ANX	ARD	DEP	MAN	PAR	SCZ	BOR	ANT	ALC
ANX	0.24									
ARD	0.16	0.41								
DEP	0.25	0.44	0.40							
MAN	0.02	0.15	0.25	0.07						
PAR	0.03	0.11	0.16	0.09	0.12					
SCZ	0.16	0.45	0.36	0.44	0.35	0.16				
BOR	0.02	0.38	0.40	0.25	0.10	0.21	0.21			
ANT	-0.04	0.29	0.26	0.19	0.30	0.12	0.25	0.18		
ALC	-0.05	0.05	0.18	-0.01	0.16	0.14	0.04	0.18	0.06	
DRG	-0.02	-0.01	-0.02	0.06	0.00	0.01	0.03	0.06	0.00	0.17

Adjusted item-to-scale correlations were calculated to assess the correlation of each item relative to the aggregate of the remaining items in that scale and those data are shown in Table 5. In the literature, different authors suggest different values of correlation that we consider significant (Ware et al., 1997 indicate value of 0.40; Nunnally and Bernstein value of 0.30 etc.). Generally, correlations lower than those values suggest that there are items in the scale which poorly represent construct that is measured. In this research, the range of those correlations shows us that 10 of the 11 scales had items that fall below this standard. We can consider all of the average adjusted item-scale correlations significant except the one for Drug Problems Scale (0.24). The number (and percentage) of items in each scale that have adjusted item-scale correlation equal or higher than 0.30 are shown in Table 5. Most of the scales had more than 75% of items correlated higher than 0.30 with their hypothesized scale, with the exception of Scales SCZ, ANT and DRG.

Also, we examined correlations between each item and all other scales respectively, and those data are shown in Table 5. Comparison of correlations between each item and the scale to which they belong with the correlations between that item and all other scales respectively helps us evaluate whether each item fits best to the scale to which we hypothesize it belongs.

We examined correlations with all clinical scales for each item and calculated the percentage of those that were higher with the hypothesized scale than any other scale of the Inventory. Analysis of the significance of those differences in correlations was done with Steiger's *t*-test for dependent correlations (Steiger and Lind, 1980), a procedure to determine a scaling success rate. This procedure was taken from Sinclair et al (2010), and it encompassed two steps - calculating the percentage of item-hypothesized scale correlations that were greater than correlations item-all other scales respectively and calculating the percentage of correlations that were significantly greater. Results of scaling success rates are also presented in Table 5 (with and without consideration to statistical significance). In all scales, the percentage of the items that correlate highest with their hypothesized scale is above 90%, so we can conclude that items are stronger measures of their intended constructs than of other scales.

Table 5

Psychometric characteristics of items and scales of the PAI short-form

Scale	Range of adjusted item-scale correlations	Average adjusted item-scale correlation	Items correlating $r \geq 0.30$ with hypothesized scale (%)	Range of adjusted item-other scale correlations	% items that correlate highest with their hypothesized scale (% of statistically significant)
ANX	0.21-0.66	0.42	9/12 (75%)	0.01-0.55	95.2 (88.1**)
ARD	0.24-0.60	0.48	11/12 (92%)	0.01-0.52	98.3 (84.2**)
DEP	0.12-0.55	0.38	9/12 (75%)	0.01-0.48	94.2 (83.7**)
MAN	0.24-0.51	0.41	11/12 (92%)	0.01-0.46	97.8 (90.1**)
PAR	0.27-0.56	0.42	11/12 (92%)	0.01-0.45	92.8 (84.5**)
SCZ	0.27-0.48	0.40	10/12 (83%)	0.00-0.43	95.6 (93.1**)
BOR	0.14-0.51	0.37	8/12 (66%)	0.01-0.45	96.2 (74.6**)
ANT	0.18-0.54	0.40	11/13 (85%)	0.01-0.42	91.6 (72.0**)
ALC	0.02-0.45	0.26	5/12 (42%)	0.01-0.40	98.5 (85.7**)
DRG	0.52-0.57	0.54	4/4 (100%)	0.01-0.23	100.0 (100.0**)
ANX	0.06-0.42	0.24	3/7 (43%)	0.01-0.13	100.0 (100.0**)

Most items within each scale display correlations with their hypothesized scales that are significantly higher than correlations with other scales. The range is from 91.6% (BOR) to 100% (ALC and DRG), i.e. 72 to 100% if we consider statistical significance. These rates are somewhat lower than those reported by Sinclair et al. (2009), i.e. there is a lower percentage of items and scales meeting this assumption.

Results generally support the hypothesized item groupings of the PAI-SF in Croatia. Items tended to be stronger measures of their hypothesized scale than of other scales, with the exception of few items on MAN and BOR scales that had higher correlations with some other scale (overall less than 5% of items).

Conclusions

So far, only a few studies have been interested in examining the properties of PAI-SF Inventory (Morey, 1991; Frazer et al., 2006; Sinclair et al., 2009, 2010), and those studies have provided important psychometric properties of this short-form Inventory. Research in Croatia showed that results on PAI short-form could be a useful approximation of the scores that can be gained on full-form Inventory. Clinical scales of short-form Inventory show lower internal consistency, but, as Frazier, Naugle and Haggerty (2006) suggest, lower levels of internal consistency reliability for short-form scales may be necessary for maximizing the content coverage and predictive validity of these scales.

Overall, short and full-scale of PAI Inventory produce a similar pattern of results. However, since participants only filled out the full-form PAI Inventory, not the short version separately, agreement values could be an overestimation.

Developing short, but reliable and informative measures can assist clinicians in quickly identifying persons with some kind of dysfunction. Multiple elevations of PAI-SF scales may yield diminished validity detection relative to the full-form, may show weaker content coverage and may yield misestimated scores.

Further research on this topic is needed to gain a better understanding of the short-form of the Inventory and to see the validity of using this form for clinical decisions in Croatia. Also, it would be useful to have a sample of people that completed only the first 160 items of Inventory (i.e. to have separate administrations of PAI full- and short-form) as some researchers recommend (e.g. Smith, McCarthy and Anderson, 2000), since some researchers have shown that full-form interpretation, even profile-based approaches may not be applicable for the short-form (Fraizer, Naugle and Haggerty, 2006). We suppose that scale agreement may drop when separate administrations are used, so further studies of psychometric properties of PAI-SF in which participants would fill only the short-form Inventory are needed.

In that light, it may be a good decision to use short-form as a screening measure for psychopathology so it would be useful to keep examining the short-form in other countries to develop a universal briefer form of PAI that can yield a maximum of information.

References

- Boone, D. (1998). Internal consistency reliability of the Personality Assessment Inventory with Psychiatric inpatients. *Journal of Clinical Psychology, 54*, 839-843.
- Deisinger, J. A. (1995). Exploring the factor structure of the Personality Assessment Inventory. *Assessment, 2*, 173-179.
- Frazier, T. W., Naugle, R. I., & Haggerty, K. A. (2006). Psychometric adequacy and comparability of the short and full forms of the Personality Assessment Inventory. *Psychological Assessment, 18*, 324-333.
- Holden, R. (2000). Are there promising MMPI substitutes for assessing psychopathology and personality? Review and prospect. In: R. H. Dana (Ed.), *Handbook of cross-cultural and multicultural personality assessment* (pp. 267-292). Mahwah: Erlbaum.
- Morey, L. C. (1991). *The Personality Assessment Inventory: Professional Manual*. Odessa: Psychological Assessment Resources.
- Morey, L. C. (2007). *The Personality Assessment Inventory: Professional Manual (2nd Ed)*. Odessa: Psychological Assessment Resources.
- Morey, L. C. (2014). *Inventar za ispitivanje ličnosti: Priručnik (prijevod 2. izdanja)*. [The Personality Assessment Inventory: Manual (translation of 2nd Ed)]. Jastrebarsko: Naklada Slap.
- Nunnally, J. C., & Bernstein, I. H. (1994). *Psychometric Theory (3rd Ed)*. New York: McGraw-Hill.
- Shrout, P. E., & Fleiss, J. L. (1979). Intra-class correlations: use in assessing inter-rater reliability. *Psychological Bulletin, 86*, 420-428.
- Sinclair, S. J., Siefert, C. J., Shorey, H. S., Antonius, D., & Shiva, A. (2009). A psychometric evaluation of the Personality Assessment Inventory - short form clinical scales in an inpatient psychiatric sample. *Psychiatry Research, 170*, 262-266.
- Sinclair, S. J., Antonius, D., Shiva, A., Siefert, C. J., Kehl-Fie, K., Lama, S., Shorey, H. S., & Blais, M. A. (2010). The Psychometric Properties of the Personality Assessment Inventory-Short Form (PAI-SF) in Inpatient Forensic and Civil Samples. *Journal of Psychopathology and Behavioral Assessment 32*, 406-415. Doi: 10.1007/s10862-009-9165-x
- Smith, G. T., McCarthy, D. M., & Anderson, K. G. (2000). On the sins of short-form development. *Psychological Assessment, 12*, 102-111.
- Steiger, J., & Lind, J. (1980). *Statistically-based tests for the number of common factors*. Paper Presentation at the Annual Meeting of the Psychometric Society, Iowa City, IA.
- Ware, J. E., Harris, W. J., Gandek, B. L., Rogers, B. W., & Reese, P. R. (1997). *MAP-R Multitrait/Multi-item Analysis Program – Revised*. The Health Assessment Lab, Boston, MA.

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Psychological correlates of resistance to mandatory child vaccination

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Abstract

In two independent studies, we investigated the spread and causes of potential resistance to the mandatory childhood vaccination in Serbia. In the first study, in a representative sample comprising 1,019 adult citizens (51.5% women), 11% claimed they would not vaccinate their child, and an additional 10% was undecided. There were no gender differences, but lower education was associated with more support for vaccination. In the second study, in a student sample (N=216), we explored if the intention to vaccinate could be associated with the knowledge about the vaccines and their effects, competence in media use, and tendency to believe in conspiracy theories. The multiple regression model explained 12% of the variance in vaccination intention; higher support was associated with more knowledge and less conspiracy mentality, while media literacy was not related to vaccination intention. These results may help identify vulnerable groups and tailor public health campaigns.

Keywords: vaccination intention, knowledge about vaccination, media literacy, conspiracy mentality

According to the World Health Organization (WHO), immunization prevents more than two million deaths each year and is one of the most cost-effective health investments (WHO, 2015). Despite this fact, in the past two decades, especially in the USA, Canada, and Western Europe, anti-vaccination movements have emerged, and the bursts of vaccine-preventable diseases have been linked to their activities (Omer et al., 2008; Omer, Salmon, Orenstein, Dehart & Halsey, 2009). Anti-vaccination movements typically draw their scientific evidence from a now-retracted article on the correlation between the MMR vaccine and autism (Wakefield et al., 1988), but continue to recruit more followers, especially among parents of young children who are to be mandatory immunized (Gowda & Dempsey, 2013). In Serbia, there is a schedule for mandatory child vaccination, and the law obliges parents to opt out of it if they doubt vaccine safety and do not want their child to be vaccinated. According to the 2014 Multiple Indicator Cluster Survey (MICS, 2014.), 70.5% of children from the general population aged 24 to 35 months received all vaccines timely. In spite of the majority of children following the vaccination schedule, Serbian Institute for Public Health reports that coverage by the MMR vaccine dropped from 93% in 2013 to 84% in 2015 (Institute of Public Health, Serbia).

As the decision on vaccinating a child is one of the most important health-related decisions a parent can make, it is vital to understand if it is an informed one. There is conflicting evidence on the relationship between parental knowledge about vaccination and the intention to vaccinate: in some studies, more knowledge about vaccination schedule and their effects led to higher intention to vaccinate, while in other, the relationship was opposite (Larson, Jarett, Eckersberger, Smith, & Paterson, 2014). To our knowledge, there are no studies on this conducted on Serbian parents, neither is there data about the sources of their information about the vaccines. In other samples, there is evidence that parents sometimes turn to the Internet instead of medical professionals as a source of health-related information (Downs, de Bruin, & Fischhoff, 2008). As for the anti-vaccination movement, it is especially active on the Internet (Blume, 2006); Google search for keyword "vaccination" ends up with 71% of results classified as anti-vaccination content (Kata, 2010). Being able to tell the reliable sources apart from unreliable to trace and evaluate the competence of authors, to fact-check the information presented to them seems to be a valuable skill that could protect parents as Internet users from misinformation which could eventually lead to unfavorable decisions. Also, information about risks of vaccination is often supported by arguments referring to ill intentions of medical officials and pharmaceutical industry. This is the reason people with so-called "conspiracy mentality" (Swami, Chamorro-Premuzic, & Furnham, 2010) are found to be more prone to anti-vaccination attitudes (Lewandowsky, Oberauer, & Gignac, 2013).

With the goal to identify what can be positive, and what negative predictors of the intention to vaccinate, we set up two studies. In the first, we measured the intention to vaccinate on a representative sample of Serbian adults and its demographic correlates. In the second, we tested a set of its psychological correlates, from a global conspiratorial worldview, the capability to evaluate the quality of information and its source to the factual knowledge about vaccines and immunization process.

Material and methods

The first survey was conducted by Ipsos Strategic Marketing, and it targeted 1,019 adult citizens (51.5% women) of the Republic of Serbia, excluding Kosovo. The sample was two-stage representative, stratified by the region and type of settlement (urban/rural). Participants were selected from the lists of polling registers, and asked one question about the vaccination intention: "Regardless whether you are a parent or not, would you at this time vaccinate your child according to the mandatory vaccination schedule of the Republic of Serbia?", followed by a four-point Likert scale anchored with 1 - *I definitely would not*, and 4 - *I definitely would*, with a "don't know" option also provided. In the socio-demographic section, we recorded participants' gender, age, education and parental status (percentage of participants with children under the age of 18).

In the second study, we tested 216 psychology students (Mean age=20.35 (1.91)) who took part in exchange for course credits. In total, 83% of the sample were females, which reflects the gender proportion of psychology students.

An instrument for assessing vaccination-related knowledge consisted of 15 multiple-choice questions, such as "Against which disease or diseases is MMR vaccine protecting?" (see Appendix 1). As there were multiple correct answers to some questions, the total score varied from 0 to 22.

Drawing from defining media literacy as an ability to select and evaluate information in the media (Literat, 2014), we devised a media literacy scale for this study. It contained 18 items, such as "I'm looking for the primary sources of information of the news I read", followed by a five-point Likert-type scale (anchored with 1 - *I do not agree at all* and 5 - *I completely agree*). The full scale can be found in Appendix 2.

A tendency to embrace conspiracy theories was measured by a five-item Conspiracy mentality questionnaire (Bruder, Haffke, Neave, Nouripanah, & Imhoff, 2013), comprised of statements such as "Government agencies closely monitor all citizens", assessed on a five-point Likert scale (1 - *I do not agree at all*; 5 - *I completely agree*).

Intention to vaccinate was measured with the same question as in Study 1, this time, followed by an 11-point scale ranging from 1 - *I definitely would not*, to 11 - *I definitely would*.

Results

In the first study, although the dominant intention was to vaccinate (80% certainly yes and yes), 10% of respondents said they would not vaccinate their child while an additional 10% said that they do not know ($M = 3.37, SD = .91$) (Figure 1). More importantly, in the group of parents of children under the age of 18 who comprised 31.8% of the total sample, 85% stated they would vaccinate their children at present, 10% of them would not vaccinate their children while 5% was hesitant ($M = 3.46, SD = .77$) (Figure 2).

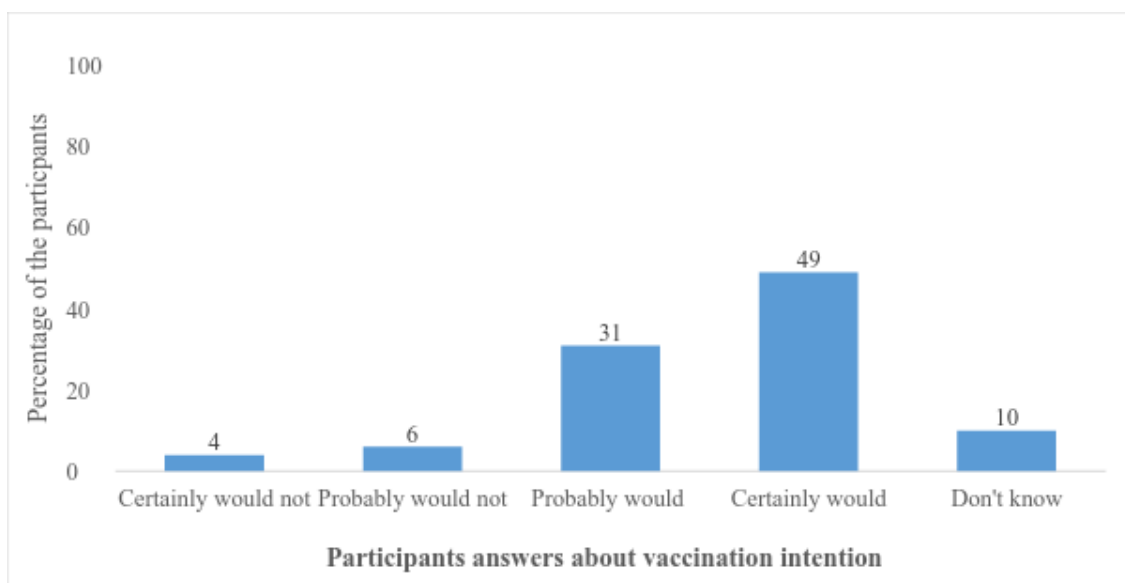


Figure 1. Distribution of an answers about vaccination intention in representative sample (N=1019)

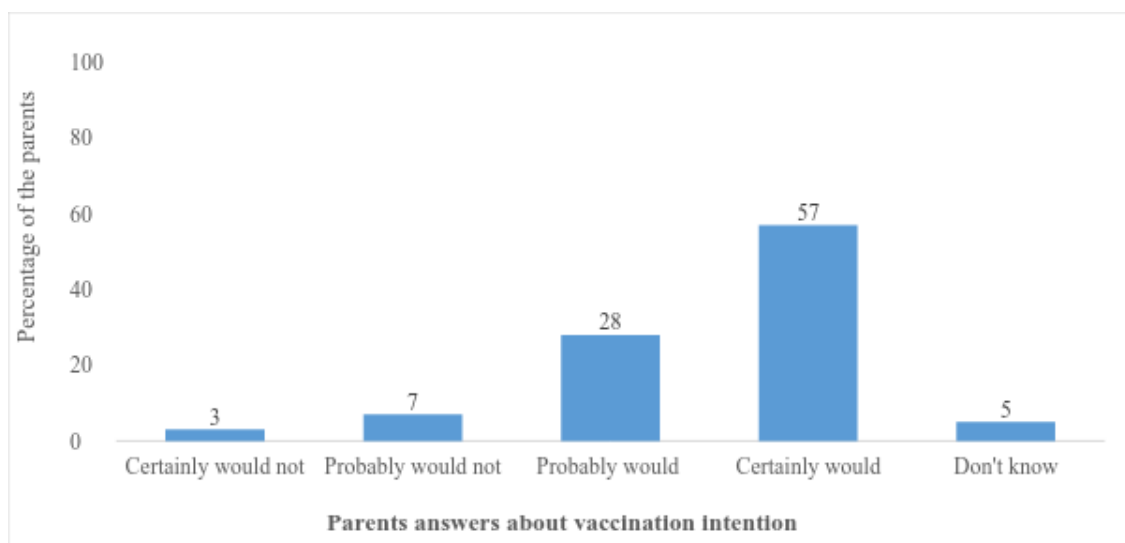


Figure 2. Distribution of answers about vaccination intention in parent sample (N=325)

There were no gender differences ($M_{\text{men}} = 3.58$ $SD = .89$, $M_{\text{women}} = 3.48$, $SD = .25.12$, ($t(1017) = .1627$, $p = .104$), but we did register differences by education. The single factor analysis of variance (ANOVA) revealed that people of different educational status significantly differed in their intention to vaccinate ($F(2, 1016) = 6.19$, $p = .02$, $\eta^2 = .12$). Post hoc comparison using the Tukey HSD test indicated groups with high or secondary education ($M_{\text{high}} = 3.46$, $SD = .859$; $M_{\text{sec}} = 3.47$, $SD = .937$) were slightly less positive than the group with elementary education ($M_{\text{elm}} = 3.69$, $SD = .863$).

Table 1

Psychometric characteristics of used instruments in the student sample (N=216)

Instruments	M	SD	KS Z	α
Vaccination related knowledge	7.79 (0-10)	1.68	1.081 (p=.193)	.75
Media literacy	52.55 (0-90)	8.62	0.686 (p=.735)	.83
Conspiracy mentality	8.87 (0-22)	3.21	1.151 (p=.141)	.62

In the second study, we first tested the psychometric properties of the instruments (Table 1) – all variables were normally distributed, and the internal consistency varied from $\alpha = .62$ for the five-item Conspiracy mentality questionnaire to $\alpha = .81$ for the Media literacy scale. We report the highest reliabilities as they did not improve when items were omitted. Table 2 gives details about the intercorrelations between all variables: higher media literacy and a less conspiratorial worldview were related to more knowledge about the vaccines; more knowledge and less conspiracy mentality were related to higher vaccination intention.

Table 2

Intercorrelations between knowledge about vaccines, media literacy, susceptibility to conspiracy theories and vaccination intention in the student sample (N=216)

	1.	2.	3.	4.
1. Vaccine related knowledge	-			
2. Media literacy	.254**	-		
3. Conspiracy mentality	-.137*	-.085	-	
4. Vaccination intention	.229**	.033	-.288**	-

* $p < .05$. ** $p < .01$

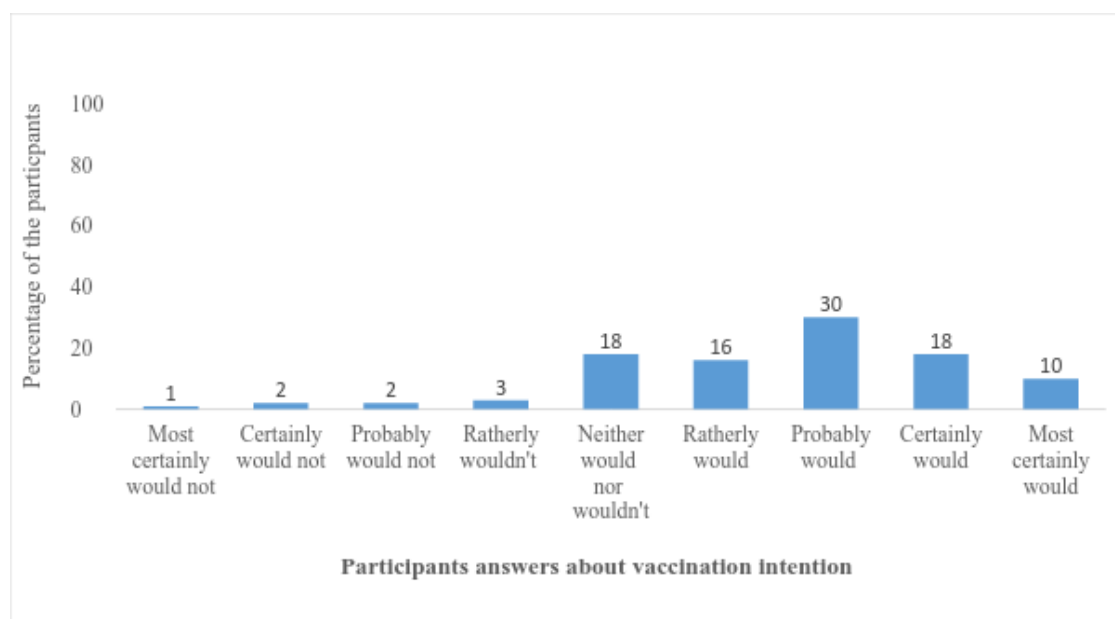


Figure 3. Distribution of answers about vaccination intention in student sample (N=216)

To test which psychological predictors are relevant for the intention to vaccinate, we simultaneously entered the media literacy, conspiracy mentality and vaccine related knowledge in the multiple regression; vaccination intention served as a criterion (the distribution of the answers about vaccination intention is shown in Figure 3). The model explained 12% of the variance in the intention to vaccinate ($F(3,212) = 9.74, p < .01$). Conspiracy mentality decreased ($\beta = -.26, t = -4.05, p < .01$) and knowledge about vaccination increased the support for vaccination ($\beta = .20, t = 3.04, p < .01$) while media literacy was not a significant predictor.

Discussion and conclusion

Having in mind the importance of vaccination for public health and the growing resistance to it in the media and general public, this research aimed to assess (a) the acceptance of mandatory vaccination in the general population of Serbia and its demographic correlates and (b) the psychological factors that foster the so-called "vaccine hesitancy", i.e. the factors that make someone prone to accept the anti-vaccination narrative. The results show that, although the large majority of Serbian citizens claim that they would vaccinate their child, there is still a significant percentage that claims they would not (11%), and a similar percentage that is undecided (10%). Less educated people were more likely to accept the mandatory vaccination than the rest of the population – this finding stands in contrast to studies from other countries reporting that it is exactly this demographic group that is most likely not to vaccinate their children (see Uwemedimo et al., 2012 for the Netherlands). However, there are also country findings in line with this one (see Wei et al., 2009 for the United states). In the next study, in a student sample, we discovered that the knowledge about the vaccines serves as a promoter, while proneness to conspiracy theories serves as a barrier to vaccination intention. This information can help the policy makers when they tailor health-related public communications: first, knowledge about vaccine-preventable diseases and their consequences relates to a better understanding of the benefits of vaccination; second, it is very important that the immunization process is transparent and strategically communicated to the public, as this could help diminish conspiracy theorizing, while creating an atmosphere of secrecy or not communicating with the public could increase it. However, the generalizability of the obtained results is limited because the second study is conducted on a relatively small and educationally and gender-wise homogeneous sample.

Exploring the psychological correlates of intention to vaccinate is especially important as studies show that, once a decision not to vaccinate has been made, it is very difficult to reverse it, and that negative attitudes are in that case more likely to get more extreme i.e. attitude change attempts could backfire (Horne, Powell, Hummel, & Holyoak, 2015). Reaching reluctant or indecisive parents while in the process of decision making, and addressing the false beliefs on which they base their decision, can be crucial for the quality of their final decision.

References

- Blume S. (2006). Anti-vaccination movements and their interpretations. *Social Science & Medicine*, 62, 628–42.
- Bruder, M., Haffke, P., Neave, N., Nouripanah, N., & Imhoff, R. (2013). Measuring individual differences in generic beliefs in conspiracy theories across cultures: Conspiracy Mentality Questionnaire. *Frontiers in Psychology*, 4, 225.
- Downs, J., de Bruin, W., & Fischhoff, B. (2008). Parents' vaccination comprehension and decisions. *Vaccine*, 26, 1595-1607.
- Gowda, C., & Dempsey, A. F. (2013). The rise (and fall?) of parental vaccine hesitancy. *Human vaccines & immunotherapeutics*, 9, 1755-1762.
- Horne, Z., Powell, D., Hummel, J. E., & Holyoak, K. J. (2015). Countering anti-vaccination attitudes. *Proceedings of the National Academy of Sciences*, 112, 10321-10324.
- Institute of Public Health of Serbia (2013). *Annual immunization coverage report on the territory of the Republic of Serbia for 2013*. IPH, Belgrade, Serbia.
- Institute of Public Health of Serbia (2015). *Annual immunization coverage report on the territory of the Republic of Serbia for 2015*. IPH, Belgrade, Serbia.
- Kata, A. (2010). A postmodern Pandora's box: anti-vaccination misinformation on the Internet. *Vaccine*, 28, 1709-1716.
- Larson, H. J., Jarrett, C., Eckersberger, E., Smith, D. M., & Paterson, P. (2014). Understanding vaccine

- hesitancy around vaccines and vaccination from a global perspective: a systematic review of published literature, 2007–2012. *Vaccine*, 32, 2150-2159.
- Lewandowsky, S., Oberauer, K., & Gignac, G. (2013). NASA faked the moon landing—therefore, (climate) science is a hoax an anatomy of the motivated rejection of science. *Psychological science*, 24, 622-633.
- Literat, I. (2014). Measuring New Media Literacies: Toward the Development of a Comprehensive Assessment Tool. *Journal of Media Literacy Education*, 6, 15-27.
- Omer, S. B., Enger, K. S., Moulton, L. H., Halsey, N. A., Stokley, S., & Salmon, D. A. (2008). Geographic clustering of nonmedical exemptions to school immunization requirements and associations with geographic clustering of pertussis. *American Journal of Epidemiology*, 168, 1389-1396.
- Omer, S. B., Salmon, D. A., Orenstein, W. A., Dehart, M. P., & Halsey, N. (2009). Vaccine refusal, mandatory immunization, and the risks of vaccine-preventable diseases. *New England Journal of Medicine*, 360, 1981-1988.
- Statistical Office of the Republic of Serbia and United Nations Children’s Fund (2014). *Multiple Indicator Cluster Survey (MICS)*. Unicef, Belgrade, Serbia.
- Swami V., Chamorro-Premuzic T., Furnham A. (2010). Unanswered questions: a preliminary investigation of personality and individual difference predictors of 9/11 conspiracist beliefs. *Applied Cognitive Psychology*, 24, 749–761.
- Uwemedimo, O. T., Findley, S. E., Andres, R., Irigoyen, M., & Stockwell, M. S. (2012). Determinants of influenza vaccination among young children in an inner-city community. *Journal of community health*, 37, 663-672.
- Wakefield, A., Murch, S., Anthony, A., Linnell, J., Casson, D., Malik, M., ... & Walker-Smith, J. (1998). RETRACTED: Ileal-lymphoid-nodular hyperplasia, non-specific colitis, and pervasive developmental disorder in children. *The Lancet*, 351, 637-641.
- Wei, F., Mullooly, J. P., Goodman, M., McCarty, M. C., Hanson, A. M., Crane, B., & Nordin, J. D. (2009). Identification and characteristics of vaccine refusers. *BMC pediatrics*, 9, 1-18.
- World health organization. Immunization. (2015). <http://www.who.int/topics/immunization/en/> 2. 11. 2015.

Appendix 1

Knowledge about the vaccination test and distribution of the answers*

QUESTIONS	PERCENTAGE OF ANSWERS
1. How does vaccination protect from diseases?	
a) Injection of small quantity of virus	58.8%
b) Injection of small quantity of antibodies	23.6%
c) Injection of autoimmune microorganisms	3.2%
d) Don't know	14.4%
2. What is "herd immunity"?	
a) A form of indirect protection from a disease when the population in one area is vaccinated against that disease, which leads to full protection from similar diseases	6.90%
b) A form of indirect protection from a disease when the majority of population in one area is vaccinated against that disease, which enables even those who aren't vaccinated to be protected	19.0%
c) A form of indirect protection from a disease when the majority of population in one area is vaccinated against that disease, but still there is a small probability they get infected with it because of the unprotected part of population	6.90%
d) Nothing of the above	2.3%
e) Don't know	64.8%
3. Children from which listed groups should not be vaccinated?	
a) Acutely ill children	56.5%
b) Children born prematurely	3.7%
c) Children born with a disability	0.5%
d) Children whose immune system is compromised due to a chronic disease or therapy	54.2%
e) Children allergic to vaccines' ingredients	77.8%
f) All of the above	14.8%
4. How can a vaccine be applied to children?	
a) By injection (in the hand or in the thigh)	98.1%
b) Intravenously	20.4%
c) Nasally	2.8%
d) By skin ointment	4.6%
5. Which factor/s determine/s when a child should be vaccinated?	
a) Type of birth (naturally or by Caesarean section)	8.8%
b) Body weight of child	50.9%
c) Apgar score of child	21.8%
d) Age	88.4%
e) Motor ability	9.3%
f) Development of reflexes	3.7%
6. Which one of the following vaccines is received only once?	
b) BCG	22.2%
c) DT	1.4%
d) HPB	1.9%
e) HB	1.4%
f) Don't know	73.1%
7. Against which disease or diseases is the BCG vaccine protecting?	
a) Tetanus	3.2%
b) Child paralysis	5.1%
c) Measles	1.9%
d) Tuberculosis	35.6%
e) Don't know	54.2%
8. According to the vaccination calendar in Serbia, when does a child receive the BCG vaccine?	
a) At birth	25.5%
b) In the first year of life	10.2%
c) Before starting school	4.6%
d) In the tenth year of life	0.5%
e) Don't know	59.3%

9. Against which disease or diseases is the HPB vaccine protecting?	
a) Herpes, peritonitis, and bacterial meningitis	7.4%
b) Hepatitis B	23.6%
c) Helicobacter pylori	0.9%
d) Hepatoblastoma	0.5%
e) Don't know	67.6%
10. According to the vaccination calendar in Serbia, when does a child receive the HPB vaccine?	
a) At birth	5.1%
c) In the first year	6.9%
d) Before starting school	5.6%
e) In the tenth year of life	0.9%
f) Don't know	81.5%
11. Against which disease or diseases is the MMR vaccine protecting?	
a) Tetanus	0.9%
b) Child paralysis	3.2%
c) Bronchial asthma and inflammation of the bronchioles	0.5%
d) Mumps, measles, rubella	32.4%
e) Tuberculosis	1.4%
f) Don't know	61.6%
12. According to the vaccination calendar in Serbia, when does a child receive the MMR vaccine?	
a) At birth	2.3%
b) In the first year	13.4%
d) Before starting school	4.2%
e) In the tenth year of life	0.5%
f) Don't know	76.6%
13. Some media have reported that certain vaccines can cause different diseases. Which vaccines were related to which diseases?	
a) MMR vaccine with autism	39.4%
b) BCG vaccine with ADHD syndrome	1.9%
c) HPB vaccine with multiple sclerosis	0.9%
d) IPV vaccine with Gullian Barre syndrome	0.5%
e) Don't know	57.4%
14. Is vaccinating children mandatory by law in the Republic of Serbia?	
a) Yes	61.1%
b) No	6.5%
c) Don't know	32.4%
15. Is it necessary to have a written approval from the parent or guardian for the child vaccination?	
a) Yes	44.0%
b) No	21.3%
c) Don't know	34.7%
16. Are health institutions obliged to report parents who refuse to vaccinate their children?	
a) Yes	31.0%
b) No	10.2%
c) Don't know	58.8%
17. Is there a legal punishment for parents who refuse to vaccinate their children?	
a) Yes	20.4%
b) No	19.9%
c) Don't know	59.7%

*correct answers are marked in bold.

Appendix 2: Media literacy questionnaire

1. I check the date of the news I read on the Internet
2. I see inconsistencies in the news I read on the Internet
3. I'm thinking whether the positions that are represented in particular text are author's opinions or facts
4. I look for other sources of the same information on the Internet
5. I'm thinking about the author's goals or interests to spread certain information on the Internet
6. I check who is the author of the text I read
7. I check whether there is author's contact information next to his text
8. I check the author's competence in an area or her/his affiliation
9. I'm thinking whether the author of the text has an interest to represent a particular viewpoint
10. I'm looking for the primary sources of information of the news I read (original scientific articles, reports from different organizations, transcripts of interviews etc.)
11. I'm thinking whether the text I read gives a one-sided view of the events or viewpoints of different participants
12. I check whether the website I am reading is commercial, linked to the scientific or state institution
13. I just read the news, I don't dwell too much on them
14. I read the news superficially and I don't invest too much effort in the process
15. I just "pick up" basic information from the news and later discuss it with friends
16. I don't remember on which website I found a particular piece of information
17. I read the news halfway and I consider myself informed on the topic
18. I read only the title of the news - there is nothing new in the text anyway

23

Social interactions as self-esteem predictors in young boys and girls of two countries

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Abstract

Relationships with significant others represent an important source of self-esteem of young people. A positive relationship with parents, peers and teachers is related to higher self-esteem. This research aimed to establish the relative contribution of mother and father behaviors, friendship quality, and teacher interaction in explaining student self-esteem considering their gender and belonging country (Croatia and Bosnia and Herzegovina). The research was conducted on students in Croatia (N=189) and B&H (N=292) with the average age of 13.4 years. Even though there were no significant differences in the self-esteem of boys and girls and students in both countries, there were significant differences in the perception of social interaction quality. Boys experience relationships of lower quality with parents and friends, while students in B&H report lower quality of their relationship with parents but more closeness to their teacher. The less pupils experience parental rejection and control and the more they experience parental acceptance and closeness in teacher interaction, their self-esteem is higher. Mother's behaviors have the greatest individual contribution to explaining the variance of self-esteem, followed by the father's and teacher's behavior, while friendship quality has no significant contribution to explaining pupil self-esteem. The only significant predictor in the last step of the analysis was teacher closeness. Together, this set of predictors explains 19% of the variance of student self-esteem. The mother's behavior is the most important socialization factor in explaining adolescent self-esteem.

Keywords: self-esteem, parental behavior (acceptance, rejection, control), quality of friendship, teacher interaction (influence, proximity), gender, country

Self-esteem is a socio-psychological construct referring to the entire evaluation of oneself including the feelings of general happiness and satisfaction (Harter, 1999). The primary sources of information that form self-evaluation are value, self-perception, and comparison with others (Schwalbe and Staples, 1991), while parents, peers, and teachers offer information that shape self-esteem in adolescents. Two mutually connected processes explain the development of self-esteem in interaction with others. Firstly, a person compares his social identities, opinions and capacities with those of other people. If a person experiences himself as inferior compared to those he is in an interaction with, that will reflect negatively on his self-esteem. Secondly, a person evaluates himself through interaction with others. If significant others do not have a high opinion of him/her, it will reflect on the perception of his/her self-value, resulting in low self-esteem respectively (McMullin & Cairney, 2004).

It is well-known that positive interactions with significant others influence numerous positive developmental outcomes such as self-esteem. One of the key questions that is being discussed is who has such an influence. The most researched is the influence of parents followed by peers and then teachers. Most research includes separate contribution of parents, peers, and teachers, even though we also found research that has taken into consideration all three groups of significant others. What can be concluded when generally speaking of the influence of parents, peers, and teachers on development is that it depends on the age and gender of the pupil and the developmental aspect. Parents have a stronger contribution in the area of longstanding goals (i.e., choice of interest and education, moral values), peers in the areas of entertainment, dressing, spending free time, and delinquent behavior (when family interactions are lacking in strength and quality) (Klarin, Penezić, & Šimić Šašić, 2014; Klarin, Proroković, & Šimić Šašić, 2010a), and teachers in the academic achievement area (Martin et al., 2007). Besides the fact that each of the significant others has an individual contribution, their mutual activity has recently been discussed. In this sense, the model of continuity and compensation is used (Cooper & Cooper, 1992, according to Raboteg-Šarić, 2014). The model of continuity relies on the attachment and social learning theory according to which there is a similarity in the relationship between the child and parents and the relationship with peers and thus with teachers. The compensation model draws on Sullivan's interpersonal theory (1953), according to which positive experiences in one area can have a protective function in another area.

The contribution of significant others to student self-esteem

Juhasz (1989) asked 5th and 6th grade students to rank significant others according to their importance and to explain what significant others do or say to make them feel good or bad. He found that parents ranked as the most important, followed by peers, brothers and sisters, grandmothers and grandfathers and other relatives. Teachers were at the bottom of the list. Ryan, Stiller, and Lynch (1994) tested the relationship between the representations of relationships with parents, teachers, and peers and school adjustment, motivation, and self-esteem. It appeared that representations of relationships with parents and teachers contributed to the explanation of school functioning (school adjustment and motivation), while representations of relationships with parents and peers were significant in explaining self-esteem. Students who feel secure in the relationship with their parents and peers, who have emotional support and support in school issues from their parents and peers, have higher self-esteem. Moreover, identification with parents is positively related, while identification with peers is negatively related to general self-esteem, which authors explain by different inter-personal orientation. Those students who identify themselves with peers do so to comply with peers or are more directed towards their peers due to lack of self-esteem. Students who identify themselves with significant adults (parents and teachers) are more engaged in school and have more positive feelings which can indicate that identification with adults is connected with the internationalization of values transferred by them (Ryan et al., 1994).

Research, in general, indicates that self-esteem is positively related to parental acceptance and support, and negatively related to over protection and control from parents (Hay & Ashman, 2003; Bean & Northrup, 2009) especially in western cultures (Herz & Gullone, 1999). The effects of parental support are stronger in girls than in boys (according to Burnett & Demnar, 1996). Specifically, parental warmth, care and closeness, and authoritative parenthood, show a positive relationship with self-esteem in adolescence (Raboteg-Šarić & Šakić, 2012), while roughness and control or, in other words, authoritarian parenthood, are negatively associated with self-esteem (Coopersmith, 1967; Heaven & Ciarrochi, 2008). Burnett and Demnar (1996) investigated the relation between self-esteem and closeness with mother, father, two best friends, and the present teacher among children aged 8-12. All four variables showed a significant positive correlation with self-esteem, whereby closeness to the mother was most strongly associated with self-esteem while closeness with the father was least strongly associated with self-esteem (particularly in boys).

Furthermore, it was established that girls felt greater closeness with the teacher than boys. Cattley (2004) found a greater contribution from parental support than from teacher support, which leaves space for improving the relationship with the teacher. The relationship with the teacher is weaker as students grow older which indicates that the teacher contribution depends on age. Teacher support and encouragement of a student's autonomy are, in general, related to high self-esteem. The teacher's inclusion, support, order and organization, and innovations are positively related to the student's self-esteem while the teacher's control is negatively related to self-esteem in students (Nelson, 1984; Demirdag, 2015). Šimić Šašić (2012) established that in a positive interaction with the "best" teacher, self-esteem is positively associated with leadership, helping, and understanding, while negative self-esteem is associated with insecurity, dissatisfaction, conflict, and strictness of the teacher. In a negative interaction with the "worst" teacher, self-esteem is not related to any teacher behavior. Teachers with poorer classroom management strategies have problems with class management, i.e. most of the time that should be spend on teaching is used to discipline students, which have negative impact on students' self-esteem (Demirdag, 2015).

Bishop and Inderbitzen (1995) established that people who do not accomplish a reciprocal friendship have lower self-esteem than those who have at least one such friendship. Also, having or not having at least one mutual friendship is more important for adolescent self-esteem than being accepted among peers. Moreover, Birkeland, Breivik, and Wold (2014) reported that being accepted by peers has a generally protective effect on general self-esteem in adolescents in cases when closeness with parents is at a low level.

Gender is a variable that additionally complicates the influence of social interaction on self-esteem. Besides showing gender differences, research has shown different relative importance of individual significant others in the explanation of self-esteem. Research has shown that support from adult figures (parent and teacher) are more important for the self-esteem of girls than that of boys (Brajša-Žganec, Raboteg-Šarić, & Franc, 2000; Burnett & Demnar, 1996). Research results also show gender differences in the perception of interactions with significant others. Keresteš (1999) concludes that parents control sons more than daughters (psychologically and behaviourally). Macuka (2007) found gender differences in the perception of father's control and mother's emotionality. Boys experience higher levels of psychological control from their father, more rejection and less acceptance from their mother than girls do.

In order to fully understand the development of an individual, he/she must be observed within the context he is growing up in. Cultural values can have influence on self-esteem, and different cultures can evaluate and encourage different behaviors (Marshall, 2001). Cultural values and ideals are transferred through procedures of upbringing, in other words, through the interaction of a child with significant others. Research has shown that there are differences in parental beliefs, goals and values (Davis-Kean, 2005; Wigfield et al., 2006), parental behavior (Kim & Rohner, 2002; Zervides & Knowles, 2007) and teacher behavior (Beyazkurk & Kesner, 2005; Khine & Fisher, 2004) in different cultures. Some of our earlier researches have shown differences between adolescents in Croatia and Bosnia and Herzegovina (B&H). Youth in B&H are more involved in family interaction (Klarin, Proroković, Šimić Šašić, & Arnaudova, 2012), consider that parents have a stronger influence on decision making in different spheres of their lives (Klarin, et al., 2010a), and have a more positive evaluation of the quality of friendship (Klarin, Proroković, & Šimić Šašić, 2010b). Klarin, Proroković, and Šimić Šašić (2012) have established that quality of family and peer interaction contribute less to the explanation of self-esteem in youth in B&H than in young people in Croatia. Besides, it seems that young people in B&H show a greater orientation toward collectivism than young people in Croatia (Šimić Šašić & Klarin, 2014; Puhalo, 2005). Even though B&H and Croatia have a joint history, the collapse of the former Socialist Republics of Yugoslavia and the transfer from socialism to capitalism systems that differ in economic, political, and ideological aspects, did not have an equally intensive impact on all the countries. According to the data of the Agency for Statistics (<http://www.bhas.ba>) and the State Institute for Statistics (<http://www.dzs.hr>), B&H has a lower gross domestic product, a lower average salary, a higher employment rate, a lower purchasing power, etc. Almost 60% of the inhabitants in Croatia lives in cities, while the same number of inhabitants in B&H live in the country. 16.4% of the population in Croatia has a university degree, and 9.5% is without any education or with incomplete elementary school, while in B&H 12.8% of the population has a university degree, and 14.7% has no education or completed elementary school education. They also differ in ethical content and religion of the population.

Therefore, the aim of this research was to establish the relative contribution of mother and father behaviors, friendship quality, and teacher interaction in explaining self-esteem of students in Croatia and Bosnia and Herzegovina. The first research problem was to investigate whether girls and boys in Croatia and B&H differ in self-esteem and the quality of interaction with parents, friends, and teachers. We

assume that pupils in B&H could give a more positive evaluation to the quality of interaction with significant others than pupils in Croatia, and boys could give a worse evaluation of the quality of social interaction. The second problem was to investigate the relationship between the quality of interaction with significant others and self-esteem. We expect positive behavior of parents (acceptance), better friendship quality and a more positive relationship with the teacher to be positively, while parental rejection and control to be negatively connected with self-esteem. The third problem was to examine individual contributions of mother and father behavior, friendship quality, and teacher interaction in explaining self-esteem of pupils in both countries. Parent behaviors, especially that of the mother, are expected to have the highest predictive value.

Method

Sample

The participants in this research were 483 pupils from 7th and 8th grade of elementary school in Croatia (Zadar, N=189), and there were 92 boys (49.46%) and 94 girls (50.54%), while in the sample from B&H there were 158 boys (54.67%) and 131 girls (45.33%). In these two samples, pupils mutually differed in some sociodemographic variables. Pupils in B&H were somewhat younger ($t=2.19$, $p=0.03$; $M_{hr}=13.49$, $M_{b\&h}=13.35$), which can be attributed to the fact that in Croatia children start first grade when turning 6 by April 1st while in B&H, they start school when turning 6 by September 1st of the current year. Statistically significant differences were established among the samples considering their place of residence ($\chi^2=267.23$, $p=.00$). Most pupils in Croatia live in the city (96.08%) while in B&H most pupils live in the country (87%). Pupils of the two countries differ in the education of their parents. Parents (mother and father) in B&H have a lower level of education ($\chi^2=61.13$, $p=.00$; $\chi^2=45.92$, $p=.00$). There are more unemployed mothers in B&H ($\chi^2=28.18$, $p=.00$), while the differences in the employment of fathers were not statistically significant. The examinees were not asked of their ethnicity, but since in Čitluk and Ljubuški most of the inhabitants are of Croatian nationality (Herzegovina-Neretva and Western Herzegovina County), this means that the samples are similar in ethnicity.

Measures

The self-esteem scale – (Vizek-Vidović & Kuterovac-Jagodić, 1996) consists of 12 items that measure general self-esteem, the students' assessment of their own value. An example item is "I have many good features". Pupils appraised how much they agree with each statement on a 5-point scale (1- I completely disagree to 5- I completely agree). The coefficient of internal consistency of the self-esteem scale was $\alpha=.89$ in the Croatian sample and $\alpha=.80$ in the sample from B&H.

The perception of parent behavior scale (Macuka, 2007) – measures rejection, acceptance, and psychological control of the mother and father. Rejection refers to the negative emotional relationship of a child with his mother and father. The subscale includes 8 items (i.e., "He/she does not show that he/she loves me" and "I have the feeling that he/she does not notice me"). Acceptance refers to the positive emotional relationship between the child and parents ("My mother and I have an honest relationship", "He/she offers me security"). This subscale includes 7 items. The control dimension refers to behavior mechanisms that are directed towards modifying child behavior such as punishment, threatening, underestimation, comparison with other children, and similar, and it can be defined as psychological control. The subscale has 10 items ("He/she mocks me in front of others", "He rarely smiles at me"). On a 5-degree scale, examinees evaluated to what extent each claim was correct (1- not correct at all, 2- partially correct and 3- correct). The coefficients of reliability of the used subscales were satisfactory in both samples. The results in the pupil sample in Croatia were: rejection (mother $\alpha=.81$, father $\alpha=.79$), acceptance (mother $\alpha=.78$, father $\alpha=.74$) and control (mother $\alpha=.88$, father $\alpha=.85$), in the sample of pupils from B&H: rejection (mother $\alpha=.76$, father $\alpha=.73$) acceptance (mother $\alpha=.71$, father $\alpha=.73$) and control (mother $\alpha=.82$, father $\alpha=.82$).

The friendship quality scale (Klarin, 2005) consists of 30 items that refer to the appraisal of friendship with one's best friend, its value, emotional support and conflict resolution, mutual assistance and activity. The scale result is interpreted as friendship quality. Examples of items are: "We always borrow things from each other", "He/she defends me when someone slanders me"; "We confide secrets to each other". On a 5-degree scale, examinees evaluated how much each one of the items referred to their best friend (1-It's never true for my friend, up to 5 –always true for my friend). The scale coefficient of reliability was $\alpha=.96$ in the Croatian sample and $\alpha=.94$ in the B&H sample.

The questionnaire on teacher interaction (Wubbels et al., 1993; according to Šimić Šašić, 2012) – measures six teacher behaviors: leadership, helping/friendly behavior, understanding, giving freedom to students, uncertain behavior, dissatisfaction, admonishing, and strictness. The Australian questionnaire version for students was used in this research and it consists of 48 items. Each subscale is measured by 6 items, and in this research each item for conflict quality and strictness had a weak connection with the total result so they were left out in the formation of the total result. The coefficients of internal consistency stood in the order stated in the scale: .90, .89, .91, .78, .88, .90, .82 and .86 for the sample in Croatia and .76, .75, .76, .72, .75, .76, .79, i .82 for the sample in B&H. Students were to evaluate how often the teacher behaved in a certain way in class assisted by a five-degree scale (1- never, 5- always). ²The combinations of these behaviors give a typical profile of the interpersonal teacher and student relationship (i.e., directive, authoritative, tolerant, repressive, etc.). In scoring results in single subscales, it is possible to express individual results in two dimensions: dimension of influence and dimension of proximity³. The teacher's behavior: strictness and leadership, uncertain and giving students freedom contribute more to the result of the dimension of influence, while friendship and understanding with dissatisfaction and conflict contribute more to the dimension of proximity (Wubbels & Brekelmans, 2005). The dimension of influence (dominance/submissiveness) points to who runs or controls communication and how often, while the dimension of proximity marks the degree of cooperativity or closeness among participants in communication.

Procedure

The research was conducted with the approval of the principal, expert service and parents. The questionnaire was anonymously filled out by pupils during one class. In both samples, pupils evaluated the interaction with the Croatian language teacher considering that the most of their classes consisted of the Croatian language class.

Results

The first research problem was to investigate whether girls and boys in Croatia and B&H differ in self-esteem and the quality of interaction with parents, friends, and teachers. To answer this research problem, two-way analyses of variance were conducted. Table 1 shows the descriptive statistics for self-esteem, parental rejection, acceptance and control, friendship quality, and influence and teacher proximity, and the results of a two-way variance analysis with regards to gender and country.

Two-way analysis of variance results indicates that no significant difference exists in self-esteem and mother acceptance of male and female students in Croatia and B&H. Significant differences have been established in mother rejection with reference to gender. Boys give higher appraisals to mother rejection. A difference in the perception of mother control was also set up between pupils in the two countries. Pupils in B&H appraised the mother's use of greater psychological control than students in Croatia. Statistically significant differences were established in the evaluation of the father's behavior - the differences in rejection and control were significant considering gender and country, while the difference in acceptance were significant only with respect to the country. Boys and pupils in B&H experienced higher rejection and psychological control by their father. Pupils in B&H experienced lower acceptance by the father. With respect to friendship quality, girls from both countries evaluated greater friendship quality than boys, while the interaction of gender and country was significant. The friendship quality difference between boys and girls, was more pronounced in Croatia than in B&H. In general, the greatest evaluations of friendship quality were given by girls in Croatia and the worst by boys in Croatia. Small differences were established in the appraisal of teacher's influence and closeness. The interaction of gender and the belonging country showed to be significant for the teacher influence. However, later analyses (Bonferroni test) showed that differences were not so large (significant). Finally, students in B&H perceive their teachers closer than students in Croatia.

²Total results in all measurement instruments are created as an average value.

³According to the formula: $(.92*lea)+(.38*hel)-(.38*und)-(.92*giv)-(.92*unc)-(.38*dis)+(.38*adm)+(.92*str)$ for influence dimension and $(.38*lea)+(.92*hel)+(.92*und)+(.38*giv)-(.38*unc)-(.92*dis)-(.92*adm)-(.38*str)$ for closeness dimension (Wubbels & Brekelmans, 2005).

Table 1

Descriptive statistics for measurement variables for boys and girls in both countries and the results of two-way variance analysis (gender X country)

	Croatia		B&H			F (p)
	M M (SD)	F M (SD)	M M (SD)	F M (SD)		
Self-esteem	3.96 (.80)	3.77 (.86)	3.90 (.69)	3.81 (.80)	gender	3.52 (.06)
					country	.01 (.92)
					gender x country	.48 (.49)
Rejection (Mother)	1.40 (.48)	1.25 (.35)	1.45 (.45)	1.34 (.37)	gender	9.54 (.02)
					country	2.58 (.11)
					gender x country	.36 (.55)
Acceptance (Mother)	2.50 (.46)	2.57 (.41)	2.49 (.57)	2.59 (.34)	gender	3.19 (.08)
					country	.01 (.94)
					gender x country	.15 (.70)
Control (Mother)	1.51 (.48)	1.44 (.43)	1.58 (.46)	1.57 (.39)	gender	1.11 (.29)
					country	5.38 (.02)
					gender x country	.43 (.51)
Rejection (Father)	1.39 (.44)	1.26 (.36)	1.47 (.43)	1.41 (.38)	gender	4.62 (.03)
					country	7.77 (.01)
					gender x country	.61 (.44)
Acceptance (Father)	2.51 (.42)	2.44 (.43)	2.41 (.44)	2.34 (.41)	gender	2.13 (.16)
					country	4.73 (.03)
					gender x country	.01 (.91)
Control (Father)	1.48 (.44)	1.32 (.34)	1.56 (.45)	1.45 (.35)	gender	10.77 (.00)
					country	6.15 (.01)
					gender x country	.24 (.62)
Friendship quality	3.78 (.84)	4.42 (.60)	4.03 (.71)	4.30 (.58)	gender	39.83 (.00)
					country	.90 (.34)
					gender x country	6.54 (.01)
Teacher's influence	1.79(1.5 4)	2.43 (1.44)	1.95 (1.59)	1.73 (1.84)	gender	1.22 (.27)
					country	1.80 (.18)
					gender x country	4.68 (.03)
Teacher's proximity	3.71 (4.54)	3.40 (4.20)	4.19 (3.11)	4.78 (3.20)	gender	1.10 (.075)
					country	4.19 (.04)
					gender x country	1.00 (.32)

The second problem of this research was to examine the relationship between self-esteem and mother and father behaviour, friendship quality, and teacher interaction. Pearson coefficients of correlation between the examined variables are shown in Table 2.

Table 2

Correlations among measurement variables on the whole sample

	1	2	3	4	5	6	7	8	9	10	11	12
1. Country	1.00											
2. Gender	-.05	1.00										
3. Self-esteem	.00	-.08	1.00									
4. Mother rejection	.09	-.16**	-.31**	1.00								
5. Mother acceptance	.00	.09	.23**	-.38**	1.00							
6. Mother control	.11*	-.06	-.32**	.70**	-.29**	1.00						
7. Father rejection	.14**	-.11*	-.30**	.74**	-.37**	.55**	1.00					
8. Father acceptance	-.10*	-.08	.26**	-.31**	.58**	-.23**	-.35**	1.00				
9. Father control	.13**	-.17**	-.29**	.53**	-.22**	.73**	.59**	-.18**	1.00			
10. Friendship quality	.04	.29**	.05	-.14**	.19**	-.07	-.14*	.17**	-.05	1.00		
11. Teacher's influence	-.08	.05	.04	-.02	.08	-.01	.02	.10	-.01	.12	1.00	
12. Teacher's proximity	.13*	.03	.27**	-.34**	.23**	-.36**	-.23**	.14*	-.28**	.17**	-.04	1.00

* $p < .05$; ** $p < .01$

In the correlation analysis, we see that pupils who report more parental acceptance and less rejection and control have higher self-esteem. Also, a higher level of self-esteem is associated with more closeness in the interaction with the teacher. Moreover, pupils in B&H experience less acceptance from the father, but more control from the mother, as well as more control and rejection from the father. They also experience more closeness in their interaction with the teacher. Boys experience more rejection by both parents and more control from the father. They also report of lower friendship quality than girls. Next, both parental rejection and control are negatively correlated with friendship quality and teacher closeness while acceptance is positively correlated with these variables. All parental behaviors are statistically significantly correlated with teacher closeness, while friendship quality is not statistically significantly correlated with mother and father control. Parental behaviors are not related to teacher influence. In general, the more positively pupils evaluate the relationship with parents, the more positive is the evaluation of friendship quality and closeness in interaction with the teacher.

The final problem in this research was to examine individual contributions of mother and father behavior, friendship quality, and teacher interaction in explaining self-esteem. Since there was no difference in the levels of self-esteem according to gender and the belonging country, but there were differences in some predictor variables, we decided to conduct a hierarchical regression analysis controlling for gender and the country of belonging in the first step of the analysis. In the next step, and according to results of previous research, mother behaviors were included, followed by father behaviors, friendship quality, and finally teacher interaction. The results of this analysis are shown in Table 3.

Table 3
Results of hierarchical regression analysis with self-esteem as the criterion variable (N=213)

predictors	Self-esteem				
	1 st step Beta	2 nd step Beta	3 rd step Beta	4 th step Beta	5 th step Beta
1. Country	.00	.03	.05	.05	.04
Gender	-.08	-.13*	-.13	-.13	-.12
2. Mother rejection		-.17	-.11	-.11	-.08
Mother acceptance		.13	.05	.05	.04
Mother control		-.17	-.08	-.08	-.05
3. Father rejection			-.05	-.05	-.07
Father acceptance			.13	.12	.12
Father control			-.14	-.14	-.13
4. Friendship quality				.02	-.01
5. Teacher's influence					.04
Teacher's proximity					.15*
ΔR^2		.14**	.02	.00	.02
R^2	.01	.15**	.17**	.17**	.19**

* $p < .05$; ** $p < .01$

The results of hierarchical regression analysis show that gender and the country of belonging do not contribute significantly to the explanation of pupil self-esteem (1% of the criterion variance). The behaviors of the mother included in the second step increase the percentage of the explained variance significantly (additional 14%). The inclusion of these variables resulted in a significant standardized regression coefficient for gender, which indicates the presence of suppressor effects. The third set of variables, behaviors of the father, do not add to the explanation of self-esteem significantly (only 2% of the variance). Now gender becomes a non-significant predictor, which may indicate that parental behaviors are a mediator in the relationship between the pupils' gender and self-esteem. In the fourth step, the included friendship quality did not show any contribution to explaining the variance of self-esteem. In the final, fifth step, variables of teacher interaction explain only 2% of the variance of self-esteem, but teacher closeness is a significant predictor of self-esteem. The total set of predictor variables explains 19% of the variance of pupil self-esteem. Pupils with teachers who show more closeness in their interaction with the class report of a higher level of self-esteem.

Discussion

The first research problem was to examine whether girls and boys and pupils in Croatia and B&H differed in self-esteem and the quality of interaction with parents, friends and teachers. Differences in self-esteem between boys and girls and pupils in the two countries were not established, but some differences in parental behavior perceptions, in friendship quality and interaction quality with teachers considering gender and country were found. Research on early adolescence (from 11-13 years of age) shows that boys and girls have a similar level of self-esteem, but later gender differences become significant and usually in favor of boys (McMullin & Cairney, 2004).

In comparing the perception of parental behavior in boys and girls from the two countries, we can conclude that these two groups differ more in the evaluation of the father's behavior than that of the mother. Statistically significant differences in the perception of the mother's behavior were established for rejection with respect to gender and for control with respect to the country. With regards to the father's behavior, statistically significant differences with respect to the country were established in all three behavioral dimensions, while gender differences were established in rejection and control. Boys generally experience more mother and father rejection and more psychological control from the father when compared to girls. In other words, boys experience a negative emotional relationship with both parents to a greater extent, and fathers punish, threaten and underestimate them more. Keresteš (1999) determined that both mothers and fathers had a tighter behavioral and psychological control over sons than over daughters, while she did not establish differences in the appraisal of emotion. Macuka (2007) found a higher level of psychological control of the father over boys while the difference in the psychological control of the mother was not statistically significant. On the other hand, Macuka reported the differences in the emotional relationship with the mother (boys evaluated more mother rejection and acceptance than girls), but not with the father. It is possible that the found differences are a result of specific samples, as well as age issues. The samples in the research mentioned above included children from 5th-8th grades of elementary school, and it is well known that positive relationships with parents are declining with age while perception of control is strengthening. Pupils in B&H experience more control from the mother but more rejection, less acceptance and more control from the father too. Previous studies showed no significant differences in students' satisfaction with families in Croatia and Bosnia and Herzegovina (Klarin i Šimić Šašić, 2009; Klarin et al., 2012a). There is a possibility that inconsistent results are a consequence of the different operationalization of family variables, considering that the scale used in the preceding research measures family satisfaction in its entirety. A worse relationship with the father (more rejection and control and lower acceptance), as well as generally negative parental behavior in B&H can be explained by traditional relationships and stricter parents in B&H, who mostly live in villages. This can be a consequence of poorer socioeconomic family circumstances or certain cultural differences. Some earlier research showed that B&H is more collectivistically oriented than Croatia (Šimić Šašić & Klarin, 2014; Puhalo, 2005), and collectivistic cultures cherish tradition, respect and authority where parents are more prone to punishment (Ahadi & Rothbart, 1993, Gaias et al., 2012). But it seems that differences in socioeconomic circumstances in families in B&H and Croatia might be much more important. It has been established that samples differ with reference to residence, parents' education, and mother's employment which reflects on the economic power in the family and can influence the level of family stress and parental behavior. Economic stress reduces parental quality, parents are strict and upbringing practices are inconsistent (Čudina-Obradović & Obradović, 2006). We also know that parents with a lower level of education are more prone to authoritarian parenting styles and have more psychological and behavioral control over their children (according to Lacković-Grgin, 2011). These socio-economic circumstances are generally worse for families in B&H.

In the friendship quality evaluations, assumptions have been confirmed on gender differences between boys and girls whereby girls from both countries evaluate friendship quality more positively than boys. Gender interaction and country are significant due to the fact that friendship quality is best evaluated by girls in Croatia, while given the worst evaluation by boys in Croatia. Girls, in general, create more intimate friendships and describe friendship relationships in terms of closeness and emotional attachment unlike boys (Klarin et al., 2010b). In this research, we have not confirmed the differences in the friendship quality of students in the two countries, which can be a consequence of the sample specificity. The prior research was carried out on a sample of high school students, and the students from B&H were from the Zenica-Doboj Canton region (Žepče).

In the end, the assumption of a difference in teacher interaction perception was not found between boys and girls, but the assumption of a positive teacher interaction with pupils in B&H was established. Students in B&H perceive their teachers as being more ready to cooperate and help (greater proximity) than students in Croatia. Similar differences in the appraisal of quality of interactions with the

teacher were established by Beyazkurk and Kesner (2005) comparing teachers from Turkey and the USA. Teachers in Turkey (more collectivist-orientated) show a significantly higher closeness in relationships with students than teachers in the USA. The authors of this research explain these differences by socialization, pointing out that it is important for parents in Turkey that children have a close relationship with the teacher, while parents in the USA do not see the importance of a close relationship with the teacher for their children's school success.

The parental and teacher interaction variables relations with self-esteem are in line with the results of previous researches (Bean & Northrup, 2009; Buri et al, 1998; Coopersmith, 1967; Demirdag, 2015; Hay & Ashman, 2003; Heaven & Ciarrochi, 2008; Herz & Gullone, 1999; Nelson, 1984; Raboteg-Šarić & Šakić, 2012; Šimić Šašić, 2012). Pupils with higher self-esteem are those who experience less rejection and control, more acceptance from the father and mother, and more assistance and understanding (closeness) in teacher interaction. In the conducted research, the best-friendship quality is not related to self-esteem, which is not in accordance with the viewpoint of Bishop and Inderbitzen (1995). They believe that it is more important for adolescents' self-esteem to have or not have at least one mutual friendship than to be accepted among peers. It is possible that friendships in early adolescence are not firm enough, and that acceptance by peers is more important for self-esteem. The correlations between the measures of various social interactions points to the similarity in relationships of adolescents with parents, peers and teachers, and confirm the model of continuity.

The main problem of this study was to examine the independent contribution of mother and father behaviors, the quality of friendship, and of teacher interaction in explaining the self-esteem of pupils. The results of hierarchical regression analysis have shown that mothers' behaviors contribute most strongly to the explanation of self-esteem in adolescents. The contribution of the father and the teacher is equally small (2%), and the quality of friendship does not contribute to explaining self-esteem of the pupils at all. These results are consistent with the results of other authors. Burnett and Demnar (1996) found that closeness of the mother is most strongly associated with self-esteem of children aged 8-12 years, compared to the two best friends, current teacher and father. Cattley (2004) reports a stronger contribution of parents than teachers. Raboteg-Šarić (2014) also states that a stronger predictor of self-esteem is the attachment to parents than attachment to friends. In fact, she states that attachment to parents is associated with indicators of adjustment (such as self-esteem, satisfaction with marriage, psychological problems, violent behavior) in adulthood, which is not the case with friendships. It seems that we can conclude that the mother's behavior (a higher level of acceptance, lower levels of rejection and control) is the most important factor of pupils' self-esteem in early adolescence (although no single behavior is a statistically significant predictor, together these variables statistically significantly explain the highest percentage of self-esteem variance). In the end, the teacher closeness also showed to be important. This means that along with the behavior of the mother, a higher level of understanding and assistance by the teacher contributes to higher self-esteem of the pupils.

Conclusion

In this study, we have found that groups of pupils (boys and girls, pupils in Croatia and B&H) give a more similar evaluation of the mother's behavior than that of the father's. The assumption of worse quality in boys' social interaction has partly been established since they give a worse evaluation than girls with respect to the relationship with parents and friendship quality. Pupils in Croatia have a more positive relationship with parents while pupils in B&H have a more close relationship with the teacher. The assumption on a relationship of parental behaviors and the teacher interaction with self-esteem was confirmed, along with the assumption on the importance of the behaviors of the mother in explaining self-esteem in adolescents. The mother's behavior is the most important socialization factor in explaining self-esteem in adolescents.

The possibility to generalize the conclusions in this study is limited due to the fact that it was conducted on the small and convenient samples of pupils. Future research should check the relationship of these variables in representative samples, investigate parental belief and strictness in the upbringing of children, and establish the contribution of cultural features and socioeconomic status to explaining the behavior of parents, peers and teachers. Relationships between the measured variables should be examined for different age groups. In other words, it is necessary to examine potential moderators and mediators with regard to the relationship between social interactions and pupil self-esteem.

References

- Ahadi, S.A., Rothbart, M.K., & Ye, R. (1993). Children's temperament in the US and China: similarities and differences. *European Journal of Personality*, 7, 359-377.
- Bean, R.A., & Northrup, J.C. (2009). Parental psychological control, psychological autonomy, and acceptance as predictors of self-esteem in Latino adolescents. *Journal of Family Issues*, 30(11), 1486-1504.
- Beyazkurk, D., & Kesner, J.E. (2005). Teacher-child relationships in Turkish and United States schools: A cross-cultural study. *International Educational Journal*, 6(5), 547-554.
- Birkeland, M.S., Breivik, K., & Wold, B. (2014). Peer acceptance protects global self-esteem from negative effects of low closeness to parents during adolescence and early adulthood. *Journal of Youth Adolescence*, 43, 70-80.
- Bishop, J.A., & Inderbitzen, H.M. (1995). Peer acceptance and friendship: An investigation of their relation to self-esteem. *The Journal of Early Adolescence*, 15(4), 476-489.
- Brajša-Žganec, A., Raboteg-Šarić, Z., & Franc, R. (2000). Dimenzije samopoimanja djece u odnosu na opaženu socijalnu podršku iz različitih izvora [The dimensions of children's self-conceptions in relation to perceived social support from different sources]. *Društvena istraživanja*, 6(50), 897-912.
- Burnett, P.C., & Demnar, W. (1996). The relationship between closeness to significant others and self-esteem in early adolescence. *Journal of Family Studies*, 2(2), 121-129.
- Cattley, G. (2004). The impact of teacher-parent-peer support on students' well-being and adjustment to the middle years of schooling. *International Journal of Adolescence and Youth*, 11(4), 269-282.
- Coopersmith, S. (1967). *The antecedents of self-esteem*. Palo Alto, CA: Consulting Psychologists Press Inc.
- Croatian Bureau of Statistics. <http://www.dzs.hr>. Accessed 25.3.2017.
- Čudina-Obradović, M., & Obradović, J. (2006). *Psihologija braka i obitelji [Psychology of marriage and family]*. Zagreb: Golden marketing-Tehnička knjiga.
- Davis-Kean, P. E. (2005). The influence of parent education and family income on child achievement: The indirect role of parental expectations and the home environment. *Journal of Family Psychology*, 19(2), 294-304.
- Demirdag, S. (2015). Classroom management and students' self-esteem: Creating positive classrooms. *Educational Research and Reviews*, 10(2), 191-197.
- Gaias, L.M., Räikkönen, K., Komsu, N., Gartstein, M.A., Fisher, P.A., & Putnam, S.P. (2012). Cross-cultural temperamental differences in infants, children, and adults in the United States of America and Finland. *Scandinavian Journal of Psychology*, 53(2), 119-28.
- Hay, I., & Ashman, A.F. (2003). The development of adolescents' emotional stability and general self-concept: The interplay of parents, peers, and gender. *International Journal of Disability, Development and Education*, 50(1), 77-91.
- Heaven, P., & Ciarrochi, J. (2008). Parental Styles, Gender and the development of hope and self-esteem. *European Journal of Personality*, 22, 707-724.
- Herz, L., & Gullone, E. (1999). The relationship between self-esteem and parenting style: A Cross-cultural comparison of Australian and Vietnamese Australian adolescents. *Journal of Cross-Cultural Psychology*, 30(6), 742-761.
- Juhasz, A.M. (1989). Significant others and self-esteem: Methods for determining who and why. *Adolescence*, 24, 581-594.
- Keresteš, G. (1999). Agresivno i prosocijalno ponašanje školske djece u kontekstu ratnih zbivanja: provjera posredujućeg utjecaja roditeljskog ponašanja [Aggressive and prosocial behavior of school-aged children in the context of war: investigation of mediating effect of parental behavior]. Doctoral Dissertation. Faculty of Humanities and Social Science, Zagreb, Croatia.
- Khine, M.S., & Fisher, D.L. (2004). Teacher interaction in psychosocial learning environments: Cultural differences and their implications in science instruction. *Research in Science and Technological Education*, 22(1), 99-111.
- Kim, K., & Rohner, R. P. (2002). Parental warmth, control and involvement in schooling: Predicting academic achievement among Korean American adolescents. *Journal of Cross-Cultural Psychology*, 33(2), 127-140.
- Klarin, M. (2005). Doprinos vršnjačkih odnosa percepciji socijalne podrške kod djece školske dobi (zbornik radova) [Contribution in peer relationships perception of social support for children of school age (Proceedings)] (69-84). Zadar: University of Zadar, Department of teachers' and preschool teachers' education.
- Klarin, M., Penezić, Z., & Šimić Šašić, S. (2014). Socijalizacijski utjecaj i roditelja i vršnjaka u djetinjstvu [Socialization influence of parents and peers in childhood]. U A. Brajša-Žganec, J. Lopižić & Z.

- Penezić (Eds.) *Psihološki aspekti suvremene obitelji, braka i partnerstva [The psychological aspects of modern family, marriage and partnership]* (pp. 101-124). Jastrebarsko: Hrvatsko psihološko društvo i Naklada Slap.
- Klarin, M., Proroković, A., & ŠimićŠašić, S. (2010a). Obiteljski i vršnjački doprinos donošenju odluka iz raznih sfera života u adolescenata – kroskulturalna perspektiva. [Family and peer contribution to decision making in different aspects of life for adolescents – cross-cultural perspective]. *Društvena istraživanja*, 19(3), 547-559.
- Klarin, M., Proroković, A., & ŠimićŠašić, S. (2010b). Doživljaj prijateljstva i njegovi ponašajni korelati u adolescenata [The experience of friendship and its behavioral correlates in adolescents]. *Pedagoški istraživanja*, 7(1), 7-22.
- Klarin M., Proroković A., Šimić Šašić S., & Arnaudova V. (2012). Some characteristics of social interactions among adolescents in Croatia, Bosnia and Herzegovina, and Macedonia. *Psychology Research and Behavior Management*5, 163 – 172.
- Klarin, M., & Šimić Šašić, S. (2009). Neke razlike u obiteljskim interakcijama između adolescenata Republike Hrvatske i Bosne i Hercegovine – Kroskulturalna perspektiva [Differences in family interactions between adolescents from the Republic of Croatia and Bosnia and Herzegovina: Cross-cultural perspective]. *Društvena istraživanja*, 18(1-2), 243-261.
- Klarin, M., Šimić Šašić, S., & Proroković, A. (2012). The contribution of family and peer interaction to the understanding of self-esteem in adolescents – gender and cultural similarities and differences. *International Journal of Humanities and Social Science*, 2(21).
- Lacković-Grgin, K. (2011). Doživljaj i praksaroditeljstva u različitim životnim razdobljima [The experience and practice of parenting in different periods of life]. *Društvena istraživanja*, 4(114), 1063-1083.
- Macuka, I. (2007). Skala percepcije roditeljskog ponašanja – procjena valjanosti [Scale perception of parental behavior - assessment of validity]. *Suvremena psihologija*, 10 (2), 179-199.
- Marshall, H. (2001). Cultural influences on the development of self-concept: Updating our thinking. *Young Children*, 56(6), 19-25.
- Martin, A.J., Marsh, H.W., McInerney, D.M., Green, J., & Dowson, M. (2007). Getting along with teachers and parents: The Yields of good relationships for students' achievement motivation and self-esteem. *Australian Journal of Guidance i Counselling*, 17(29), 109-125.
- McMullin, J. A., & Cairney, J. (2004). Self-esteem and the intersection of age, class, and gender. *Journal of Aging Studies*, 18, 75-90.
- Nelson, G. (1984). The relationship between dimension of classroom and family environments and the self-concept, satisfaction and achievement of grade 7 and 8 students. *Journal of Community Psychology*, 12, 276-287.
- Puhalo, S. (2005). Povezanost etničkog identiteta i individualističkih i kolektivističkih vrijednosnih orijentacija mladih u Bosni i Hercegovini [The relationship of ethnic identity and individualistic and collectivist value orientations of young people in Bosnia and Herzegovina]. In: V. Turjačanin i Đ. Čekrljia (Eds.) *Etnički, državni i evropski identitet [Ethnic, national and European identity]* Banja Luka: Fondacija Fridrich Ebert Stiftung.
- Raboteg-Šarić, Z. (2014). Odnosi adolescenata s roditeljima i vršnjacima [Relationships of adolescents with parents and peers]. U A. Brajša-Žganec, J. Lopižić & Z. Penezić (Ed.) *Psihološki aspekti suvremene obitelji, braka i partnerstva [The psychological aspects of modern family, marriage and partnership]* (125-148). Jastrebarsko: Hrvatsko psihološko društvo i Naklada Slap.
- Raboteg-Šarić, Z., & Šakić, M. (2012). Učinci roditeljskog odgojnog stila i kvalitete prijateljstva na dobrobit adolescenata [The effects of parenting style and the quality of friendship for the well-being of adolescents]. In: Z. Penezić, V. Čubela-Adorić, J. Ombla, A. Slišković, I. Sorić, P. Valerjev, A. Vulić-Prtorić (Eds.) *XVIII Dani psihologije u Zadru-sažeci radova [XVIII Days of Psychology-abstracts]* (p133). Zadar: University of Zadar & Department of psychology.
- Ryan, R.M., Stiller, J.D., & Lynch, J.H. (1994). Representations of relationships to teachers, parents, and friends as predictors of academic motivation and self-esteem. *Journal of Early adolescence*, 14(2), 226-249.
- Schwalbe, M.L., & Staples, C.L. (1991). Gendered differences in sources of self-esteem. *Social Psychology Quarterly*, 54 (2), 158-168.
- Statistics Agency of BiH. <http://www.bhas.ba>. Accessed 25.3.2016.
- Sullivan, H.S: (1953). *The interpersonal theory of psychiatry*. New York: W.W. Norton & Company.
- Šimić Šašić, S., & Klarin, M. (2014). Horizontalne i vertikalne dimenzije individualizma i kolektivismu u Hrvatskoj i Bosni i Hercegovini [The Horizontal and Vertical Dimensions of Individualism and Collectivism in Croatia and Bosnia and Herzegovina]. *Paper presentation, 19th Psychology Days in Zadar, Croatia*.

- Šimić Šašić, S. (2012). *Kvaliteta interakcije nastavnika i učenika na različitim razinama obrazovanja [The quality of the interaction of teachers and students at different education levels]*. Doctoral Dissertation. Faculty of Humanities and Social Science, Zagreb, Croatia.
- Vizek-Vidović, V., & Kuterovac-Jagodić (1996): *Self-worth scale for children-Evaluation Report, School Based Health and Peace Initiative*, Zagreb, Unicef CARE.
- Wigfield, A., Eccles, J. S., Schiefele, U., Roeser, R. W., & Davis-Kean, P. (2006). Development of achievement motivation. In: W. Damon & R.M. Lerner (Eds.), *Handbook of child psychology: Social, emotional and personality development*. New Jersey: John Wiley & Sons, Hoboken.
- Wubbels, T., & Brekelmans, M. (2005). Two decades of research on teacher-student relationships in class. *International Journal of Educational Research*, 43(1-2), 6-24.
- Zervides, S., & Knowles, A. (2007). Generational changes in parenting styles and the effect of culture. *E-Journal of Applied Psychology*, 3 (1), 65-75.

24

Work-family Conflict, Social Support, and the Quality of Family Functioning of Men and Women regarding Striving for Achievement

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Abstract

The aim of this study was to examine the differences in perceptions of work-family conflict, social support and the quality of family functioning between men and women while controlling for striving for achievement. The research was conducted on 1,064 working men (n=532) and women (n=532). All respondents were parents where both spouses were employed. Along with questions about demographic data, scales were used to measure striving for achievement, work-family conflict, social support from the family and the supervisor, and the quality of family functioning.

Less favorable assessments of work-family conflict, social support at work and in the family, and of the quality of family functioning were associated with higher levels of striving for achievement. The analyses showed that men reported a higher level of striving for achievement, and, when controlling for striving for achievement, they reported a higher quality of family functioning, more social support in the family, and lower levels of family-to-work conflict than women. There were no differences in the perceived levels of work-to-family conflict and social support from the superior at work among men and women. It can be said that taking into account striving for achievement of men and women contributes to knowledge in work-family research and that it would be interesting to see whether men and women, as life partners, having different levels of striving for achievement may be beneficial to some extent.

Keywords: Gender, Striving for Achievement, Work-family Conflict, Quality of Family Functioning, Social Support

The once predominant vision of separate and unequal spheres for men and women has given way to new conflicts and uncertainties about how to combine commitments to work, family, and parenthood (Sweet, 2014). One of the most studied constructs in this area of research is work-family conflict. It is defined as the experience that the demands of an individual's work and family roles are mutually incompatible or that meeting the requirements of one role makes it more difficult or even disables meeting the requirements of the other role (Greenhaus & Beutell, 1985; p.77). Such conflict can arise from 1) the inability to meet the time demands of the two roles (for example, inflexible and long working hours can disable participation in family life), 2) from tensions or fatigue, and 3) from behaviors required by one role which is inefficient for the other. Most researchers make a distinction between conflict due to the disrupting influence of work on family life (*work-to-family conflict*) and conflict due to the disrupting influence of family on work life (*family-to-work conflict*) (e.g., Frone, Russell & Cooper, 1992). These concepts have also been accepted and studied in Croatia (e.g. Dobrotić & Laklija, 2009; Gjurić, Šimunić, & Gregov, 2014).

A meta-analysis of antecedents of work-to-family and family-to-work conflict by Michel, Kotrba, Mitchelson, Clark, and Baltes (2011) showed that work/family role stress, conflict, ambiguity, and overload are positive predictors of work-to-family and family-to-work conflict, with a somewhat greater association of characteristics of one domain with the interfering influence of the same domain on the other. Social support from different sources at work and in the family was also shown as a primary negative predictor of work-family conflict (Frone, Yardley, & Markel, 1997; Michel, Mitchelson, Pichler, & Cullen, 2010; Michel et al., 2011). Related to this, a positive, stimulating family climate is considered to predict a reduction in the perceived levels of work-family conflict (especially family-to-work conflict) through greater family cohesion and a supportive family network (Michel et al., 2011). Time and emotional preoccupation with work and family roles have also been examined as predictors of work-family conflict (Frone et al., 1992; Šverko, Arambašić & Galešić, 2002). According to traditional gender roles, men are preoccupied with the work domain, while women are preoccupied with the family. This was shown in recent studies in Croatia (Bartolac, Kamenov & Petrak, 2011; Knežević, Gregov & Šimunić, 2016). Thus, much research has been dedicated to examining the role of gender in the perception of work-family conflict.

The results of most research have failed to show any differences in the level of conflict perceived by men and women (e.g., Byron, 2005; Milković, 2009; Gjurić et al., 2014). In a time when there is an increasing strive for gender equality or the equalization of the roles assigned to men and women, it is obviously oversimplified to assume that gender in itself determines differences in the experience of work-family conflict. Since attitudes and values direct or predetermine behavior, the responsibilities that an individual takes, the level of preoccupation with work and family, and the level of social support that is expected and requested, they may also be more important in predicting the perceived level of conflict than gender is (Korabik, McElwain & Chappel, 2008). Striving for achievement turned out to be an interesting variable in this context. Specifically, it was shown that men generally have higher levels of striving for achievement than women, men and women have higher levels of striving for achievement the more traditional their gender roles are, and that it is an important predictor of greater work-to-family conflict, especially in men (Pandža, 2010). In the research by Šimunić, Gregov, and Proroković (2011) this variable was significantly correlated with all the examined life values in terms of the greater discrepancy between their importance and achievement (work, family, leisure, etc.). Also, in the same research, it was correlated with the factor of social status and prestige in both men and women. It should be noted that this concept differs from the concept of the need for achievement and is a shortened and adapted name for a general strive for achieving success through competition and power (Nikolić, Pavela & Šimić, 2014; O'Neil, Helms, Gable, David, & Wrightsman, 1986). Some authors consider it as one of the characteristics of a Type A personality (Williams & Cooper, 1998), which have consistently been linked with work-family conflict. It could also be said that the connection between striving for achievement and work-family conflict is still understudied.

Results of previous research have shown that greater striving for achievement is associated with estimates of higher levels of work-family conflict, and with some predictors of higher levels of conflict, for example, lower quality of family functioning and less social support (e.g., Pandža, 2010; Šimunić, 2015). However, most of our research did not reveal significant differences in work-family conflict with regard to gender (Gjurić et al., 2014), although it was shown that men have, on average, a higher level of striving for achievement than women (Šimunić et al., 2011). The aim of this study was, therefore, to examine the differences in perceptions of work-family conflict, social support, and the quality of family functioning between men and women while controlling for striving for achievement, as a personal characteristic assumed to predetermine these variables. According to the gender role theory and/or results of previous research (Bartolac et al., 2011; Kokorić, Šimunić, & Gregov, 2014; Šimunić et al., 2011) it could be assumed

that men will have a higher level of striving for achievement than women, and that higher striving for achievement will be associated with lower levels of perceived social support, quality of family functioning, and higher levels of work-to-family and family-to-work conflict. When excluding the contribution of striving to achievement in examining differences according to gender, it could be expected that effects of the prevailing traditional gender role expectations will be manifested. Specifically, it could be expected that men have a higher level of work-to-family conflict than women, while women should perceive higher family-to-work conflict than men. Due to the expected greater disruptions of family life by work in men, it could be expected that they may perceive lower levels of quality of family functioning. Reported social support was expected to be higher in women, due to their assumed greater tendency to seek support. These results were intended to be a preliminary to further research and assumptions.

Material and methods

Participants

The research was conducted on a sample of 1,064 employed men ($n=532$) and women ($n=532$), from 24 to 61 years of age ($M=41.4$; $SD=8.6$). All of the participants were parents in dual-career marriages, who were also employees with at least six months of work experience in the same workplace, an employed spouse, and at least one child in the household. The sample was very heterogeneous according to the workplaces (e.g., schools, banks, insurance companies, hospitals, various major industries - textile, engineering, etc.).

Measuring instruments

At the beginning of the questionnaire *a set of questions on sociodemographic data* was applied. Participants had to specify their gender, age, and workplace.

Striving for Achievement was measured with one of the subscales of the Gender Role Conflict Scale developed by O'Neil et al. (1986; Success, Power, Competition), that is, with the translated (into the Croatian language) and adopted version of the subscale validated by Nikolić et al. (2014). This 11-item scale includes three components: *success* (constant concern about personal achievement, well-being, competence, failure, and career progress), *power* (orientation towards maintaining authority, dominance, and influence over others) and *competitiveness* (competition with others in order to get something or compare ourselves with others to establish our own superiority in a particular situation). Exemplary items are: "It is important that I'm smarter or/and stronger than other men/women", "I tend to be more successful than others" and "Victory is the measure of my own value and importance". Respondents gave their answers on a 5-degree scale. The reliability of the scale expressed as the Cronbach alpha coefficient of this sample was .87. A higher score on the scale reflects a higher level of striving for achievement.

The Work-family Conflict Scale is a scale originally developed by Netemeyer, Boles, and McMurrian (1996), adapted and validated by Šimunić, Proroković, and Ivanov (2014). It is composed of 12 items, or two sets of six items, which differ only in the direction of influence. The items measure the disrupting influence of work on family life (work-to-family conflict) and the disrupting influence of family on work (family-to-work conflict) taking into account time demands and stress/fatigue as a source of conflict. Respondents expressed their (dis)agreement with each item on a 7-degree scale. In this study, the reliability of the Work-to-family conflict subscale (Cronbach alpha) was .79, and .81 for the Family-to-work subscale. An exemplary item for measuring work-to-family conflict is: "Because of the time required for my job I do not have enough time to participate in family activities". Accordingly, an example of the items measuring family-to-work conflict is: "Because of the time required for family activities I often have to delay and modify work activities". A higher score on the subscales reflected a perceived higher level of the negative influence of one role (domain) on the other.

The Quality of family functioning scale (Šimunić, Gregov, & Pupić-Bakrač, 2010) was used to examine the perception of the quality of interactions between family members and the quality of the functioning of the family. The scale contains 33 items that measure the perception of family functioning in five domains: family health/competencies, conflict, cohesion, leadership, and emotional expressiveness. Responses to the (dis)agreement with each item were given on a 7-degree scale. This research took into account the two factors obtained in the research by Šimunić (2015): *Family Competence* containing 25 items and *Family Conflict* with eight items. An example of the items measuring Competence is: "My family usually functions well when we are together". The Cronbach alpha coefficient was .95. An example of the items measuring Conflict is: "In my family, when things go wrong, we blame each other". The Cronbach alpha coefficient was .86. A higher score on the subscales reflects a greater degree of perceived family competence and a lower degree of conflict in the family.

Social support at work and in the family was measured with two scales that were designed and adapted in the research conducted by Šimunić (2008) on a sample of nurses. The scales were further validated in a slightly different form in a larger sample of men and women from some parts of Croatia and Bosnia and Herzegovina (Šimunić, Gregov, & Proroković, 2016). Each scale is composed of nine items, including instrumental and emotional social support for the job and for family life, which differ only in the source of social support: 1) superior, and 2) family. Respondents expressed their (dis)agreement with each statement on a 7-degree scale. An example of the items measuring Social support from the supervisor is: "My superior recognizes when I do a good job". The Cronbach alpha coefficient was .86. An example of the items measuring Social support from the family is: "I can talk about everything with my family members". The reliability of this scale was .79. Higher scores on these scales reflect a greater degree of perceived social support from the given sources.

Procedure

On receiving permission to conduct the research, which was requested by phone, electronically, or in person, the questionnaire was distributed to various work organizations individually or by post, and partly through personal acquaintances. Two sets of questionnaires were distributed to employees who had at least six months of service in the current workplace (which included the existence of a superior at work), an employed spouse, and at least one child in their household. The distributed set of questionnaires had to be completed by selected employees and their spouses who were warned that they had to fill out the questionnaires separately, without an insight into each other's answers. The participants were given at least a week to complete and return the questionnaires in sealed envelopes directly to the main researcher or collaborator. The response rate was about 50%.

Results

Before conducting the planned analyses, the distributions of the data for each variable and for men and women separately were inspected. Indices of the distribution shape (skewness and kurtosis) did not surpass the value of 2 for any variable, allowing the conduction of parametric analyses. Yet, it should be noted that responses indicated mostly higher levels of the quality of family functioning and social support of the family and low levels of the perceived family-to-work conflict, which should be taken into consideration in the interpretation of the results. Pearson coefficients of the correlation between all the variables were calculated (as shown in Table 1), with special emphasis on the correlations with striving for achievement. As expected, higher levels of striving for achievement were associated with lower levels of perceived social support, quality of family functioning (lower competence, more family conflict), and higher levels of work-to-family and family-to-work conflict for both men and women (low to moderate). Also, as it could have been assumed, higher levels of work-to-family and family-to-work conflict were mutually positively correlated and both were associated with lower levels of social support and quality of family functioning, implying higher levels of stress. The inspection of scatter plots showed that all these relations were linear.

Table 1

Pearson coefficients of correlation between the examined variables in men (n=514; above the diagonale) and women (n=526; beneath the diagonale)

	1	2	3	4	5	6	7
1. Work-to-family conflict	-	.33	-.36	-.25	-.17	-.23	.17
2. Family-to-work conflict	.31	-	-.22	-.44	-.30	-.37	.24
3. Social support by superior	-.43	-.27	-	.25	.23	.18	-.14
4. Social support by family	-.34	-.44	.32	-	.67	.60	-.27
5. Family competence	-.19	-.36	.27	.68	-	.72	-.32
6. Family conflict	-.18	-.38	.21	.57	.72	-	-.36
7. Striving for achievement	.12	.21	-.13	-.17	-.17	-.26	-

All correlations significant at $p < .01$

A t-test was conducted to determine whether men and women differed in their levels of striving for achievement, showing that, as it was assumed, men had higher levels than women ($M_m=2,73$; $M_f=2,54$; $t=4.06$; $df=1064$; $p=.000$). After determining the assumptions of linearity of the relationships between the

examined variables (especially relationships with striving for achievement) and acceptable normality of distributions in both men and women, homogeneity of slopes and variances were also determined. This made it eligible to conduct the planned analyses of covariance with gender as the independent variable and striving for achievement as the covariate. The results of these analyses and basic descriptive parameters are shown in Table 2. The results of the analyses of covariance showed that men perceived higher levels of social support in the family and of the quality of family functioning (higher family competence and lower levels of conflict in the family) than women. They also perceived lower levels of family-to-work conflict than women. A graphical display of the levels of work-to-family and family-to-work conflict in men and women are given in Figure 1. Social support from the superior at work and work-to-family conflict did not differ according to the participants' gender. Of course, striving for achievement was a significant covariate in all cases.

Table 2

Results of analyses of covariance to test differences between men and women in examined work and family characteristics with striving for achievement as a covariate

Dependent variable	Men			Women			ANCOVA	
	<i>N</i>	<i>M</i>	<i>SD</i>	<i>N</i>	<i>M</i>	<i>SD</i>	<i>F</i>	<i>p</i>
Social support by superior cov.: Striving for achievement	516	4.95	1.28	528	4.97	1.25	0.06	.806
		2.72	0.77		2.54	0.71	19.52	.000
Family competence cov.: Striving for achievement	529	5.90	0.86	533	5.85	0.88	3.89	.049
							67.67	.000
Family conflict cov.: Striving for achievement	529	5.68	1.18	533	5.59	1.13	116.73	.000
							7.06	.008
Social support by family cov.: Striving for achievement	531	5.90	0.95	530	5.77	1.00	9.76	.002
							51.45	.000
Work-to-family conflict cov.: Striving for achievement	532	3.46	1.31	531	3.38	1.22	0.25	.614
							22.92	.000
Family-to-work conflict cov.: Striving for achievement	532	2.00	1.01	531	2.07	1.03	4.16	.042
							58.65	.000

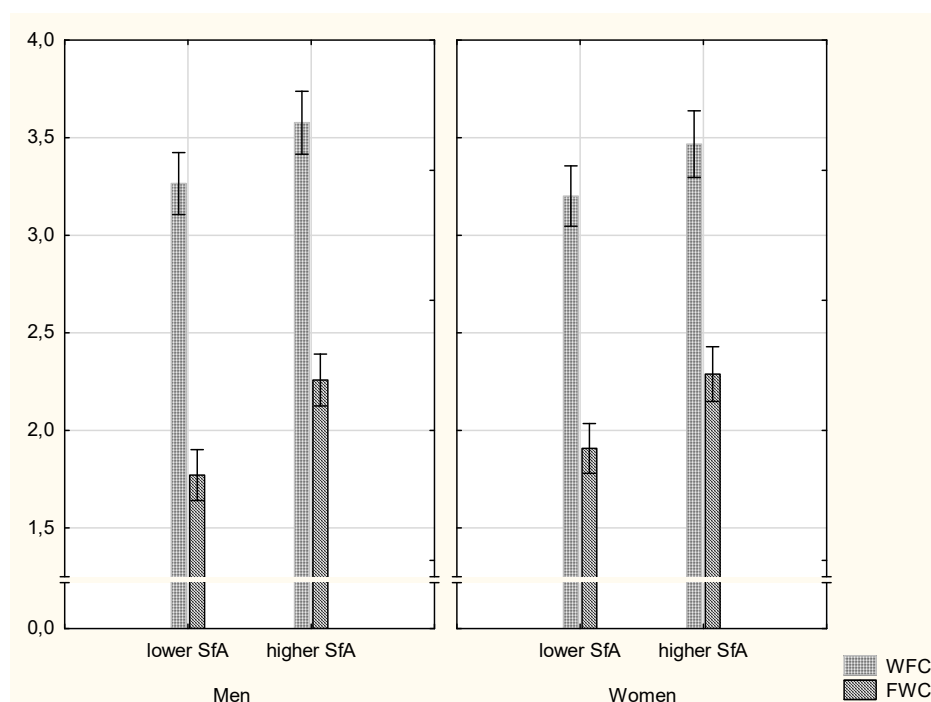


Figure 1. Levels of work-to-family and family-to-work conflict in men and women.

Discussion

The aim of this study was to examine the differences in the perceptions of work-family conflict, social support, and the quality of family functioning between men and women while controlling for striving for achievement. According to the gender role theory and/or results of previous research (Bartolac et al., 2011; Kokorić, Šimunić, & Gregov, 2014; Šimunić et al., 2011,) it was assumed that men would have a higher level of striving for achievement than women. The hypothesis was confirmed, indicating that men, compared with women, strive more highly towards power, success, and competition. It was also assumed and confirmed that striving for achievement will be positively correlated with higher levels of stress (especially when considered a correlate of type A personality) or unfavourable assessments of social support, characteristics of family life, and conflicts between the work and family role. Such correlations of striving for achievement with unfavorable outcomes in men and women were obtained in previous studies (e.g., O'Neil, 2008; Pandža, 2010). It is important to mention that perceptions of higher levels of work-family conflicts were correlated with social support and family functioning in the same manner, with higher correlations of work-to-family conflict with social support from the superior and lower correlations of the same variable with family characteristics (functioning quality and social support in the family). This is in accordance with the presumption and results of previous research that evaluations of work/family role stress are positive predictors of both types of conflict, with a somewhat greater association of characteristics of one domain with the interfering influence of the same domain on the other (Michel et al., 2010; Michel et al., 2011; Šimunić et al., 2014).

Although the men in this sample have a higher level of striving for achievement than women, they have, on the other hand, higher levels of social support from their family than the women (mostly being their wives). When excluding the contribution of striving for achievement, men have more favourable assessments of the characteristics of family life and, consequently, lower family-to-work conflict. Contrary to the hypothesis, men perceived higher levels of support from the family in comparison to women, but this was actually not so unexpected from another point of view, when considering that men might have more overwork hours and the more traditional context of gender roles, where women are expected to be (and really are) the more sensitive caregivers. In addition to this, the result showing that men perceived greater quality of family functioning was also contrary to the hypothesis. The results of the research conducted by Jelušić and Maslić-Seršić (2005) showed that family-to-work conflict depends on family circumstances, such as the number of children, family climate, fair distribution of tasks between spouses (marital egalitarianism). It seems that these adverse effects of a less equitable distribution (which may be reflected through higher levels of perceived support from the family, that is, presumably, from the spouse, in men than in women) on the estimates of the quality of family functioning and family-to-work conflict in women are not manifested when they are compared to men with relatively greater levels of striving for achievement, which contribute to unfavorable assessments. This indeed does show a manifestation of the effects of the prevailing traditional gender role expectations in our society (Bartolac et al., 2011; Kokorić et al., 2014).

However, some assumptions related to this were not confirmed. Men could have been expected to have a higher level of work-to-family conflict than women. Nonetheless, again, as in previous research (Byron, 2005; Šimunić et al., 2011), there were no general differences between them in the perceived levels of work-to-family conflict according to gender. This may also be related to the absence of differences in the perceived support from the superior at work, which could be an important predictor of the disruptions of the family by work, not to ignore the fact that the perceived levels of social support were relatively high (which may have the role of a protective factor). The absence of differences between men and women may be due to different manners of resolving conflict with regard to gender (Guelzow, Bird, & Koball, 1991) or a different mode of perception and action of certain relevant factors in the experience of work-family conflicts for men and women, which may annul the effects. For example, expectations and acceptance, from both men and women, that men should be more involved in work roles and women take on a greater portion of family obligations could be such a factor. These results are almost entirely consistent with the results of, for example, the research conducted by Hill (2005), which showed that employed men spend more time at work and less time in the family in relation to working women, but nevertheless experienced lower work-to-family conflict (which was not obtained in this research) and family-to-work conflict and assessed higher levels of satisfaction with family and marital life in relation to their wives. It was also shown that women (professors) experience greater family-to-work conflict than men (O'Laughlin & Bischoff, 2005).

Although this research involved a relatively decent number of men and women equalised in their domestic domains, future research should be conducted on a more representative sample of participants

from different urban and suburban parts of different regions of the country. It would also be valuable and preferable to keep other factors under control (e.g., age and education) to give more precise explanations for the obtained differences or see if they would still exist. Since these men and women were mainly spouses, it could be interesting to also see whether there is an interactive effect of both partners' striving for achievement on the perception of work-family conflict, as was done in the research by, for example, Gjurić et al. (2014) on the level of traditionalism of marital role attitudes of partners. The results of the mentioned research showed that greater compliance of the gender role attitudes of spouses are more beneficial to the perceptions of stress due to work-family conflict. However, it is possible that a difference in striving for achievement of the partners may be to some extent more complementary, particularly in their sense of equality of work-family relations. It should be noted that the levels of the average perceived levels of family-to-work conflict were rather low, along with the high levels of social support and quality of family functioning. It would be useful to conduct such research on a sample of men and women with more pronounced work-family stress issues or problems in everyday functioning. In a practical manner, these results imply that society and organizations should promote actions of cooperation with others in achieving success, and should shed light on the possibilities of stressful outcomes and dissatisfaction due to low cooperation and the disrupting impacts of work and family roles on each other. Also, society, spouses, and families should be more sensitive to these issues, especially when it comes to giving support to women in harmonising their family and work obligations, emphasising that their work roles are as important as those of their male spouses.

Conclusion

It could be said that greater striving for achievement is associated with unfavourable assessments of family life characteristics, social support and disruptions among work and family life, especially family disrupting work life. Although the men in this sample had higher levels of striving for achievement than women, they, on the other hand, assessed higher levels of social support from their family than the women did, and, when excluding the contribution of striving for achievement, they have more favourable assessments of the characteristics of family life quality and lower family-to-work conflict. There were no differences in the perceived levels of work-to-family conflict and social support from the superior at work among men and women. It could be said that taking into account the levels of striving for achievement and gender in explaining work-family conflict contributes to knowledge, and that it would be provoking to see whether men and women having different levels of striving for achievement as life partners may even be beneficial to some extent.

References

- Bartolac A., Kamenov, Ž., & Petrak O. (2011). Rodne razlike u obiteljskim ulogama, zadovoljstvu i doživljaju pravednosti s obzirom na tradicionalnost stava [Gender differences in family roles, satisfaction, and the perception of fairness with respect to attitude traditionalism]. *Revija za socijalnu politiku*, 18(2), 175-194.
- Byron, K. (2005). A meta-analytic review of work-family conflict and its antecedents. *Journal of Vocational Behavior*, 67, 169-198.
- Dobrotić, I., & Laklija, M. (2009). Korelati sukoba obiteljskih i radnih obveza u Hrvatskoj [Correlates of work-family conflict in Croatia]. *Revija za socijalnu politiku*, 16(1), 45-63.
- Frone, M.R., Russell, M., & Cooper, M.L. (1992). Antecedents and outcomes of work-life conflicts: testing a model of work-family interface. *Journal of Applied Psychology*, 77, 65-75.
- Frone, M.R., Yardley, J.K., & Markel, K.S. (1997). Developing and Testing an Integrative Model of the Work-Family Interface. *Journal of Vocational Behavior*, 50, 145-167.
- Gjurić, H., Šimunić, A., & Gregov, Lj. (2014). Konflikt radne i obiteljske uloge kod zaposlenih bračnih drugova: važnost usklađenosti stava prema bračnim ulogama [Work-Family Conflict among Employed Spouses: The Importance of the Compliance of Attitudes towards Marital Roles]. *Društvena istraživanja*, 23(4), 641-659.
- Greenhaus, J. H. & Beutell, J. N. (1985). Sources of conflict between work and family roles. *Academy of Management Review*, 10(1), 76-88.
- Guelzow, M. G., Bird, G.W., & Koball, E. H. (1991). An explanatory path analysis of the stress process for dual-career men and women. *Journal of Marriage and the Family*, 5, 151-164.
- Hill, E.J. (2005). Work-family facilitation and conflict, working fathers and mothers, work-family stressors and support. *Journal of Family Issues*, 26, 793-819.
- Jelušić, J., & Maslić Seršić, D. (2005). Obiteljske i radne okolnosti kao prediktori ravnoteže obiteljskog i poslovnog života zaposlenih majki [Family

- and working context as predictors of family-work balance in working mothers]. *Suvremena psihologija*, 8(1), 23-36.
- Knežević, I., Gregov, Lj., & Šimunić, A. (2016). Salience and conflict of work and family roles among employed men and women. *Archives of Industrial Hygiene and Toxicology*, 67(2), 152-163.
- Kokorić, M., Šimunić, A., & Gregov, Lj. (2014). Stav o bračnim ulogama i percepcija obiteljskih odnosa kod zaposlenih supružnika [Attitude towards Marital Roles and Perception of Family Relations of Employed Spouses]. *Revija za socijalnu politiku*, 21(1), 1-17.
- Korabik, K., McElwain, A., & Chappel, D.B. (2008). Integrating Gender-related Issues into Research on Work and Family. In: K. Korabik, D.S. Lero, D.L. Whitehead (Eds.). *Handbook of Work-Family Integration: Research, Theory, and Best Practices* (pp. 215-232). San Diego, CA: Elsevier.
- Michel, J.S., Kotrba, L.M., Mitchelson, J.K., Clark, M.A., & Baltes, B.B. (2011). Antecedents of work-family conflict: A meta-analytic review. *Journal of Organizational Behavior*, 32(5), 689-725.
- Michel, J.S., Mitchelson, J.K., Pichler, S., & Cullen, K. (2010). Clarifying relationships among work and family social support, stressors, and work-family conflict. *Journal of Vocational Behavior*, 76(1), 91-104.
- Milković, D. (2009). *Percepcija interferencije obiteljske i poslovne uloge zaposlenika Kaznionice u Požegi [The perception of work-family interference of employees of the Požega Penitentiary]*. University of Zagreb, Faculty of Law, Study Centre of Social Work.
- Netemeyer, R.G., Boles, J.S., & McMurrian, R. (1996). Development and validation of work-family conflict scales and family-work conflict scales. *Journal of Applied Psychology*, 81, 433-441.
- Nikolić, M., Pavela, I., & Šimić, N. (2014). Skala težnje ka postignuću [Striving for achievement scale]. In: Čubela Adorić et al. (Ed.), *VIIth Collection of Psychological Scales and Questionnaires*, Zadar: University of Zadar.
- O'Laughlin, E., & Bischoff, L. (2005). Balancing parenthood and academia: Work/family stress as influenced by gender and tenure status. *Journal of Family Issues*, 26, 79-106.
- O'Neil, J. (2008). Summarizing 25 Years of Research on Men's Gender Role Conflict Using the Gender Role Conflict Scale: New Research Paradigms and Clinical Implications. *The Counseling Psychologist*, 38, 358-445.
- O'Neil, J.M., Helms, B.J., Gable, R.K., David, L., & Wrightsman, L.S. (1986). Gender-role conflict scale: College men's fear of femininity. *Sex Roles*, 14(5-6), 335-35.
- Pandža, M. (2010). Odnos percepcije bračnih uloga i konflikta radne i obiteljske uloge: Dijadni pristup [The relation of perceptions of marital roles and work-family conflict: A dyadic approach]. Graduate thesis. University of Mostar.
- Šimunić, A. (2008). Konflikt radne i obiteljske uloge kod žena koje rade u smjenama [Work-family conflict in women shift-workers]. Graduate thesis, University of Zadar.
- Šimunić, A. (2015). Osobne značajke zaposlenih supružnika i konflikt radne i obiteljske uloge [Personal traits of employed spouses and work-family conflict]. Doctoral thesis. Zagreb: Faculty of Humanities and Social Sciences.
- Šimunić, A., Gregov, Lj., & Proroković, A. (2011). The discrepancy between values and their achievement, work-family conflict, and satisfaction in dual-career couples. *Advances in Business-Related Scientific Research Journal*, 2(2), 169-18.
- Šimunić, A., Gregov, Lj., & Proroković, A. (2016). Skala socijalne podrške na poslu i u obitelji [Scale of Social Support at Work and in the Family]. In: Tucak Junaković et al. (Ed.), *VIIIth Collection of Psychological Scales and Questionnaires*, Zadar: University of Zadar.
- Šimunić, A., Gregov, Lj., & Pupiće-Bakrač, A. (2010). Skala kvalitete obiteljskog funkcioniranja [Quality of family functioning scale]. In: Tucak Junaković et al. (Eds.). *Vth Collection of Psychological Scales and Questionnaires*, Zadar: University of Zadar.
- Šimunić, A., Proroković, A., & Ivanov, L. (2014). Skala konflikta radne i obiteljske uloge [Work-family conflict scale]. In: Čubela Adorić et al. (Ed.), *VIIth Collection of Psychological Scales and Questionnaires*, Zadar: University of Zadar.
- Šverko, B., Arambašić, L., & Galešić, M. (2002). Work-life balance among Croatian employees: role time commitment, work-home interference and well-being. *Social Science Information*, 41, 281-301.
- Williams, S., & Cooper, C.L. (1998). Measuring occupational stress: Development of the Pressure Management Indicator. *Journal of Occupational Health Psychology*, 3(4), 306-321.

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Relationship among self-esteem, shyness, susceptibility to peer pressure and self-evaluated body image in students of the University of Zagreb

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Abstract

The main purpose of this study was to examine the relationship among self-evaluated body image, shyness, self-esteem and susceptibility to peer pressure in students of the University of Zagreb, Croatia. The available sample consisted of 285 students from different Faculties and Academies of Art from the University of Zagreb (71.9% female). The data was collected by questionnaires (Rosenberg's self-esteem scale, Peer Pressure Questionnaire, Shyness scale and Physical Self-Description Questionnaire) that were conducted online. The obtained correlations, which remained significant when controlling for other variables, were the following: self-esteem and body image (large and positive); self-esteem and susceptibility to peer pressure (small and negative); self-esteem and shyness (small and negative); shyness and susceptibility to peer pressure (small and positive) and, finally, body image and susceptibility to peer pressure (small and positive). The significance of the correlation between self-evaluated body image and shyness was also tested, but the findings suggested it is statistically non-significant when controlling for the remaining variables. The remaining issues for further studies are the usage of non-random sampling, unevenly distributed sample by sex and subjective questionnaires. Despite its disadvantages, the study gives a better understanding of the mentioned variables and its inter-correlations point out the primary role of self-esteem and its significance in governing our behavior.

Keywords: self-esteem, susceptibility to peer pressure, body image, shyness, students

Self-esteem is the main component that can be portrayed as building blocks of our personality, behavior, motivation, interpersonal relationships, academic achievement and physical satisfaction (Baumeister, Campbell, Krueger, & Vohs, 2003). While defining self-esteem, it is important to emphasize that it represents a subjective component, that is, self-esteem accounts for a reflection of our perceptions and beliefs; it cannot be perceived as a realistic representation of us or other people (Baumeister et al. 2003).

Broadly, we can define self-esteem as a general subjective evaluation on a low-high dimension (Buss & Larsen, 2008; Miljković, & Rijavec, 2012). Self-esteem can be divided into two main components: self-worth and self-confidence (Miljković & Rijavec, 2012). Self-worth is based on one's view of worth that is dependent on the number of perceived successes and failures in important domains in life (Ferraro, Edson Escalas, & Bettman, 2011). Moreover, self-confidence displays one's own belief in having the ability to accomplish different assignments and adapt to one's environment (Miljković & Rijavec, 2012). The low-high dimension or level of self-esteem, mentioned previously, is important due to its connection with the way people interact with each other and deal with their problems (Baumeister et al., 2003; Jelić, 2012). For example, individuals with low self-esteem discredit or despise their subjective perception of the "self" and therefore feel unsatisfied with themselves (Jelić, 2012). Conversely, individuals with high self-esteem consider themselves more capable, successful and worthwhile (Jelić, 2012). This trend stresses the importance of the predictive validity of self-esteem. High self-esteem can, therefore, be perceived as a significant predictor of good mental health, whereas low self-esteem is usually a significant predictor of shyness prolongation, social anxiety, and withdrawal (Butt, Moosa, Ajmal, & Rahman, 2011; Miljković & Rijavec, 2012; Zhao, Kong, & Wang, 2013).

Shyness and self-esteem

Shyness can be a product of genetic traits, environment and personal experience (Gocmen, 2012), and represents a dispositional personality trait that can be defined as "... premature discomfort caused by our subjective belief that our real 'self' cannot be measured with our ideal 'self'" (Duck, 2007, p.67). Buss (1980) represents shyness as a type of social anxiety that is followed by shame, discomfort and inhibition of normally expected social behavior in the presence of other people. Koydemir & Demir (2008) have shown that shy individuals have a different set of cognitive mechanisms that can induce specific levels of anxiety and behavioral inhibition and may also reflect their negative perception of random social interactions (Buss & Larsen, 2008). This specific set of cognitive mechanisms can also contribute to the increase of suicide attempts and loneliness (Buss & Larsen, 2008), because shy individuals often have a subjective belief that other people dislike or reject them, and do not think highly of them (Malik & Rafique, 2013). Regarding the facts stated above, based on a study conducted on a student population, Gocmen (2012) found a negative relationship between shyness and self-esteem, in other words, students who had high self-esteem were low on shyness. Furthermore, Butt et al. (2011) also found a negative-moderate relationship between shyness and self-esteem and stated that shyness does not always have the same effect on the self-esteem of every person. Zhao et al. (2013) based on their study on university students, confirmed the negative relationship between shyness and self-esteem. Moreover, they found that self-esteem had a mediating effect on the relationship between shyness and loneliness.

Physical appearance, self-concept & self-esteem

Body image and physical self-concept represent one of the main sources of one's self-esteem, thus making it relevant to better comprehend the relationship between these psychological constructs (Krishen & Worthen, 2011). Physical self-concept can be defined as a subjective representation or awareness of one's body and the way other people react to their physical appearance (Lacković-Grgin, 1994). Physical appearance is one of the most prominent characteristics of social interaction (Dion, Bercheid & Walster, 1972) on which *first impressions* are based. Dion et al. (1972) conducted a study that provided strong empirical evidence of the power that physical appearance has on perception and categorization, by demonstrating the intention people have in prescribing better and more positive characteristics to those they find more attractive than to those who are less attractive. Furthermore, some of the agents that are inflating the importance of an ideal body image nowadays are the media, culture, and friends. These external factors create an increase in personal discrepancies between our ideal and real body image and thus contribute to greater body dissatisfaction (Curtis & Loomans, 2014). Any dissatisfaction, if chronic, can jeopardize one's health and cause mood disorders (Krishen & Worthen, 2011). Krishen & Worthen (2011) give a thorough summary of research in which they propose further ideas which need to be explored. They stress the importance of self-esteem and body image as variables that have a serious impact on our mental health, eating habits and formation of gender schemas. Some studies have also shown that individuals with low physical self-concept tend to have low self-esteem. Van

der Berg, Mond, Eisenberg, Ackard, & Neumark-Sztainer (2010) confirmed there is a positive relationship between low self-esteem and body dissatisfaction among adolescent years (11-18 years). Fortes, Cipriani, Coelho, Paes, & Ferreira (2014), based on their research, have shown that 30% of Brazilian females has some sort of body dissatisfaction feelings. They have also confirmed that there is a negative relationship between self-esteem and body image satisfaction. Tiunova, (2015), Dorak, (2011) and Mintem, Gigante, & Horta, (2015) based on their studies, also confirmed this negative relationship.

Susceptibility to peer pressure & self-esteem

Peer groups are one of the most important sources of positive and negative influence on our emotional and psychological development during pre-adolescent and early adulthood (Erikson, 1968) by facilitating different kinds of voluntary, involuntary, passive or active pressure. Peer pressure can be defined as a conscious effort of peer members to change beliefs, values, and attitude of a newcomer (Lotar & Farko, 2012). Passive peer pressure equals to conformity that involves learning a set of behaviors, i.e. the basic behavior of individual changes as a reaction to the behavior of the other group member (Calvó-Armengol & Jackson, 2010). Moreover, active pressure represents a deliberate act with an intention to actively influence somebody (Calvó-Armengol & Jackson, 2010). Peer pressure has its universal meaning but also has a dissimilar influence on individuals of a different personality, gender, parental relationship and even self-esteem (Lebedina-Manzoni & Ricijaš, 2013). Some studies, like the one conducted by Asch (1955), have shown that individuals with low self-esteem tend to be more susceptible to peer pressure, which was later confirmed in many other studies. Uslu (2013) found a negative relationship between self-esteem levels and peer pressure among adolescents: adolescents who had low self-esteem were more exposed to peer pressure. Furthermore, Lebedina-Manzoni, Lotar, & Ricijaš (2008) also found a negative relationship between self-esteem and peer pressure among university students, but in comparison with high school students they found high school students more vulnerable to peer pressure than university students. Bámaca & Umana-Taylor (2006) and Forko & Lotar (2012), also confirmed this negative relationship obtained in previously mentioned studies.

Aim of research and hypotheses

Based on previous findings, our goal is to show a more detailed relationship between self-esteem, physical appearance, susceptibility to peer pressure and shyness. While reviewing all the relevant literature on the topic, it was noticed that most research were conducted on preadolescents and adolescents. Because (pre)adolescence is, surely, a big turning point for changes in every domain of someone's life, we wanted to examine the previously mentioned relationships among students during their early adulthood. Based on previous research that was also conducted on a student population (Lebedina-Manzoni et al., 2008), we propose that the relationship between self-evaluated self-esteem and body image will be significant, large and positive. Furthermore, we propose that the relationship between self-evaluated self-esteem and shyness/susceptibility to peer pressure will be significant and negative. The rest, although possible inter-relationships on a student population, are assumed not to be significant.

Material and methods

Participants

The sample consisted of 285 students from the University of Zagreb, Croatia. The age range of the sample was at minimum 18 years, while the maximum was 30 years ($M=21.15$; $sd=1.722$) and 71.9% of them were female. The sample consisted of students from the University of Zagreb, and the most frequently attended colleges were Faculty of Humanities and Social Science (23.16%), Center for Croatian Studies (18.24%) and Faculty of Electrical Engineering and Computing (11.93%). Another 53.33% of participants were distributed in the remaining constituent units such as Faculty of Economics and Business, Faculty of Education and Rehabilitation Sciences, Faculty of Political Science, Faculty of Mining, Geology and Petroleum Engineering, School of Medicine, Faculty of Graphic Arts, Faculty of Law and other Faculties and Academies of Art. Because of the nature of the survey, we used a non-probabilistic sampling method and a convenient sample.

Instruments

All participants had to go through the same procedure. In the beginning, the participants answered the demographic questions regarding their age, gender, and which Faculty or Academy of Art they attended.

Self-esteem. Self-esteem was measured by the Croatian version of Rosenberg Self-Esteem Scale adapted by Bezinović (1988). This ten-item scale is used for measuring global self-esteem while considering negative, as well as positive feelings that a person may have towards oneself. The participants had to evaluate their personal level of agreement with every item listed on a Likert five-point scale (1-totally disagree and 5-strongly agree), with an exception of item three, five, eight, nine and ten which were evaluated conversely, because those are reverse coded items. Originally, Rosenberg Self-esteem scale was constructed by using Guttman scaling method, but after Crandal's adaptation it became frequently used as a Likert scale (Lacković-Grgin, 1994). The result of each participant was formed as the sum of all points on every item, where the minimal result was 10 and the maximum result 50. As for the interpretation of given results, the main logic was that the higher the score on the used scale the higher self-esteem participants had. Also, metric characteristics of the scale were satisfied, Cronbach's alfa coefficient was $\alpha=.74-.89$ (Lacković-Grgin, 1994) and in studies conducted by Bezinović (1988) the coefficient of internal consistency was between $\alpha=.81-.84$. In our study the coefficient of internal consistency was $\alpha=.89$.

Susceptibility to peer pressure. Susceptibility to peer pressure was measured by the Peer Pressure Questionnaire, constructed by students and staff of the Faculty of Education and Rehabilitation Sciences, University of Zagreb, and adapted by Lebedina-Manzoni and Ricijaš (Lebedina-Manzoni et al., 2008). In this 25-item questionnaire, the participant had to evaluate the frequency of performing an act mentioned in every item on a five-point scale (1-never and 5-always). The higher result was linked to higher self-assessed susceptibility to peer pressure. Metric characteristics of the questionnaire were satisfied, with the coefficient of internal consistency of $\alpha=.86$.

Shyness. Self-evaluation of the basic level of shyness was assessed by the Shyness scale constructed by Cheek & Buss (1981). Revised shyness scale (Burušić, 1999) was made up of 13 items and each participant had to evaluate the level of accuracy of each item, according to their personal assessment, on a Likert five-point scale (1- totally inaccurate and 5-completely accurate), with the exception of item three, six, nine and twelve which were evaluated contrary, because those are reversely coded items. The overall result was formed as a linear combination of all evaluations, with a minimum of 13 points and a maximum of 65 points. The higher result was interpreted as a higher level of shyness. Also, metric characteristics of the scale were satisfied, Cronbach's alfa coefficient in this study was $\alpha=.91$.

Physical appearance. Satisfaction with physical appearance was measured by a short version of The Physical Self-Description Questionnaire by Marsh, Ellis, Parada, Richards, and Huebeck (2005). On this 13-item scale, which is taken from the scientific paper "Mirror, mirror, on the wall, who's the fairest of them all - physical appearance and gender differences" by Mamula, Arbanas, Mehić, & Bistrović (2011) who have constructed a revised short version of PSQD-R and translated it into Croatian. Participants had to assess the level of agreement for each item on a Likert five-point scale (1-totally disagree and 5-completely agree). The higher the score, the higher the self-evaluated level of one's satisfaction with his/her body image. Metric characteristics were satisfied, with a Cronbach alfa of 0.92 that was based on our sample.

Procedure

For the purpose of this survey, participants were given an online questionnaire which was constructed as a combination of four instruments: Rosenberg self-esteem scale, Peer Pressure Questionnaire, Shyness Scale and The Physical Self-Description Questionnaire. The main order of questions in every scale was previously randomized by determined software, so the effect of question order was brought to its minimum. Expected time for completing the entire survey was approximately around 15 to 20 minutes, but due to its nature participants had more time to complete the survey.

Results

Table 1 shows descriptives for self-evaluated body image, shyness, self-esteem and susceptibility to the peer pressure of the respondents. According to the Kolmogorov-Smirnov (K-S) test and Skewness/Kurtosis values (see Table 1), the data of the variables self-evaluated body image and self-esteem were non-normally distributed ($p < 0.001$) and negatively-skewed, susceptibility to peer pressure normally ($p > 0.05$) and shyness non-normally distributed ($p < 0.001$) and positively-skewed. Comparing central tendencies (median for non-normally and mean for normally distributed) and range of the data, it is to conclude that most of the students' evaluations of self-esteem ($C=45$) and body images ($C=50$) were higher than the average –whereas the highest possible maximum for self-esteem was 50 and 65 for body image. The results for self-evaluated susceptibility to peer pressure show that most of the results were clustered around the mean ($M=49.57$; $SD=11.31$), although it is, however, important to note that the highest possible result on this scale was 125, which means that the mean itself was not that high. Finally, results for self-evaluated shyness show that the mass of the distribution is concentrated on the lower evaluations of shyness ($C=30$). All coefficients of variation calculated from the means and standard deviations (17% for self-evaluated body image, 33% shyness, 20% self-esteem and 22% for susceptibility to peer pressure) indicate a relatively low, but acceptable variation of the respondents' evaluations. Taken that into consideration, along with the allowed violations of normality assumptions for calculating its correlation (Petz, 1997), Pearson's r was used to examine the correlation of all variable combinations.

Table 1

Display descriptive data and normality test results for self-evaluated body image, shyness, self-esteem and susceptibility to peer pressure ($N=285$)

	<i>M</i>	<i>C</i>	<i>sd</i>	Min	Max	K-S	Skewness (<i>SE</i> =0.144)	Kurtosis (<i>SE</i> =0.288)
Body image	48.78	50.00	8.48	20	65	0.077	-0.506	0.091
Shyness	31.63	30.00	10.69	13	63	0.076	-0.509	-0.247
Self-esteem	38.62	45.00	8.03	13	50	0.108	-0.710	-0.055
Susceptibility to peer pressure	49.57	37.00	11.31	25	86	0.051	0.462	0.083

Table 2 shows the Pearson's inter-correlations and partial correlations of the variables. Without controlling for other variables, correlations for the four variables were, from highest to lowest, as follows: $r=0.729$ (self-esteem and body image), $r=-0.457$ (self-esteem and shyness), $r=-0.402$ (self-esteem and susceptibility to peer pressure), $r=-0.369$ (shyness and body image), $r=0.356$ (shyness and susceptibility to peer pressure) and $r=-0.220$ (susceptibility to peer pressure and body image). All correlations were, when not controlling for either one or two variables, statistically significant ($p < .001$). The correlation between self-evaluated self-esteem and body image is positive and large (and remains so, even when controlling for peer pressure and shyness; $r=0.682$; $p < .001$). This means that those who tended to evaluate their self-esteem higher were most likely to evaluate their body image as more acceptable (and vice versa). Conversely, the lowest and negative correlation between self-evaluated body image and susceptibility to peer pressure became smaller, positive and less significant when controlling for shyness and self-esteem ($r=0.133$; $p < 0.05$). This means that the possibility of students who evaluated their body image as more acceptable being less susceptible to peer pressure (and vice versa) is not true, while there is a small tendency of them being more susceptible to peer pressure. The negative correlation between self-evaluated self-esteem and shyness was, along with the negative correlation between self-esteem and susceptibility to peer pressure, moderate. It implies that those who had higher evaluations of their self-esteem were, on average, more likely to have lower evaluations of their shyness and lower evaluations of their susceptibility to peer pressure (and the other way around). On the other hand, a partial correlation for those two combinations of variables was negative and small ($r=-0.210$; $p < 0.001$ when controlling for body image and susceptibility to peer pressure in the case of correlation between self-esteem and shyness and $r=-0.30$; $p < 0.001$ when controlling for body image and shyness). That means that the previously described tendencies were in fact very little when the controlled variables were taken into consideration. The negative and small to moderate correlation between self-evaluated shyness and body image first indicated that students who tended to evaluate their shyness higher also had some tendency to see their body image as less acceptable. However, the obtained correlation became statistically non-significant when controlling for self-evaluated self-esteem and susceptibility to peer pressure ($r=-0.085$; $p > 0.05$).

When comparing partial correlations of the previously mentioned variables but with only one controlled variable ($r=-0.058$ with self-esteem as a controlled variable and $r=-0.319$ with susceptibility to peer pressure as a controlled variable), it is to conclude that removing the variance of self-esteem was what made this apparent correlation non-significant. Finally, the positive and small to moderate correlation between self-evaluated shyness and susceptibility to peer pressure indicates that students who tended to evaluate their susceptibility to peer pressure higher also had some tendency to see themselves as more shy, and vice versa. However, this tendency became less meaningful when compared to the partial correlation of only $r=0.220$ ($p<0.001$) for the same pair of variables (when the variance of self-esteem and body image were excluded from the regular correlation).

Table 2

Pearson's and partial correlations for self-evaluated body image, shyness, self-esteem and susceptibility to peer pressure

	Body image	Shyness	Self-esteem	Susceptibility to peer pressure
Body image	-			
Shyness	-0.369**	-		
Self-esteem	0.729**	-0.457**	-	
Susceptibility to peer pressure	-0.220**	0.356**	-0.402**	-
Shyness (controlled for body image)	-	-	-0.296**	0.304**
Self-esteem (controlled for body image)	-	-0.296**	-	-0.363**
Self-esteem (controlled for shyness)	0.678**	-	-	-0.288**
Body image (controlled for shyness)	-	-	0.678**	-0.102
Shyness (controlled for self-esteem)	-0.058	-	-	0.212**
Body image (controlled for self-esteem)	-	-0.058	-	0.117*
Body image (controlled for susceptibility to peer pressure)	-	-0.319**	0.717**	-
Shyness (controlled for susceptibility to peer pressure)	-0.319**	-	-0.367**	-
Body image (controlled for susceptibility to peer pressure and self-esteem)	-	-0.085	-	-
Body image (controlled for susceptibility to peer pressure and shyness)	-	-	0.682**	-
Body image (controlled for shyness and self-esteem)	-	-	-	0.133*
Shyness (controlled for body image and self-esteem)	-	-	-	0.220**
Self-esteem (controlled for shyness and body image)	-	-	-	-0.300**
Self-esteem (controlled for body image and susceptibility to peer pressure)	-	-0.210**	-	-

** $p<0.001$; * $p<0.05$

Discussion

The aim of this study was to examine the relationship between self-evaluated body image, shyness, self-esteem and susceptibility to peer pressure in students of the University of Zagreb. The highest significant (positive) correlation between self-evaluated body image and self-esteem suggests that, based on students' positive evaluations of their body image, their high evaluations of self-esteem can, with a high level of certainty, also be predicted and vice versa. That confirmed the starting hypothesis about their positive and statistically significant correlation which can be very well explained by previously mentioned studies (Curtis & Loomans, 2014; Dorak, 2011; Mintem, Gigante & Horta, 2015; Tiunova, 2015). Since both variables have an important role in social interaction and acceptance (considering that high results are desirable for success in the previously mentioned), their prominence is often resulting from feedback coming from social environment (Zubić & Burušić, 2009). These results are not surprising and belong in the previous theoretical frameworks. Although small (compared to the starting moderate correlation which did not control for the remaining variables), the obtained negative correlation between self-evaluated self-esteem and susceptibility to peer pressure was found in previous similar studies as well (Forko & Lotar, 2012; Lebedina-Manzoni et al., 2008; Uslu, 2013). The results confirm our hypothesis. In the current context, it (negative correlation) seems to be reasonable because it can be directly related

to the previously mentioned finding which points out the importance of social experiences, such as studying, rejection, social acceptance, etc. In fact, this explains why people who have negative or insecure perceptions of their worthiness are exactly the ones who can, to a certain point, be more susceptible to peer pressure (and vice versa). This relation is explained because people seem to be more “dependent” on social confirmation. As for correlations that included self-evaluated shyness, results are very interesting. First, the correlation between self-evaluated shyness and self-esteem was also obtained as it was suggested. Since it was small and negative, those people who had higher evaluations of their self-esteem were as well, to a certain point, more likely to have lower evaluations of their shyness and vice versa. Furthermore, even when using partial correlation, a small and positive correlation between self-evaluated shyness and susceptibility to peer pressure was also obtained. This indicates that there was still some tendency of the students who perceived their shyness lower to somehow perceive themselves as less susceptible to peer pressure and vice versa. Taken together, that might mean that the fear of previously mentioned social rejection (Malik & Rafique, 2013), which represents a link between shyness and low self-esteem, could be the key to interpreting the low and yet significant relationship between shyness and susceptibility to peer pressure. Also, it is important to mention that the obtained correlation between self-evaluated shyness and self-esteem could have been undersized to some extent because the distributions of the variables are skewed in opposite directions (Petz, 1997). This potentially means that any calculated correlation is *a priori* lower because of the violation of normality assumption. What is even more interesting is that the apparent negative and low to moderate correlation between self-evaluated body image and shyness became non-significant when, as mentioned in results, the variance of self-esteem was excluded from the correlation of the two –whereas the correlation did not significantly change when the variance of self-perceived susceptibility to peer pressure was excluded. That emphasizes the importance of the self-esteem in all the correlated variables even further, since its variance exclusion causes the non-significance of previously obtained correlations. Furthermore, the fact that only the correlations including the mentioned variable (except for the low correlation between shyness and susceptibility to peer pressure) were somehow consistent, shows how the variances of the remaining variables were excluded. Finally, the fact that the correlation between self-evaluated body image and susceptibility to peer pressure turned out almost non-significant is not surprising, because it can be well explained by the previously mentioned role of self-esteem as the main moderator variable, and by self-perceived shyness. It is to be further discussed whether a better self-image means moderately higher susceptibility to peer pressure. Accordingly, it is to be discussed whether people who are more satisfied with their body image are more socially accepted and therefore more susceptible to peer pressure (and vice versa) despite the correlation between the two being weak.

Conclusions

Values of the results of this study indicate the following among students of the University of Zagreb: i) a significant large and positive correlation between self-evaluated self-esteem and body image; ii) a small and negative correlation between both self-evaluated self-esteem and susceptibility to peer pressure, and self-esteem and shyness and, in the end, iii) a small and positive correlation between self-evaluated susceptibility to peer pressure and shyness/body image.

The significance of the correlation between self-evaluated body image and shyness was also tested, but the findings suggested their non-significance when controlling for the remaining variables. The sizes and the combinations of the mentioned correlations -which remained significant when controlling for other variables- lead to a conclusion that self-evaluated self-esteem might have a key role in all of the obtained relationships. Moreover, it proves that the strong correlation with self-evaluated body image in fact confirms the results of the previous studies (Curtis & Loomans, 2014; Dorak, 2011; Mintem, Gigante & Horta, 2015; Tiunova, 2015). It is important to point out that the results may only be interpreted regarding self-evaluations due to the well-known disadvantages of using questionnaires. Furthermore, the sample that was used was convenient and unevenly distributed by sex (71.9% female), which decreases the possibility of generalization of the results and limits the population on which the data can be generalized almost only on female students. Overall, the study gives a better understanding of the mentioned variables and its inter-correlations in the early adulthood, emphasizing the role of the self-esteem in general. Finally, since the findings regarding shyness were, not only interesting but left some questions open as well, it is suggested that another research should be conducted—using a different, more representative sample along with using multidimensional composite questionnaires/structural models. It becomes important to investigate its relationship with the mentioned variables and their interpretations even further.

References

- Asch, S. E. (1955). Opinions and social pressure. *Readings about the social animal*, 193, 17-26.
- Bámaca, M. Y., & Umana-Taylor, A. J. (2006). Testing a model of resistance to peer pressure among Mexican-origin adolescents. *Journal of Youth and Adolescence*, 35(4), 626-640.
- Baumeister, R. F., Campbell, J. D., Krueger, J. I., & Vohs, K. D. (2003). Does high self-esteem cause better performance, interpersonal success, happiness, or healthier lifestyles? *Psychological science in the public interest*, 4(1), 1-44.
- Bezinović, P. (1988). *Percepcija osobne kompetentnosti kao dimenzija samopoimanja* (Doktorska disertacija) [*Perception of self-competence as a dimension of self* (Doctoral thesis)]. Zagreb: Filozofski fakultet.
- Burušić J. (1999). *Ispitivanje individualnih razlika u samoprezentacijskim stilovima* [*Investigating individual differences in different styles of self-presentation*]. Zagreb: Filozofski fakultet.
- Buss, A. H. (1980). *Self-consciousness and social anxiety*. New York: Wiley.
- Buss, D.M., & Larsen, R. J. (2008). *Psihologija ličnosti* [*Psychology of Personality*]. Jastrebarsko: Naklada Slap.
- Butt, M., Moosa, S., Ajmal, M., & Rahman, F. (2011). Effects Of Shyness On The Self Esteem Of 9th Grade Female Students. *International Journal of Business and Social Science*, 2(12), 150-155.
- Calvo-Armengol, A., & Jackson, M. O. (2010). Peer pressure. *Journal of the European Economic Association*, 8(1), 62-89.
- Cheek, J. M., & Buss, A. H. (1981). Shyness and Sociability. *Journal of Personality and Social Psychology*, 41(2), 330-339.
- Curtis, C., & Loomans, C. (2014). Friends, family, and their influence on body image dissatisfaction. *Women's Studies Journal*, 28(2), 39-56.
- Dion, K., Berscheid, E., & Walster, E. (1972). What is beautiful is good. *Journal of personality and social psychology*, 24(3), 285-290.
- Dorak, F. (2011). Self-esteem and body image of Turkish adolescent girls. *Social Behavior and Personality: an international journal*, 39(4), 553-561.
- Duck, S. (2007). *Human relationships*. London: Sage Publications Inc.
- Erikson, E. H. (1994). *Identity: Youth and crisis*. New York: WW Norton & Company.
- Ferraro, R., Escalas, J. E., & Bettman, J. R. (2011). Our possessions, ourselves: Domains of self-worth and the possession-self link. *Journal of Consumer Psychology*, 21(2), 169-177.
- Forko, M., & Lotar, M. (2012). Izlaganje adolescenata riziku na nagovor vršnjaka- važnost percepcije sebe i drugih [Adolescent's risk exposure at the urge od their peers - the importance of self-perception and perception of others]. *Kriminologija i socijalna integracija*, 20(1), 35-47.
- Fortes, L. D. S., Cipriani, F. M., Coelho, F. D., Paes, S. T., & Ferreira, M. E. C. (2014). Does self-esteem affect body dissatisfaction levels in female adolescents?. *Revista Paulista de Pediatria*, 32(3), 236-240.
- Gocmen, P. O. (2012). Correlation between shyness and self-esteem of arts and design students. *Procedia-Social and Behavioral Sciences*, 47, 1558-1561.
- Jelić, M. (2012). Nove spoznaje u istraživanjima samopoštovanja: konstrukt sigurnost I samopoštovanja [New findings in self-esteem research: Self-esteem security]. *Društvena istraživanja-Časopis za opća društvena pitanja*, 2, 443-463.
- Koydemir, S., & Demir, A. (2008). Shyness and cognitions: An examination of Turkish university students. *The Journal of psychology*, 142(6), 633-644.
- Krishen, A. S., & Worthen, D. (2011). Body image dissatisfaction and self-esteem: A consumer-centric exploration and a proposed research agenda. *Journal of Consumer Satisfaction, Dissatisfaction and Complaining Behavior*, 24, 90-106.
- Lacković-Grgin, K. (1994). *Samopoimanje mladih* [*Self-concept of younger people*]. Jastrebarsko: Naklada Slap.
- Lebedina-Manzoni, M., Lotar, M., & Ricijaš, N. (2008). Podložnost vršnjačkom pritisku i samopoštovanje kod studenata [Susceptibility to peer pressure and self-esteem]. *Hrvatska revija za rehabilitacijska istraživanja*, 44(1), 77-92.
- Lebedina-Manzoni, M., & Ricijaš, N. (2013). Characteristics of youth regarding susceptibility to peer pressure. *Kriminologija i socijalna integracija*, 21(1), 39-48.
- Malik, T., & Rafique, R. (2013). Parental Bonding and its Association With Shyness, Self-Esteem and Self-Image in Teenagers. *Journal of Behavioural Sciences*, 23(3), 102-115.
- Mamula, M., Arbanas, G., Mehić, N., & Bistrović, I. (2011.). Ogdalce moje, najljepši na svijetu tko je - fizički izgled i rodne razlike [Mirror, mirror, on the wall, who's the fairest of them all - physical appearance and gender differences]. In: Kolesarić, V. (Ed.) *Vrijeme sličnosti i razlika-izazov psihologiji I psiholozima: knjiga sažetaka*, 116.

- Marsh, H. W., Ellis, L. A., Parada, R. H., Richards, G., & Heubeck, B. G. (2005). A short version of the Self Description Questionnaire II: operationalizing criteria for short-form evaluation with new applications of confirmatory factor analyses. *Psychological assessment*, 17(1), 81-102.
- Miljković, D., & Rijavec, M. (2012). *Razgovori sa zrcalom: psihologija samopouzdanja*. [Talking to a mirror: Psychology of self-esteem]. Zagreb: IEP.
- Mintem, C.G., Gigante, P.D., & Horta, L.B. (2015). Change in body weight and body image in young adults: a longitudinal study, *BMC Public Health*, 1-7.
- Petz, B. (1997). *Osnovne statističke metode za nematematičare* [Basic statistical methods for nonmathematicians]. Jastrebarsko: Naklada Slap.
- Tiunova, A. (2015). Relationship of body image and self-esteem in adolescents with different types of constitutional development: Preliminary results. *Activitas Nervosa Superior*, 57(2), 81-86.
- Uslu, M. (2013). Relationship between degrees of self-esteem and peer pressure in high school adolescents. *International Journal of Academic Research*, 5(3), 119-124.
- Van der Berg, P. A., Mond, J., Eisenberg, M., Ackard, D., & Neumark-Sztainer, D. (2010). The link between body dissatisfaction and self-esteem in adolescents: Similarities across gender, age, weight status, race/ethnicity, and socioeconomic status. *Journal of Adolescent Health*, 47(3), 290-296.
- Zhao, J., Kong, F., & Wang, Y. (2013). The role of social support and self-esteem in the relationship between shyness and loneliness. *Personality and Individual Differences*, 54(5), 577-581.
- Zubić, D., & Burušić, J. (2009). Fizička atraktivnost kao odrednica sociometrijskog statusa: moderirajući utjecaj samopoštovanja i socijalne anksioznosti [Physical attractiveness as an indicator of sociometric status: the moderating effect of self-esteem and social anxiety]. *Suvremena psihologija*, 12(1), 63-80.

26

Moral reasoning of law students and legal professionals

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Abstract

Law school, and the later practice of law could include some of the limiting factors for the development of moral reasoning (e.g. the opposition of one's own moral principles to the law which must be carried out). Taking this into consideration, the aim of this study was to compare the level of moral reasoning of students and legal professionals and determine whether it varies depending on the year of study in students or the length of service in legal professionals.

This research included 200 law students (third, fourth, and fifth year of study) and 184 legal professionals (31 notaries public, 108 lawyers, and 45 judges) in the Republic of Croatia, who completed the test of moral reasoning (TMR) (Proroković, 2016).

The results indicate higher levels of the index of moral reasoning (IMR) in legal professionals than in the group of students. More specifically, lawyers and judges have significantly higher levels of the IMR compared to students of all three years of study; public notaries have a higher IMR only in relation to the students of the third year of study.

The third- year students had lower levels of the IMR than students of the final two years, who did not mutually differ in this index. Also, there were no changes in the IMR related to the length of service in the three groups of legal professionals.

Despite the limitations set forth by cross-sectional data, the results of this study imply that one's inclusion in the labor market after completing studies is accompanied by progress in moral reasoning.

Keywords: moral reasoning, law students, public notaries, lawyers, judges

The theory of moral development by Lawrence Kohlberg describes moral development throughout life, which takes place through three hierarchically organized levels, with each having two phases. The pre-conventional level, from childhood to early adolescence, is characterized by externally controlled morality conditioned by obedience and avoiding punishment. On the conventional level, which is characteristic of adolescence, individual sense of morality is related to social and interpersonal relationships and rules. Rules imposed by authorities are still accepted, but at this level the individual becomes aware of the importance of maintaining positive interpersonal relationships and social order. On the post-conventional level, sense of morality is based on abstract principles and values. Individuals at this level are aware of the imperfections of rules and laws, and they believe that they should not be followed at all costs, or, that they sometimes need to be ignored or changed. Kohlberg believes that the transition to the post-conventional level occurs during late adolescence or young adulthood, but also states that only a small number of individuals reach this level in general (Kohlberg, 1986, according to Hren, 2008).

The assumption of Kohlberg's and of other cognitive developmental theories of morality is that moral development involves not only the acquisition of positive attitudes toward moral norms and principles but also the development of competencies required to deliver consistent and differentiating judgments related to moral norms and principles (Lind, 1986). These competencies, which is a synonymous name for moral reasoning, were first mentioned by Kohlberg who defined them as "the capacity to make decisions and judgments which are moral (i.e., based on internal principles) and to act in accordance with such judgments" (Kohlberg, 1964, p. 425, according to Lind, 2000). Lind notes that the adoption and understanding of moral rules do not guarantee that a person will act in accordance with them, while measures of moral reasoning abilities are correlated more significantly with moral behavior (Lind, 1986). Based on this definition and earlier empirical data Lind proposed the Dual-aspect theory of moral behavior and development, forming the Moral Judgment Test (MJT) (Lind, 2000). On the MJT, complex moral dilemmas are reasoned through pro and con arguments, each belonging to one of Kohlberg's moral stages. The preference of a certain moral orientation (preference of 6 Kohlberg stages) indicates the affective aspect, while cognitive capacity (moral competence, expressed through the C score; a measure of moral reasoning) indicates the degree to which the individual reasoning of the pros and cons of the arguments is consistent in selecting specific Kohlberg's stages, i.e. the ability to constantly evaluate the arguments in relation to their moral quality regardless of whether they are in accordance with the respondent's opinion or not (Lind, 1986, 2006). Both aspects are important, the affective aspect indicates the direction or orientation of behavior, while the cognitive aspect indicates its organization and structure (Lind, 2006).

To empirically test his theory, Lind (1986) compared results on the MJT between West European students (Germany, Netherlands, and Austria) and students from socialist countries (Poland and the former Yugoslavia) (N = 4055). The absence of cross cultural difference in the affective components of moral development, and the existence of the cognitive component shown in this study could be explained by the opinion of Rest (1973) and Lind (1985, all according to Lind, 1986) that the preference of higher moral arguments (principle) is a necessary but insufficient condition for moral competence (moral reasoning). Despite the equivalence in the affective component, Western European students achieved higher levels of moral reasoning in relation to students from the socialist countries and the authors attributed some of the reasons for these differences to the differences in the level of industrialization, political culture and climate, and in the levels and quality of education in particular.

Studies clearly show that moral development correlates more strongly with the level of education, also shown as one of the strongest correlates of moral reasoning, than with chronological age (Pascarella, 1997; Rest, 1988). King and Mayhew (2002), in their review article, which encompassed the results of 172 studies, concluded that even only participating in formal education positively reflects on the development of moral reasoning. Many longitudinal studies have examined this relationship, and results indicate that experience in college promotes moral development; more specifically, during the courses, students' preference for the conventional stage of moral reasoning tends to weaken, while their preference for post-conventional moral reasoning increases (Burwell et al., 1992; King et al., 1985; King & Kitchener, 1994; Mentkowski & Strait, 1983; Shaver, 1985; Shaver, 1987; Whiteley, 1982; all according to King & Mayhew, 2002). In such a study (Rest & Deemer, 1986; according to Hren, 2008) 102 participants were monitored from high school up to ten years after graduation and, in the beginning, all participants showed progress in moral reasoning. However, subsequent measurements showed differences. Moral reasoning developed in the participants who finished college, while the results of those who had not studied decreased. In the group of participants who discontinued their studies, results remained at the level they were while the participants studied. Attending faculty explained 38% of the variance of the results (Rest & Deemer, 1986, according to Hren, 2008). Many studies of moral reasoning on students showed that a significant

improvement in moral reasoning is related to the very attending of college also when controlling age and the input level of moral reasoning (King & Mayhew, 2002).

Part of the studies examining the relationship between moral reasoning and education focus not only on the level of education, but also on its very content. It is reasonable to assume that some contexts are more effective than others in promoting moral development. According to Rest and Narvaez (1994) faculties that include testing, questioning, and openness to new evidence and arguments have a positive influence on moral development, while faculties not open to questioning and examination and which are too careerist oriented and respect conservative values inhibit moral development. When it comes to the context of faculty, the study of medicine induced much interest because it has been shown that medical students seem to have stagnated (Branch, Pels, Lawrence, & Arky, 1993; Christakis & Feudtner, 1993; Self, Schrader, Baldwin, & Wolinsky, 1993; Self & Baldwin, 1994; Self, Olivarez, & Baldwin, 1998) or even regressed in moral development in the function of study duration (Feudtner, Christakis, & Christakis, 1994; Hren, Marušić, & Marušić, 2011; Patenaude, Niyonsenga, & Fafard, 2003). Some authors attributed this effect to the lack of educational content in medical school that would encourage the development and questioning of moral points of view, to the specific "environment" of medical school, which is, in comparison to other studies, characterized by a worse learning climate, less interpersonal contacts and tasks with other study colleagues, and high study competitiveness. Relationships with teachers are evaluated as bad, and only law students report of even worse relationships with their teachers (Lind, 2000). On the other hand, Hren (2006, 2008, 2011) states that a decline in moral reasoning occurs after the completion of the pre-clinical part of education, that is, on entering a clinic. Hren et al. (2011) speculate that regression in moral reasoning could be related to problems in the hierarchical organization of the clinical practice, the specific nature of the moral dilemmas students face, and the hidden medical curriculum. In the majority of cases, students face moral dilemmas alone, without an opportunity to discuss them with others. A solution for students who do not have the personal or relationship skills to solve the dilemmas is to "go with the flow" and obey both explicit and implicit norms and rules.

Most of the research dealing with regression or stagnation in moral reasoning has focused on medical students. However, it is logical to assume an inhibition of moral development in some other occupations. Law studies and later law practice may bring individuals to moral dilemmas in their study or work assignments which are to be solved in accordance with the letter of the law, and which may be contrary to their moral viewpoints. Knowing that morality and the law are equalized at the conventional level, and a legal professionals' job is to enforce the law, the question is whether these professionals experience stagnation at the conventional level of moral development, and whether their moral reasoning erodes regarding the years of law study, or the years of work in practice. This is especially relevant if we consider the finding by Lind (2000) that law students in Germany report the far worst relationships with their teachers, which may be one of the factors negatively reflecting on moral reasoning.

On the other hand, most research on moral reasoning has been conducted on students. Considering that moral reasoning continues to develop after student days, respectively, throughout the life span, and that a connection of moral reasoning with the level of education was found in adult individuals (Armon & Dawson, 1997), it seems incorrect to exclude the entire adult population from studies of moral reasoning. Furthermore, the effects of education on moral reasoning are often attributed to the "stimulating environment" education brings to the development of moral reasoning. It can be assumed that entering the world of work is not the end of such a "stimulating environment", and that it largely depends on the tasks and roles that people perform. To our knowledge, there is a lack of research comparing the levels of moral reasoning of students and professionals employed in the same profession, which gives an insight on how practice and later life challenges could influence moral reasoning.

Given all mentioned above, the aim of this study was to compare the levels of moral reasoning of law students and legal professionals (notaries public, lawyers, and judges), and see if there are differences in the index of moral reasoning with regard to the length of education (years of study of the students) and the length of service in legal professionals. According to Kohlberg's theory of moral development and the results of most previous studies, it can be assumed that moral reasoning should be positively connected to formal education, as well as informal education and experiences (which are an integral part of the work roles of employed legal professionals). This could result in greater moral reasoning in working legal professionals compared to students, while students of the higher years of study should have a higher IMR than younger colleagues. Also, an opposite hypothesis could be set considering that law study and later law practice may bring individuals to moral dilemmas that put legal regulations and a person's own moral principles in conflict, it is possible that moral reasoning stagnates or erodes in law students and professionals, as it was shown for medical students.

Method

Participants

The study included 200 law students and 184 legal professionals. The student sample consisted of 68 male and 132 female students of third ($n=61$), fourth ($n=77$), and fifth years ($n=56$) of law study, in the age range from 21 to 23 years.

The legal professionals involved in the study (75 men and 109 women) were employed in various areas of the legal system. There was a total of 31 notaries ($M_{age} = 39.87$), 108 lawyers ($M_{age} = 38.51$), and 45 judges ($M_{age} = 47.74$). The inequality of different groups of legal professionals was mainly determined by population sizes. According to the Croatian Bar Association, the Notary Chamber and Ministry of Justice, 324 notary public offices, 4 540 lawyers and 1 924 judges were registered in Croatia in the year 2015, so the number of participants in each group is proportional to population sizes.

Instruments

The Test of Moral Reasoning (TMR; Proroković, 2016), is an adapted version of the Moral Judgement Test (MJT; Lind, 2000). The TMR consists of two moral dilemmas, described in detail, in which the individual in the story makes a certain decision. For each of the decisions made, six *pro* and *con* arguments are proposed which offer valid or invalid justification for the individual's decision, and which have been adapted, with respect to their content, to Kohlberg's stages of moral development. The respondent's task was to assess the extent to which each of the set arguments is acceptable/unacceptable on a six-point scale (without the option of a neutral response), which allows the assessment of 'optimal' responses at the six theoretical levels of moral reasoning. As a measure of the level of moral reasoning, the so-called Index of Moral Reasoning (IMR) is calculated, based on the assessment of deviations from the 'optimal profile'. The optimal profile is based on the hypothesis that a person at the highest level of moral reasoning is one who assesses the argument which represents the sixth and highest stage of moral reasoning as most important. This person then assesses the argument that represents the fifth stage as one degree less acceptable, and so on to the argument which represents the first and lowest stage of moral reasoning (totally unacceptable). IMR is a parameter that varies within the range of 0 to 1, where a lower score indicates a lower level, and a higher score a higher level of moral reasoning. The IMR shows a normal distribution, which is leptokurtic to a low extent. The results of tests to date (Proroković, 2016) have shown good metric characteristics for this measurement instrument and for the IMR as a valid indicator (with both criterion and construct validity) of the level of moral reasoning. It should be noted that the IMR was an attempt to remove this deficiency related to the calculation of the C score of the Lind MJT. Since the C score measures the consistency of the subject's responses, it is possible to achieve a high C score in people who consistently prefer the lower stages of moral development, which actually does not correspond to a higher level of moral reasoning. The IMR is highly correlated with the C Score.

Procedure

The study included a convenience sample of legal professionals and law students in the Republic of Croatia. Part of the research was conducted in groups (students and part of the lawyers who work in the same law firms), while the other part was carried out individually.

All subjects were first briefly informed about the study, which was followed by asking for their consent to participate in it. It was particularly pointed out that the research was anonymous and that the analysis of the results would be performed on a group basis. The test was conducted in the traditional paper - pen manner with about a thirty- minute duration.

Results

Table 1 shows the descriptive values of the index of moral reasoning (IMR) and C score. All data analyses were carried out on the IMR, while the C Score values were given to compare the obtained values with those obtained in other studies. Given that the values of the IMR were normally distributed on all subsamples (except for fourth -year students, but the values of skewness and kurtosis were still lower than 1), differences were tested by calculating analyses of variance.

According to the first problem of the research, differences between the IMR of law students and groups of employed legal professionals were examined. Since these two groups obviously differed in age, it was preferable to control this variable in the analyses. However, most of the assumptions necessary for conducting the analysis of covariance (ANCOVA) were violated, so the correlation between age and IMR

was calculated. There was a low, but significant correlation between age and IMR in the whole sample ($r_{(373)}=.19, p<.05$), but when it was calculated for separated subsamples, it remained significant only in the subsample of students ($r_{(192)}=.16; p<.05$), but insignificant in the subsample of legal professionals ($r_{(179)}=-.11; p>.05$). Since the correlation between age and IMR was not significant for the group of legal professionals, and the group of students was very homogeneous by age, differences between students and legal professionals in IMR were calculated by ANOVA, assuming that age did not contribute significantly to possible differences.

Table 1
Descriptive data for the index of moral reasoning (IMR) and C score for different groups of participants

		IMR	C score	
Year of study				
Students	Third (n=61)	<i>M</i>	0.426	12.597
		<i>Sd</i>	0.076	9.084
		<i>Lill.</i>	<.10	<.10
		<i>Skew.(st.err)</i>	-0.09(.31)	0.75(.31)
		<i>Kurt.(st.err)</i>	-0.87(.60)	0.11(.60)
	Fourth (n=77)	<i>M</i>	0.453	17.090
		<i>Sd</i>	0.069	11.549
		<i>Lill.</i>	<.01*	<.10
		<i>Skew.(st.err)</i>	-0.98(.27)	0.99(.27)
		<i>Kurt.(st.err)</i>	0.86(.55)	2.00(.55)
	Fifth (n=56)	<i>M</i>	0.462	17.026
		<i>Sd</i>	0.072	14.716
		<i>Lill.</i>	>.20	<.01*
		<i>Skew.(st.err)</i>	0.31(.32)	1.40(.32)
		<i>Kurt.(st.err)</i>	0.14(.63)	1.81(.63)
Area of work				
Legal professionals	Notaries (n=31)	<i>M</i>	0.472	14.756
		<i>Sd</i>	0.087	10.443
		<i>Lill.</i>	>.20	<.15
		<i>Skew.(st.err)</i>	-0.44(.42)	1.25(.42)
		<i>Kurt.(st.err)</i>	-0.32(.82)	1.88(.82)
	Lawyers (n=108)	<i>M</i>	0.504	21.447
		<i>Sd</i>	0.078	15.354
		<i>Lill.</i>	>.20	<.01*
		<i>Skew.(st.err)</i>	-0.36(.23)	1.02(.23)
		<i>Kurt.(st.err)</i>	-0.18(.46)	0.59(.46)
Judges (n=45)	<i>M</i>	0.506	21.662	
	<i>Sd</i>	0.096	16.578	
	<i>Lill.</i>	<.20	<.05*	
	<i>Skew.(st.err)</i>	-0.53(.35)	0.86(.35)	
		<i>Kurt.(st.err)</i>	-0.33(.69)	-0.14(.69)

IMR-index of moral reasoning; Lill-Lilliefors test

ANOVA results showed that there was a significant effect of the participants' role on the index of moral reasoning ($F_{(1,376)}=40.96, p<.01, par. \eta^2=0.098$). IMR was significantly higher in the group of legal professionals in relation to the group of students ($M_{\text{legal.prof.}}=0.498, M_{\text{students}}=0.447$).

Before conducting ANOVA, homogeneity of variances was tested using Levene's test, showing no differences between the three groups of legal professionals ($F_{(2)}=.954, p>.05$) nor between all six groups of participants ($F_{(5)}=1.97, p>.05$). The analysis of differences between the six subsamples showed significant differences in the IMR ($F_{(5,373)}=15.29, p<.01, par. \eta^2=0.110$). Notaries had a higher IMR in relation to third-year law students, but not in relation to the students in the last two years of study. In contrast, lawyers and judges had significantly higher IMR scores compared to the students in all three years of study. Although the arithmetic mean of the IMR in notaries is relatively lower than in judges and

lawyers, the analysis of variance did not show significant differences among the three categories of legal professionals in the IMR (Table 1, Figure 1).

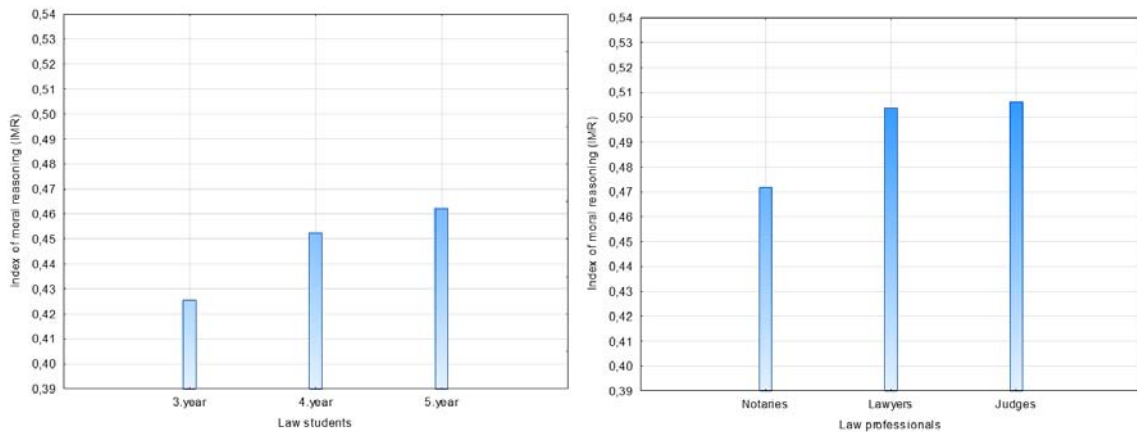


Figure 1. Average values of Index of moral reasoning (IMR) at law students and professionals

Another problem of this study was to investigate differences in the IMR of the students and legal professionals with regard to the length of training/experience. The results showed a significant variation of the IMR among students in different years of study ($F_{(2,191)}=4.18, p<.05, par. \eta^2=0.042$) and the post-hoc testing showed that the IMR is significantly higher in fourth and fifth-year students in relation to third-year students. Just like the correlation between age and IMR, the correlation between years of service (in the group of legal professionals) and the IMR was not statistically significant ($r_{(179)}=-.06, p>.05$). It can be seen in Figure 2 that the relationship between these two variables was not linear. After the operationalization of the years of service into five year long categories the differences in the IMR among such groups of subjects were not significant either ($F_{(5,175)}=1.64; p>0.05$).

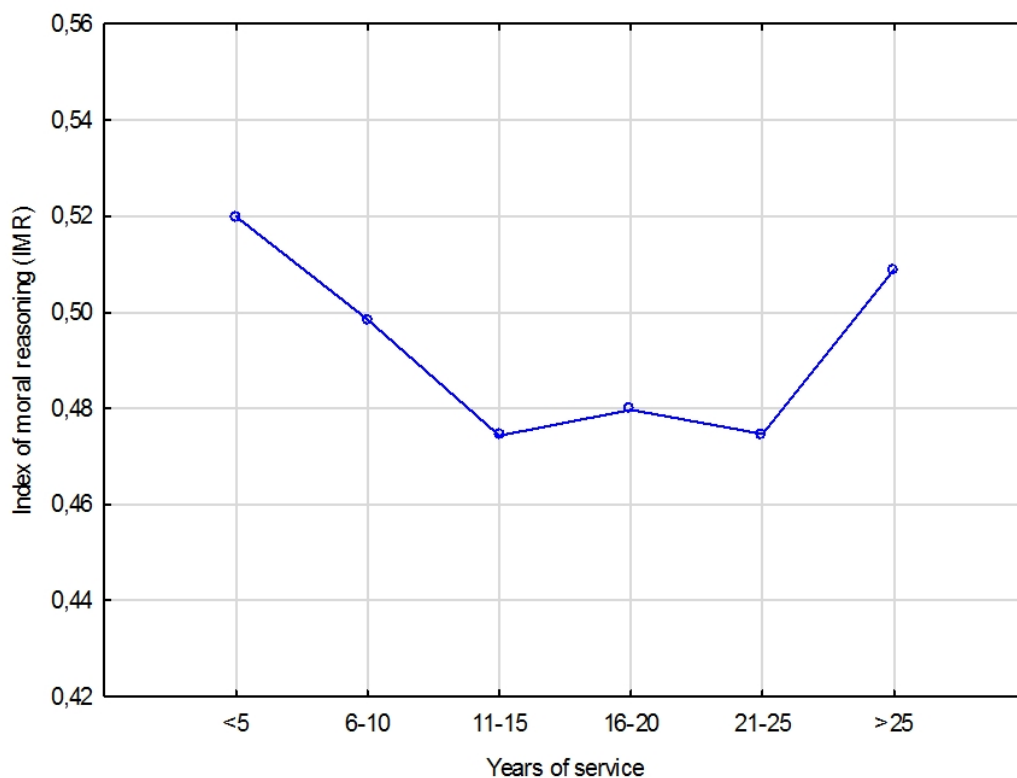


Figure 2. Relation between index of moral reasoning and years of service among law professionals

Discussion

Considering the aim of this research, the difference in the index of moral reasoning between law students and employed legal professionals was checked first, and the results indicate that working legal professionals had a higher index of moral reasoning than law students. Before the interpretation of these results, something about the connection between age and IMR should be said, due to the possibility that the previously mentioned difference, in theory, could partly be attributed to age. The correlation between age and IMR in the whole sample was low but significant, indicating that the IMR is higher as the participants were older. This result was confirmed in the group of students, i.e. with an increase in the year of study the IMR was also slightly higher. But, in the group of adult legal professionals there was no connection between IMR and age, and, although insignificant, the coefficient of correlation was negative. These results are in accordance with some previous studies. Schillinger (2006, according to Lind, 2015) concluded that a positive correlation of moral development and age which is regularly shown in adolescents (Colby et al., 1984, according to Lind, 2015) could be conditioned by education, because in most of the studies the effects of education were not separated from the effects of age. Lind (2015), in a sample of students of different ages, kept the level of education under control and found that older groups of students did not have greater moral competence (a measure of moral reasoning). Moreover, a slightly negative correlation was found, which indicates that adult moral development can be negatively correlated with age. Respecting interpretations of Schillinger (2006) and Lind (2015) it seems that the difference in IMR between students and legal professionals can be attributed not to the age but to the specific context, that is, probably the entrance into the world of work is accompanied by an increase in moral reasoning. If we draw a parallel with the studies that have sought differences in moral reasoning among students of different specific contexts of study and additional activities associated with student life, which facilitate the development of moral reasoning, this difference was actually expected (King & Mayhew, 2002; Rest & Narvaez, 1994). The work of legal professionals brings about encounters with different types of moral dilemmas every day, and the role of these professionals demands that they find adequate solutions to these dilemmas (taking into account that the role of legal professionals in resolving dilemmas is very different with regard to the specific type of profession they perform). Obviously, such work context reflects on them as individuals to consistently implement moral judgments in resolving moral dilemmas more successfully than students do. It would be expected that only increased life experience leads to the same effect, but in this sample the professional roles had a more significant effect on the development of moral reasoning than age did.

It should be noted that the differences between legal professionals and law students also depend on the type of job roles that the legal professionals perform (Figure 1). There were no differences in moral reasoning between lawyers and judges, but compared to students of all years of study both have higher values of moral reasoning. Notaries have a similar level of moral reasoning as students in the last two years of study. These differences point to the likelihood that a specific work context indeed plays an important role in the development of moral reasoning. It was actually expected that the judges in particular, and then the lawyers, should have a more pronounced moral development probably due to the fact that their everyday life involves being continuously confronted with moral dilemmas, as well as learning how to deal with them. On the other hand, the work of public notaries is considerably less plagued with the challenges of the other two groups, which is perhaps why their moral reasoning is the same as that recorded in older students. These results are an additional reason for including samples of postgraduate participants in future research.

Although the formal education of legal professionals is already finished, we still cannot be sure that their progress in moral judgment does not depend on education. The circumstances of today's labor market require continuous non-formal education and the adoption of new knowledge and skills of all professionals. It is possible that higher values of the index of moral reasoning arise from the effects of these forms of non-formal education, which legal professionals go through as part of their work.

It is necessary to mention an important limitation of this study which is linked to the cross-sectional nature of the research data. It is possible that differences obtained on such data, in addition to the afore-mentioned factors, can be attributed to some other factors which could not be controlled by the given manner of data collection. For example, employed lawyers completed their studies in a different range of years in which some of them completed their education in the system before the Bologna reforms, and some afterwards. As it has been shown that the quality of studies and curriculum could be a factor reflecting on moral reasoning (King & Mayhew, 2002; Rest & Narvaez, 1994), part of our obtained differences may be the result of this. On the other hand, it is possible that our groups of legal professionals are not equal in some characteristics relevant to moral reasoning, such as intellectual abilities. Studies consistently show that intellectual abilities are positively associated with moral reasoning (Derryberry,

Wilson, Snyder, Norman, & Barger, 2005; Sanders, Lubinski, & Benbow, 1995; Thoma, Narvaez, Rest & Derryberry, 1999), so it is possible that people who differ in this variable opt for different types of job roles. It is possible that a group such as judges consists of people of higher intelligence, and the resulting differences in IMR actually are a consequence of the initial unevenness of groups. Also, students are a much more homogenous group than employed legal professionals. Apart from the three primary roles taken into account in this study, the sample of legal professionals differs within itself by some other characteristics. For example, the lawyers involved in this research differ from one another according to the branch of law they are predominantly engaged in (criminal, civil, labor), and the judges are different according to the courts they are working in (county, municipality). In any case, as it was assumed by the first hypothesis, the results of this study suggest that the practical work of legal professionals may facilitate the development of moral reasoning, i.e. the conflict linked to the possible inconsistency of legal professionals' moral principles with the laws that must be carried out failed to inhibit further development of moral reasoning. However, only a longitudinal follow-up could clarify the results obtained in this study and eventually confirm assumptions of moral development in the function of age and education or work experience.

The next research problem was directed towards examining in more detail the way in which the length of law studies reflects on moral reasoning, that is, whether there is an increase in moral reasoning according to the year of study in law students, which was obtained for most study orientations (e.g., Lind, 1986; Pérez Delgado & Oliver, 1995), or whether there is a moral regression, as in medical students (eg, Lind, 2013; Neves Feitosa et al, 2013). It turned out that the third year students have significantly lower values of the IMR than students of the fourth and fifth -year of study. This result is consistent with the first hypothesis and the results of previous studies, which found an increase in moral reasoning with the length of study in the majority of students (King & Mayhew, 2002). Considering that increase in moral reasoning is a relatively slow process, and that the values of arithmetic means of the IMR in fifth -year students are only slightly higher than those of fourth- year students, the lack of distinction of the IMR among the two groups of students could not be called stagnation.

When it comes to legal professionals, it was likewise intended to see whether the index of moral reasoning differs among people with different years of work experience to somehow see if the length of exposure to work tasks can be linked to changes in the index of moral reasoning. The correlation between the years of service and IMR was statistically insignificant, but when respondents are categorized in groups with five years of work experience, we see that the lack of connection could be assigned to a non-linear relationship of the years of service and the index of moral reasoning. Although the analysis of differences in the IMR, with categories according to years of service as the independent variable, did not show significance, there is a vivid trend of changes (Figure 2). The first years of work are characterized by higher values of IMR and stagnation takes place from 11 to 25 years of work experience, followed by a slight increase again. It should be said that these differences are not significant, but the reason for the insignificance may be related to the specific context of this study. As already mentioned, it involved a relatively small, though heterogeneous sample of legal professionals, whose age and quality of education were also heterogeneous. With regard to the second problem, in general, it could be said that the changes found in law students correspond to the changes in the majority of students of different study orientations who show an increase in moral reasoning with the years of study.

Although the IMR was used as a measure of moral reasoning in this study, C scores were also calculated. As mentioned earlier, the C score has a drawback related to the possibility of unduly high results in respondents who consistently reason on lower stages, which was avoided by using the IMR. Nevertheless, the C score has been used in numerous studies and its comparison through different studies is possible. Its values theoretically range from 0 to 100, although in practice a higher result than 40 is rarely observed. Lind (2013) states that a C score value up to 9 is interpreted as "low or zero moral competence", 10-29 is the range of "medium" competencies, which generally includes the majority of educated individuals, a C score greater than 30 indicates a high moral competence. Comparison of the C scores in this research with the theoretical values shows that all of our respondents (students and legal professionals) are in the middle range of moral competence (C score: $M_{students}=15.66$; $M_{legal.prof}=20.37$). Although the obtained C scores are comparable among different studies and cultures, the question of the contribution of language adaptation of the questionnaire to the total score still remains, which questions the justification of such comparisons. In the study of Taradi, Taradi, Keglević, & Antičević (2009) the values of C scores of Croatian medical students are listed: 1st year = 21.27; 3rd year = 16.39; 5th year = 17.12. In relation to their values, in general, we can say that the group of legal professionals from our study achieved higher scores, but law students achieved a lower level of moral competence (C score) in relation to medical students. These results may suggest that more effort should be directed towards

strengthening the moral reasoning of law students by introducing specific forms of teaching that encourage its development, especially since it is utterly important in their profession.

Conclusion

Students in general have a lower level of moral reasoning than employed legal professionals. More specifically, lawyers and judges have higher values of the index of moral reasoning (IMR) compared to students in the last three years of study, while public notaries have a higher IMR than third- year students, but not fourth and fifth- year students.

Higher values of IMR were achieved in fourth and fifth- year students when compared with third - year students, while the two older groups did not differ in the IMR. There were no differences in the IMR in employed legal professionals according to their years of service.

References

- Armon, C., & Dawson, T. L. (1997). Developmental Trajectories in Moral Reasoning Across the Life Span. *Journal of Moral Education*, 26(4), 433–453.
- Branch, W., Pels, R. J., Lawrence, R. S., & Arky, R. (1993). Becoming a doctor. Critical-incident reports from third-year medical students. *The New England Journal of Medicine*, 329(15), 1130–1132.
- Christakis, D. A., & Feudtner, C. (1993). Ethics in a short white coat: the ethical dilemmas that medical students confront. *Academic Medicine: Journal of the Association of American Medical Colleges*, 68(4), 249–254.
- Derryberry, W. P., Wilson, T., Snyder, H., Norman, T., & Barger, B. (2005). Moral Judgment Developmental Differences Between Gifted Youth and College Students. *The Journal of Secondary Gifted Education*, 17(1), 6–19.
- Feudtner, C., Christakis, D. A., & Christakis, N. A. (1994). Do clinical clerks suffer ethical erosion? Students' perceptions of their ethical environment and personal development. *Academic Medicine: Journal of the Association of American Medical Colleges*, 69(8), 670–679.
- Hren, D. (2006). Moralni razvoj studenata medicine – pregled stanja i preporuke za djelovanje [The moral development of medical students - overview of the situation and recommendations for action]. *Croatian Medical Journal*, 2(6).
- Hren, D. (2008). *Utjecaj visokoškolskog obrazovanja na razvoj moralnog rasuđivanja osoba mlade odrasle dobi [Impact of higher education on young adults' moral reasoning]*. Doctoral dissertation. Zagreb: Faculty of Humanities and Social Sciences, University of Zagreb.
- Hren, D., Marušić, M., & Marušić, A. (2011). Regression of Moral Reasoning during Medical Education: Combined Design Study to Evaluate the Effect of Clinical Study Years. *PLOS ONE*, 6(3), e17406.
- King, P. M., & Mayhew, M. J. (2002). Moral Judgement Development in Higher Education: Insights from the Defining Issues Test. *Journal of Moral Education*, 31(3), 247–270.
- Lind, G. (1986). Cultural Differences in Moral Judgment Competence? A Study of West and East European University Students. *Cross-Cultural Research*, 20(1–4), 208–225.
- Lind, G. (2000). Moral regression in medical students and their learning environment. *Revista Brasileira de Educacao Médica*, 24(3), 24–33.
- Lind, G. (2006). Moral Cognition or Affect or Both? Test and Educational Implications of Piaget's Parallelism Theory. Paper presented at The annual meeting of the American Educational Research Association, San Francisco, April 7 - 11.: http://www.uni-konstanz.de/ag-moral/pdf/Lind-2006_cognitive-affective-parallelism.pdf.
- Lind, G. (2013). Medical education hampers moral competence development. Retrieved from: https://www.google.hr/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=0ahUKEwiMhPnB0bPAhWCzxQKHQGaDZ0QFgggMAA&url=http%3A%2F%2Fwww.uni-konstanz.de%2Fag-moral%2Fpdf%2FLind-2013_Medical-education-hampers-moral-comptence.pdf&usq=AFQjCNG2c_IE5SaP0fYwKg0i0JYVgx_bA&sig2=m270ZBj4z1FJFK-i3nMk2A&cad=rja/ accessed 30.09.16.
- Lind, G. (2015). Favorable Learning Environments for Moral Competence Development. A Multiple Intervention Study with 3.000 Students in a Higher Education Context. *International Journal of University Teaching and Faculty Development*, 4(4).
- Neves Feitosa, H., Rego, S., Unger Raphael Bataglia, P., Castelo Branco Sancho, K. F., Rego,

- G., & Nunes, R. (2013). Moral judgment competence of medical students: a transcultural study. *Advances in Health Sciences Education: Theory and Practice*, 18(5), 1067–1085.
- Pascarella, E. T. (1997). College's Influence on Principled Moral Reasoning. *Educational Record*, 78, 47–55.
- Patenaude, J., Niyonsenga, T., & Fafard, D. (2003). Changes in students' moral development during medical school: a cohort study. *CMAJ: Canadian Medical Association Journal*, 168(7), 840–844.
- Pérez-Delgado, E., & Oliver, J. C. (1995). The Influence of Age and Formal Education on Moral Reasoning in a Sample from Spain. *Journal of Moral Education*, 24(1), 65–72.
- Proroković, A. (2016). Test moralnog rasuđivanja (TMR) [The test of moral reasoning]. In: I. Tucak Junaković, V. Ćubela Adorić, A. Proroković, A. Slišković, I. Burić (Eds), *Collection of Psychological Scales and Questionnaires - Volume 8* (pp. 63–174). Zadar: University of Zadar.
- Rest, J. R., & Narvaez, D. (1994). *Moral development in the professions: Psychology and applied ethics*. Hillsdale, NJ: Lawrence Erlbaum.
- Rest, J. R. (1988). Why Does College Promote Development in Moral Judgement? *Journal of Moral Education*, 17(3), 183–194.
- Sanders, C. E., Lubinski, D., & Benbow, C. P. (1995). Does the Defining Issues Test measure psychological phenomena distinct from verbal ability? An examination of Lykken's query. *Journal of Personality and Social Psychology*, 69(3), 498–504.
- Self, D., & Baldwin, D. (1994). Moral reasoning in medicine. In J.R Rest (Ed.), *Moral Development in the professions: Psychology and applied ethics*. (pp. 147–162). Hillsdale, NY: Lawrence Erlbaum Associates.
- Self, D. J., Olivarez, M., & Baldwin, D. C. (1998). Clarifying the relationship of medical education and moral development. *Academic Medicine: Journal of the Association of American Medical Colleges*, 73(5), 517–520.
- Self, D. J., Schrader, D. E., Baldwin, D. C., & Wolinsky, F. D. (1993). The moral development of medical students: a pilot study of the possible influence of medical education. *Medical Education*, 27(1), 26–34.
- Taradi, S. K., Taradi, M., Keglević, M. V., & Antičević, D. (2009). Moral Judgment Competencies in Medical Students - Is Medical Education out of Balance? Presented at the Association for Medical Education in Europe (AMEE) Conference. Retrieved from: <http://bib.irb.hr/prikazirad?lang=en&rad=426258>
- Thoma, S.J., Narvaez, D., Rest, J., & Derryberry, P. (1999). Does Moral Judgment Development Reduce to Political Attitudes or Verbal Ability? Evidence Using the Defining Issues Test. *Educational Psychology Review*, 11, 325–341.

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Some psychosocial predictors of successful aging among Croatian older adults

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Abstract

Numerous predictors of successful aging (SA), mostly health and lifestyle factors, were previously examined, but little research has been conducted on SA in Croatia. The main goal of this study was to examine the contribution of some aspects of psychosocial functioning (i.e. life satisfaction, the meaning of life, involvement in the community, optimism, and life regrets) to self-rated SA. The study was conducted on the sample of 306 community-dwelling Croatian adults, 60 to 89 years old. The Self-Rated Successful Aging Scale, based on a list of 20 attributes of SA, proposed by Phelan et al. (2004), was used for measuring SA. Results have shown that psychosocial factors explained significant, although modest, additional proportion of the variance in SA, after controlling for the contribution of sociodemographic variables and self-rated physical and mental health. The significant predictors of SA were: self-rated health, life satisfaction, the meaning of life/life purpose, involvement in the community, optimism, and regrets of wrong actions. This research supports the idea that self-rated health and psychosocial factors play a major role in the successful aging process.

Keywords: successful aging, life satisfaction, meaning of life, community involvement, regrets

In step with the increasing in life expectancy and proportion of older persons in the population of developed countries, the traditional view of old age as determined exclusively by physical, cognitive and social decline, has gradually changed. The quality of life in late adulthood, as well as opportunities for preserving or improving the physical, psychological and social well-being of older people, are increasingly emphasized. In this context, the concept of successful aging (SA) emerged. Authors in this field generally agree that SA is a multidimensional construct, but there is no consensus regarding the components that it includes. The vast diversity of criteria and definitions of SA that could be found in the literature resulted in numerous operationalizations of the construct.

Successful aging is usually defined on the basis of biomedical criteria (e.g. physical functioning or absence of disease), although an increasing number of studies have been using psychosocial and lay perspective components. Probably the most widely used SA model is the biomedical model proposed by Rowe and Kahn (1987). This model defines SA as the freedom from disease and disability, maintaining high physical and cognitive functioning, and an active engagement with life. On the other hand, psychosocial approach emphasizes the importance of life satisfaction/well-being, social relations and engagement, and personal resources, such as resilience or optimism for SA (Bowling & Dieppe, 2005). The gap between biomedical and psychosocial perspective is bridged by the lay approach, which gives practical and contextually relevant guide for concrete social interventions focused on older adults (Bowling, 2006).

Recent extensive review of quantitative operational definitions of SA revealed 105 operational definitions across 84 studies (Cosco, Prina, Perales, Stephan, & Brayne, 2014). The majority of these operationalizations (92.4%) were based on biomedical approach, although psychosocial and lay components (e. g., engagement constructs, well-being constructs, personal resources or extrinsic factors such as finances) were increasingly represented. Depending on SA operational definition, the percentage of successful agers identified in these studies varied between less than 1 and more than 90 percent of study participants (Cosco et al., 2014).

In previous research on SA, many predictors/determinants/correlates of SA were examined. The strongest empirical evidence was found for younger age (Depp, Jeste, 2006; Li et al., 2014; Meng, D'Arcy, 2014; Ng, Broekman, Niti, Gwee, Kua, 2009; Parslow, Lewis, Nay, 2011; Pruchno, Wilson-Genderson, Rose, Cartwright, 2010), absence of disability, cognitive impairment, major health problems (e.g., arthritis, diabetes, stroke, hypertension, depression) or chronic health-related problems (Depp, Jeste, 2006; Hodge, English, Giles, Flicker, 2013; Li et al., 2014; Meng, D'Arcy, 2014; Ng et al., 2009; Strawbridge, Cohen, Shema, Kaplan, 1996; Vahia, Thompson, Depp, Allison, Jeste, 2012), and for health behaviors, such as nonsmoking (Depp, Jeste, 2006; Hodge et al., 2013) and physical activity (Almeida et al., 2014; Meng, D'Arcy, 2014; Ng et al., 2009; Parslow et al., 2011; Strawbridge et al., 1996).

In addition to the well-established associations with health and lifestyle factors, an increasing number of studies have demonstrated relationships between SA and various psychosocial and well-being factors, such as life satisfaction (Meng, D'Arcy, 2014), self-efficacy (Vahia et al., 2012), optimism (Cosco, Stephan, Brayne, 2015; Vahia et al., 2012), resilience (Lamond et al., 2008; Vahia et al., 2012), religiosity and spirituality (Ng et al., 2009; Pruchno et al., 2010), ego integrity (Han et al., 2015), meaning of life/life purpose (Windsor, Curtis, Luszcz, 2015), social connections/social support/engagement/community involvement (Cosco et al., 2015; Jeste, Deep, Vahia, 2010; Li et al., 2014; Ng et al., 2009; Parslow et al., 2011; Pruchno et al., 2010; Strawbridge et al., 1996), etc.

However, the main problem of research on the predictors and determinants of SA, related to the issue of considerable heterogeneity of operational definitions of SA, is the problem of confounding variables related to SA. So the same variables are in some studies treated as predictors, in others as components, while in some studies they are treated as an outcome or indicators of SA, depending on the SA definition used in the study. This problem is also highlighted by some other authors, such as Cosco (2015), who claims that psychosocial constructs (e.g. life satisfaction) are especially inclined to this problem. However, it seems that this problem of conceptual confusion will not be resolved soon due to the lack of comprehensive unitary definition and operationalization of SA.

Research on SA in Croatia is in its very beginning, which is surprising considering the fact that Croatia follows trends of developed countries regarding the rapid growth of older population. According to the last census in the year 2011, persons older than 65 years constituted a high 17.7 % of the population in Croatia that year (Croatian Bureau of Statistics). The first Croatian studies on SA (Ambrosi-Randić, Plavšić, 2008; Tucak Junaković, Nekić, 2016) used a list proposed by Phelan, Anderson, LaCroix and Larson (2004), that consists of 20 attributes of SA, originating from the previously published literature. Participants of these studies have rated how important each attribute is to SA. Results of these two studies, conducted on samples of community-dwelling adults older than 60, demonstrated that Croatian subjects rated the importance of 20 attributes to SA similarly to American subjects from the

original study of Phelan et al. (2004). Items referring to good health, being able to take care of oneself, feeling good about oneself, and support from family and friends, were rated as important by the greatest proportion of participants of those two studies (Ambrosi-Randić, Plavšić, 2008; Tucak Junaković, Nekić, 2016).

In the present study, we used a newly constructed scale of self-rated SA, based on the list above of 20 attributes of SA, since we found that Croatian subjects assessed the importance of those attributes for SA similarly to subjects in the original study of Phelan et al. (2004). Being aware of the above-mentioned problem of conceptual confusion regarding constructs related to SA, we nevertheless decided to treat results on this scale as an indicator of SA or outcome assessed at a particular moment in time, while results on different psychosocial and well-being constructs were treated as predictors. Besides, the correlations of these constructs with self-rated SA in this study could also be used as indicators of the convergent validity of this newly constructed scale. We examined those psychosocial constructs that we assumed to be most closely associated with SA (i.e. life satisfaction, optimism, and active involvement in the community), as well as those which we hypothesized to contribute significantly to SA, but were previously rarely investigated in the context of SA (i.e. the meaning of life/sense of purpose or life regrets). Besides, many of the previous studies included simultaneously only a few of these psychosocial factors that could affect SA. Therefore, in the present study, we have included all the above mentioned factors at the same time to be able to identify the relative predictive contribution of each of them to self-rated SA.

So, the primary purpose of the present study is to investigate the predictive contribution of some aspects of psychosocial functioning or well-being in a broader sense (i.e. life satisfaction, the meaning of life, active involvement in the community, optimism, and life regrets) to self-rated SA, after controlling for contribution of sociodemographic variables and perceived physical and mental health. According to many previous findings that have consistently pointed to the key role of good health for SA, we hypothesized that perceived physical and mental health would have the greatest contribution to self-rated SA. We separated physical from mental health so that we could identify their independent contributions. On the other hand, regarding measures that assess overall health we can not be sure which specific aspects of health subjects really assessed. Furthermore, we assumed that life satisfaction, the meaning of life, active involvement in the community, and optimism would make a significant positive contribution to SA, while life regrets would be negative predictors.

An additional goal was to test differences in SA regarding sociodemographic characteristics, such as gender, age, educational level, marital status, place of living and religiosity. Previous findings regarding the influence of demographic characteristics on SA are not consistent (Bowling, Iliffe, 2006; Depp, Jeste, 2006; Meng, D'Arcy, 2014; Ng et al., 2009; Pruchno et al., 2010; Strawbridge et al., 1996). Only the association of younger age with SA is well documented (e. g. Depp, Jeste, 2006; Li et al., 2014; Meng, D'Arcy, 2014; Ng et al., 2009; Parslow et al., 2011).

Method

Subjects and procedure

The study sample consisted of 306 adults, 60 – 89 years old, from 13 Croatian counties. The original sample was somewhat larger, but data from about 10% of respondents were excluded from the analyses because of a larger incidence of missing data or error responses. All participants were community-dwelling elderly adults. Sociodemographic characteristics of the participants whose data were used for the analyses are reported in Table 1. Participants were recruited by researchers themselves and with the assistance of senior students of various psychology courses from two Croatian universities, the University of Zadar and the Juraj Dobrila University of Pula. It is a convenience sample recruited by using the snowball sampling method. Data were collected individually during November and December of 2015 and January of 2016. Participants filled out the questionnaires by themselves in the presence of the researcher or questions and items were read by the researcher, if participants chose that option.

Table 1
Sociodemographic characteristics of participants (N = 306)

VARIABLES	M (SD)
Age	69.3 (6.67)
	CATEGORY
Gender	Male
	Female
Educational level	Completed or uncompleted elementary school
	High school
	College or more
Marital status	Single
	Married
	Cohabitation
	Divorced
Parental status	Widowed
	Yes
	No
Employment	Employed
	Unemployed
	Retired
Place of living	City
	Smaller town/ community
	Village
Religiosity	Yes
	No

Measures

Successful aging

The Self-Rated Successful Aging Scale was used for measuring SA. It is a newly constructed scale, based on the Croatian translation (Ambrosi-Randić, Plavšić, 2008) of the above-mentioned list of 20 attributes of SA, proposed by Phelan et al. (2004). Each of the 20 original statements (e.g. "Having friends and family who are there for me" or "Adjusting to changes that are related to aging") was transformed to "I" form (e.g. "I have friends and family who are there for me" or "I successfully adapt to changes that are related to aging"). Participants assessed them on a 5-point scale that ranged from 1 (the statement *doesn't apply to me at all*) to 5 (the statement *totally applies to me*). The total score on this scale was calculated as the average of the sum of the responses to all items, so the total range of the results could vary between 1 and 5. The higher result on the scale indicates respondents' perception of their aging as more successful (healthier, more vital, productive, etc.). This scale, but with smaller differences in two items, was previously administered only once on a convenience sample of 169 older adults (Tucak Junaković, Nekić, 2016). On the basis of the results of this first administration, two items of the scale were adapted to be easier to understand and rate. So, the present study reports the results of the first administration of the scale in such a form. The exploratory factor analysis, using principal factor analysis method, with Kaiser-Guttman's criteria of factor extraction with the minimal eigenvalue of 1, revealed that scale measures only one factor. The Cronbach's alpha reliability coefficient was .87.

Perceived Physical Health

Perceived physical health was assessed by one item that asked respondents to rate their current physical health on a 5-point scale that ranged from 1 (*very poor*) to 5 (*excellent*).

Perceived Mental Health

Perceived mental health was also assessed by a single-item measure. In the same way as for physical health, respondents were asked to rate their current mental health on an identical 5-point scale.

Life satisfaction

Life satisfaction was assessed by one question, "Overall, how satisfied are you with your life?" Responses ranged from 1 (*not at all satisfied*) to 5 (*extremely satisfied*).

Meaning of life/life purpose

The meaning of life or life purpose was assessed by asking participants, "When you view your life as a whole, how much meaning and purpose does it have to you?" Responses could range from 1 (*it is totally meaningless*) to 5 (*it is absolutely meaningful*).

Active involvement in community

Active involvement in the community was assessed by one question, "How involved are you in activities of the community you live in?" Respondents could rate their level of involvement on a 5-point scale that ranged from 1 (*not at all*) to 5 (*very much involved*).

Optimism

Optimism was measured by the Life Orientation Test-Revised (LOT-R) (Scheier, Carver, Bridges, 1994). The LOT-R is a six-item scale (when used without four filler items), three worded positively and three worded negatively. Respondents rated each item on a 5-point scale, from 1 (*strongly agree*) to 5 (*strongly disagree*), so the total results on the scale could range from 6 to 30, or from 1 to 5, when total results are divided by the number of items. A higher score indicates a higher level of optimism. Internal consistency of the scale in this sample was rather low (.52), and in some previous Croatian studies (e.g. Raboteg-Šarić, Merkaš, Majić, 2011) it was increased to .65 by dismissing two items from the original LOT-R scale. This reliability coefficient was still lower than those determined in other studies, which ranged between .70 and .80 (Carver, Scheier, 1999).

Life regrets

Life regrets caused by missed opportunities were measured by asking participants to indicate how much they regretted having missed opportunities in life.

Life regrets due to wrong actions were assessed by asking participants to rate how much they regretted having done things they now consider that they should not have done.

To both items, respondents could give their responses on a 5-point scale that ranged from 1 (*not at all*) to 5 (*very much*).

Results

Differences in SA regarding sociodemographic characteristics

The differences in SA by sociodemographic characteristics of the participants were examined using a t-test, independent by groups, and one-way ANOVA. The differences regarding gender, educational level, relationship status, place of living and religiosity were examined. For the purpose of these analyses, five categories of marital status were divided into two: participants living with a partner (married or cohabitating, $N = 195$) and those without a partner (single, divorced or widowed, $N = 111$). The reason for this division was a small number of participants in some categories (namely, participants that were cohabitating, single or divorced). Only the main effects of the educational level (completed or uncompleted elementary school, high school, college education or more) ($F(2/303) = 3.54, p = .030$) and the place of living (city, smaller town, village) ($F(2/303) = 3.60, p = .013$) were found significant. Post-hoc analyses by Scheffé's test revealed a significant difference ($p = .035$) between the participants with completed or uncompleted elementary school ($M = 3.55, SD = 0.07$) and those with finished high school ($M = 3.76, SD = 0.05$), where those with higher education scored significantly higher on the SA scale. Regarding the place of living, Scheffé's test demonstrated a significant difference ($p = .04$) between the participants who lived in smaller towns ($M = 3.84, SD = 0.09$) and those who lived in villages ($M = 3.52, SD = 0.07$), where those who lived in smaller towns scored significantly higher on SA. It should be noticed here that the number of participants who lived in cities was disproportionately higher compared to those who lived in villages or in smaller towns, which should be kept in mind when discussing the differences mentioned above.

Descriptive parameters and correlations between SA and psychosocial variables

Kolmogorov-Smirnov test showed that the distributions of results on all variables, except on SA, significantly deviated from normal (Table 2). However, extreme values of skewness and kurtosis indexes were not detected, so the use of parametric statistical analyses seemed justified.

As could be seen from the mean results on the scales (Table 2), participants of this study scored rather high on the measures of SA, self-rated health and psychosocial constructs. Only the means of optimism and, especially, of community involvement measures were somewhat lower and were, regarding the total theoretical range of results, near average. Means of life regrets measures were somewhat below the theoretical average of 3 on 1 to 5 scale, indicating that participants in this study do not regret much, although they regret more missing opportunities than faulty actions.

As was hypothesized, all correlations among the examined psychosocial variables or well-being constructs in a broader sense were significant, in the expected direction and, mostly, moderately high. The only exceptions were the non-significant correlations between involvement in the community and life regrets and between physical health and regrets of actions.

Table 2
Pearson's correlation coefficients and descriptive parameters for examined variables

	Age	SA	PH	MH	LS	ML	IC	O	LR- mo	LR- ra
Age	1.00									
Successful aging (SA)	-.07	1.00								
Physical Health (PH)	-.19**	.52**	1.00							
Mental Health (MH)	-.14*	.49**	.52**	1.00						
Life satisfaction (LS)	-.06	.56**	.43**	.48**	1.00					
Meaning of life/life purpose (ML)	-.11	.49**	.29**	.38**	.55**	1.00				
Involvement in community (IC)	-.06	.42**	.23**	.24**	.26**	.20**	1.00			
Optimism (O)	-.04	.42**	.35**	.35**	.37**	.31**	.16**	1.00		
Life regrets – missed opportunities (LR-mo)	.06	-.23**	-.13*	-.15*	-.29**	-.32**	-.06	-.17**	1.00	
Life regrets – regrets of actions (LR-ra)	.05	-.27**	-.03	-.23**	-.34**	-.36**	-.02	-.18**	.58**	1.00
<i>M</i>	69.33	3.70	3.31	3.71	3.86	3.96	2.93	3.29	2.67	2.45
<i>SD</i>	6.67	0.60	0.80	0.85	0.79	0.75	1.14	0.64	1.17	1.14
<i>RANGE</i>	60.00- 89.00	1.40- 4.95	1.00- 5.00	1.00- 5.00	1.00- 5.00	2.00- 5.00	1.00- 5.00	1.16- 4.83	1.00- 5.00	1.00- 5.00
<i>Skewness</i>		-.58	.28	-.00	-.72	-.44	-.04	-.21	.23	.48
<i>Kurtosis</i>		.60	.27	-.44	1.26	.00	-.76	.09	-.85	-.68
<i>Kolmogorov-Smirnov D</i>		.06	.31**	.24**	.29**	.28**	.17**	.08*	.19**	.24**

* $p < .05$, ** $p < .01$

According to the expectations, the correlations of SA with perceived physical and mental health and all psychosocial variables were significant and, mostly, moderately high. Compared to correlations of SA with other examined variables, correlations of SA with life regrets were lower and negative. The age of participants in this, in terms of age, relatively restricted sample of older persons, correlated significantly, although low, only with physical and mental health, where older participants rated their physical and mental health as worse. The correlation between age and SA was not significant ($r = -.07$, $p > .05$).

Contribution of sociodemographic variables, self-rated health, and psychosocial factors to prediction of SA

In order to test the contribution of psychosocial factors to individual differences in results on Self-Rated Successful Aging Scale, after controlling for some sociodemographic variables and perceived physical and mental health, we used the hierarchical regression analysis. The results of this analysis are presented in Table 3.

The sociodemographic variables of gender and age were introduced in the first step, perceived physical and mental health in the second, and, lastly, psychosocial variables were entered in the third step of the analysis. Psychosocial variables were introduced last, after health variables, since we hypothesized that health variables would had a greater contribution to the prediction of SA compared to psychosocial variables. Besides, we aimed to test the assumption that psychosocial variables would contribute additionally to the prediction of SA, above sociodemographic and health variables.

Table 3

Results of hierarchical regression analysis for SA with sociodemographic variables, perceived physical and mental health, and psychosocial factors as sets of predictors ($N = 306$)

PREDICTORS	β (β)
The first step	
Sociodemographic variables	
Gender (1-male, 2-female)	.075 (.091*)
Age	-.070 (.045)
R^2	.010
The second step	
Health	
Perceived physical health	.383** (.268**)
Perceived mental health	.293** (.080)
ΔR^2	.336**
F change	76.550**
R^2	.346**
The third step	
Psychosocial factors	
Life satisfaction	.175**
Meaning of life/life purpose	.170**
Involvement in community	.238**
Optimism	.132**
Life regrets – missed opportunities	.018
Life regrets – regrets of actions	-.107*
ΔR^2	.197**
F change	21.006**
R^2	.543**

* $p < .05$, ** $p < .01$

(β)- β coefficient in the last step of the hierarchical regression analysis

Among sociodemographic variables examined in this study, only gender and age were included in the hierarchical regression analysis since a series of t-tests and ANOVAs were previously conducted to test the differences in SA with respect to education level, relationship status, place of living and religiosity.

Gender and age in the first step explained only 1% of individual differences in SA ($R^2 = .01$, $p > .05$), and neither age nor gender contributed significantly to the prediction of SA. Physical and mental health explained together a significant additional proportion of the variance (33.6%) in SA. Individual contribution of each of the health aspects to the prediction of SA was significant and positive, indicating higher self-rated SA among those with better perceived physical and mental health. Finally, the included psychosocial factors explained together a significant additional proportion of the variance in SA (19.7%), after controlling for contribution of sociodemographic variables and two health aspects entered in the previous steps of the regression equation. Statistically significant predictors of SA in the third step were life satisfaction, the meaning of life/life purpose, involvement in the community, optimism, and regrets of actions. Participants that scored higher on life satisfaction, the meaning of life, community involvement and optimism measures, and those with fewer regrets due to actions assessed that they aged more successfully.

All three sets of predictors explained together a rather high proportion of the variance in SA (54%).

Discussion

The study was conducted with the aim of testing the contribution of some sociodemographic variables, perceived physical and mental health, and some aspects of psychosocial functioning or well-being in a broader sense to self-rated SA in a convenience sample of Croatian community-dwelling older adults. The focus was on predictive contribution of psychosocial factors, i.e. life satisfaction, the meaning of life, involvement in community, optimism, and life regrets, after controlling for contribution of sociodemographic variables and health.

As was already mentioned in the introduction, research on SA in Croatia is very rare, with few exceptions (Ambrosi-Randić, Plavšić, 2008; Tucak Junaković, Nekić, 2016), so the study described in this

article is a modest step in the Croatian research of this construct. Due to a rapidly growing proportion of the Croatian population older than 60, we expect that research on the factors fostering quality of life and SA in late adulthood would be increasingly interesting to researchers in the field of gerontology. In this study, we used a newly constructed scale of self-rated SA, based on the list of 20 attributes of SA, proposed by Phelan et al. (2004). The scale is quite comprehensive and advocates a multidimensional approach to SA since these attributes cover various domains of functioning, important for SA, such as physical and functional health, psychological and social functioning.

Before answering the main problem of this study, the differences in SA regarding some sociodemographic variables (i. e. gender, educational level, marital status, place of living and religiosity) were tested. Previous findings regarding these issues have been inconsistent. Therefore, some studies found more successful agers among women (Ng et al., 2009), among married (Bowling, Illife, 2006; Meng, D'Arcy, 2014; Pruchno et al., 2010), among elders with a higher educational background (Ng et al., 2009; Strawbridge et al., 1996), and among religious older adults (Ng et al., 2009; Pruchno et al., 2010), while other studies did not confirm those differences (Depp, Jeste, 2006). In this sample only the difference in SA regarding the educational level and place of living was found. Precisely, participants with completed high school scored significantly higher on SA than those with completed or uncompleted elementary school, and participants who lived in smaller towns assessed that they aged more successfully compared to those who lived in villages. Probably elders with higher education have better personal resources, such as more adaptive strategies of coping with life challenges, as well as greater financial resources, which facilitates more successful aging. Also, older participants with elementary school education are usually older than those with a higher education, which is also the case in the sample of this study. The finding that younger age is associated with SA has been confirmed in many studies. In fact, the strongest evidence regarding association between SA and various predictors and correlates was found exactly for younger age (Depp, Jeste, 2006; Li et al., 2014; Meng, D'Arcy, 2014; Ng et al., 2009; Pruchno et al., 2010), primarily due to better health and functional status of younger people. Considering the found differences in SA regarding place of living, it seems plausible that larger communities offer more various contents and possibilities, such as community services, libraries, theatres, membership in different associations etc., which can all facilitate SA. Besides, people living in villages are usually older compared to those living in towns and cities, which was also the case in this study, and, as already mentioned, older people usually score lower on SA measures than younger ones. On the other hand, it should be noticed that in this sample, the correlation between age and SA was not significant. It is probably due to a rather restricted variability in participants' age. In this sample of older subjects, age was significantly related only to health variables. As could be expected, older participants assessed their physical and mental health as worse.

Nevertheless, it is puzzling why the older respondents living in bigger cities did not score significantly higher on SA compared to those living in small towns and villages. A plausible explanation for this finding could be that the above-mentioned advantages of living in larger communities could be countermanded by the lack of social support, and alienation and poverty that are often more present in older citizens living bigger cities, which, in turn, undermines their SA compared to those living in smaller communities.

Regarding SA as outcome variable, and self-rated health and examined psychosocial constructs treated as predictors of SA, older persons scored rather high on these well-being variables in a broader sense. Precisely, participants assessed that they had been aging quite successfully. Besides, it seems that they are quite satisfied with their life, rather optimistic, and rate their physical and, especially, their mental health as rather good, and see their life as meaningful. This is not surprising since the participants were community-dwelling, non-institutionalized older persons. Most of them live with their spouses, in their homes, or are widowed and live alone in their homes. So it could be hypothesized, which is partly confirmed, that their health and functional status is rather preserved. Besides, it seems that they do not have many life regrets. This is, according to Erikson's psychosocial theory (Erikson, 1984), important in the late adulthood for accepting one's life, achieving ego integrity or a sense of purpose in life, which could all facilitate SA. In accordance with some previous findings (Hattiangadi, Medvec, Gilovich, 1995; Savitsky, Medvec, Gilovich, 1997), participants in this study regret more failing to act or missing opportunities than regretting actions. The usual explanations for such findings are that regrets of inaction, unlike regrets of action that have clear consequences, are more salient in the long run because they are always open to perceived possibilities. So a person can think of many different scenarios of how things would have turned out good if he or she only had more courage to do the thing he or she missed to do.

On the other hand, older adults scored somewhat lower on community involvement compared to measures of other psychosocial constructs. This is probably due to Croatian cultural specificities. Namely, we assume that in Croatia, as a post-socialist country which recently joined the European Union, people, especially older ones that grew up in times of the socialist regime, are not used to participating actively in

the community life and seeing themselves as active agents in the social and political processes, as opposed to the elderly in some other developed Western countries with long-lasting democratic traditions. Besides, they are generally more financially limited, compared to the elderly in more developed countries. Also, it should be noted that the single-item measure of community involvement used in this study was rather general and vague. This could also be the reason for obtaining the modest mean results on the community involvement variable. Due to the vagueness and generality of this community involvement measure, the respondents could think of a wide range of community activities, from participation in different professional organizations to, for example, church attendance, when they answered the question on the community involvement. Nevertheless, we used this general measure since we did not want to limit somehow the respondents' comprehension of this concept.

Furthermore, almost all relations among SA, psychosocial and health variables were significant and, mostly, moderate. This could be expected since all of these constructs are aspects of well-being in a broader sense. The strongest associations between SA and predictor variables were demonstrated for life satisfaction, health variables and the meaning of life/sense of purpose. Sociodemographic variables gender and age explained only 1% of individual differences in SA, which is in accordance with some other findings demonstrating that sociodemographic variables generally do not relate to SA (Depp, Jeste, 2006). On the other hand, self-rated physical and mental health explained a significant proportion of the variance (approximately 34%) in SA, where physical health showed to be a better predictor of SA. An increasing number of studies demonstrate the importance of using self-rated health measures in adult population because they are proven to be a valid indicator of objective health status of adults (Idler, Benyamini, 1997; Moller, Kristensen, Hollnagel, 1996). Results of this study indicating a significant contribution of health to SA are in line with a large number of studies showing that positive health status, objective or subjective, is a key component or one of the strongest predictors or correlates of SA (Hodge et al., 2013; Li et al., 2014; Meng, D'Arcy, 2014; Ng et al., 2009; Strawbridge et al., 1996; Vahia et al., 2012).

After controlling for contribution of sociodemographic variables and two health aspects, psychosocial factors explained a significant, although modest, additional proportion of the variance in SA (approximately 20%). According to the expectation, participants who are more satisfied with their life, rate their life as more meaningful, are more actively involved in community life, more optimistic and have fewer regrets of faulty actions, age more successfully, according to their perception. In this set of predictors, surprisingly, regrets caused by missed opportunities did not demonstrate a significant predictive contribution to SA. It should be noticed that, compared to the relations of SA with other well-being variables, the correlations between SA and life regrets were lower and, of course, negative. The plausible reason is that life regrets are a narrower and more specific phenomenon, so they are not so closely related to SA, conceptualized as a wide-range construct, as were broader aspects of well-being such as life satisfaction or meaning of life.

These findings demonstrating a significant contribution of the examined psychosocial factors to the prediction of SA corroborate the psychosocial approach to SA which accentuates the importance of life satisfaction/well-being, social connections, and engagement, and personal resources for SA (e.g., Bowling, Dieppe, 2005). Results of this study are in accordance with previous similar findings that evidenced associations between SA and various psychosocial and well-being factors, or significant contribution of these factors to SA. This association with SA is demonstrated for life satisfaction (Meng, D'Arcy, 2014), optimism (Cosco et al., 2015; Vahia et al., 2012), ego integrity (Han et al., 2015), meaning of life/life purpose (Windsor et al., 2015), social connections/social support/community involvement (Cosco et al., 2015; Jeste et al., 2010; Li et al., 2014; Parslow et al., 2011; Pruchno et al., 2010; Strawbridge et al., 1996), etc.

Limitations and Conclusion

In the end, some limitations of this study and directions for future research should be noticed. The most obvious limitations are the convenience sample and the use of self-assessment measures, which has probably elevated correlations between constructs measured by the same method. So, in the future research with, possibly, more representative samples some of these measures could be replaced with more objective ones, such as objective health status based on the presence or absence of medical conditions. Although they have a practical advantage in research with older subjects, some of the single-item measures, due to reliability issues, can be replaced with multi-item measures.

Nonetheless, the main problem of research on the determinants of SA, referring to this study as well, is more profound. This is the already mentioned problem of confounding variables where the same variables could be treated as predictors, components or outcomes of SA. Since this problem of conceptual

confusion is not easily solvable due to a lack of the consensual operational definition of SA, we believe that research on SA in Croatia should focus on finding conceptualization of SA that will work out best in Croatian cultural setting and that could prompt practical interventions directed to the quality life of Croatian older people. Thus, the research results on SA in Croatia could be used as a platform for developing concrete interventions and strategies (e.g. workshops, forums, public lectures) in Croatia aimed at the promotion of factors that were proved to contribute to SA of Croatian elderly people, such as a healthy life style, optimism, involvement in community activities, etc.

Furthermore, despite a considerable proportion of the variance in SA being explained by predictors included in this study, there are obviously many other potential predictors that could be examined in future Croatian research on SA, such as generativity, self-efficacy, resilience, spirituality, and other personal resources, as well as other aspects of functioning.

To conclude, regardless the limitations, the results of this study support the notion that self-rated health and psychosocial factors (namely, life satisfaction, meaning of life, community involvement, optimism, and life regrets) play a significant role in the successful aging process of older people.

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References

- Almeida, O. P., Karim, M. K., Hankey, G. J., Bu, B. Y., Golledge, J., & Flicker, L. (2014). 150 minutes of vigorous physical activity per week predicts survival and successful ageing: a population-based 11-year longitudinal study of 12201 older Australian men. *British Journal of Sports Medicine, 48*(3), 220-225.
- Ambrosi-Randić, N., & Plavšić, M. (2008). *Uspješno starenje* [Successful Aging]. Pula: Društvo psihologa Istre, Istarska županija, Sveučilište Jurja Dobrile u Puli.
- Bowling, A. (2006). Lay perceptions of successful ageing: findings from a national survey of middle aged and older adults in Britain. *European Journal of Ageing, 3*, 123-136.
- Bowling, A., & Dieppe, P. (2005). What is successful ageing and who should define it? *British Medical Journal, 331*, 24-31.
- Bowling, A., & Iliffe, S. (2006). Which model of successful aging should be used? Baseline findings from a British longitudinal survey of ageing. *Age and Ageing, 35*, 607-614.
- Carver, C. S., & Scheier, M. F. (1999). Optimism. In C. R. Snyder (Ed.), *Coping: The psychology of what works*. (pp. 182-204). New York: Oxford University Press.
- Cosco, T. D. (2015). Sussessfully aging predicts successful aging in successful agers: further definitional issues. *International Psychogeriatrics, Letters, 170-171*.
- Cosco, T. D., Prina, A. M., Perales, J., Stephan, B. C. M., & Brayne, C. (2014). Operational definitions of successful aging: a systematic review. *International Psychogeriatrics, 26*(3), 373-381.
- Cosco, T. D., Stephan, B. C. M., & Bryne, C. (2015). Validation of an a priori, index model of successful aging in a population-based cohort study: the successful aging index. *International Psychogeriatrics, 27*(12), 1971-1977.
- Croatian Bureau of Statistics. Croatia in figures 2011. http://www.dzs.hr/default_e.htm. Accessed April 2016.
- Deep, C. A., & Jeste, D. V. (2006). Definitions and predictors of successful aging: a comprehensive review of larger quantitative studies. *The American Journal of Geriatric Psychiatry, 14*, 6-20.
- Erikson, E. (1984). *Childhood and society*. London: Triad Paladin.
- Han, K., Lee, Y., Gu, J., Oh, H., Han, J., & Kim, K. (2015). Psychosocial factors for influencing healthy aging in adults in Korea. *Health and Quality of Life Outcomes, 13*(1), 31-40.
- Hattiangadi, N., Medvec, V. H., & Gilovich, T. (1995). Failing to act: regrets of Terman's geniuses. *International Journal of Aging and Human Development, 40*(3), 175-185.
- Hodge, A. M., English, D. R., Giles, G. G., & Flicker, L. (2013). Social connectedness and predictors od successful ageing. *Maturitas, 75*(4), 361-366.
- Idler, E. L., & Banyamini, Y. (1997). Self-rated health and mortality: a review of twenty-seven community studies. *Journal of Health and Social Bahavior, 38*, 21-37.

- Jeste, D. V., Depp, C. A., & Vahia, I. V. (2010). Successful cognitive and emotional aging. *World Psychiatry*, 9(2), 78-84.
- Lamond, A. J., Depp, C. A., Allison, M., Langer, R., Reichstadt, J., Moore, D. J., Golshan, S., Ganiats, T. G., & Jeste, D. V. (2008). Measurement and predictors of resilience among community-dwelling older women. *Journal of Psychiatric Research*, 43(2), 148-154.
- Li, C.-I., Lin, C.-H., Lin, W.-Y., Liu, C.-S., Chang, C.-K., Meng, N.-H., Lee, Y.-D., Li, T.-C., & Lin, C.-C. (2014). Successful aging defined by health-related quality of life and its determinants in community-dwelling elders. *BMC Public Health*, 14, 1013.
- Meng, X., & D'Arcy, C. (2014). Successful Aging in Canada: Prevalence and predictors from a population-based sample of older adults, *Gerontology*, 60(1), 65-72.
- Moller, L., Kristensen, T. S., & Hollnagel, H. (1996). Self-rated health as a predictor of coronary heart disease in Copenhagen, Denmark. *Journal of Epidemiology and Community Health*, 50, 423-428.
- Ng, T. P., Broekman, B. F. P., Niti, M., Gwee, X., & Kua, E. H. (2009). Determinants of successful aging using a multidimensional definition among Chinese elderly in Singapore. *The American Journal of Geriatric Psychiatry*, 17(5), 407-416.
- Parslow, R. A., Lewis, V. J., & Nay, R. (2011). Successful aging: development and testing of a multidimensional model using data from a large sample of older Australians. *Journal of the American Geriatrics Society*, 59(11), 2077-2083.
- Phelan, E. A., Anderson, L. A., LaCroix, A. Z., & Larson, E. B. (2004). Older adults' views of „successful aging“ – How do they compare with researchers' definitions? *Journal of the American Geriatric Society*, 52(2), 211-216.
- Pruchno, R. A., Wilson-Genderson, M., Rose, M., & Cartwright, F. (2010). Successful aging: early influences and contemporary characteristics. *The Gerontologist*, 50(6), 821-833.
- Raboteg-Šarić, Z., Merkaš, M., & Majić, M. (2011). Nada i optimizam adolescenata u odnosu na roditeljski odgojni stil [Adolescents' hope and optimism in relation to parental child-rearing styles]. *Napredak*, 152(3-4), 373-388.
- Rowe, J. W., & Kahn, R. L. (1987). Human aging: usual and successful. *Science*, 237, 143-149.
- Savitsky, K., Medvec, V. H., & Gilovich, T. (1997). Remembering and regretting: The Zeigarnik effect and the cognitive availability of regrettable actions and inactions. *Personality and Social Psychology Bulletin*, 23(3), 248-257.
- Scheier, M. F., Carver, C. S., & Bridges, M. W. (1994). Distinguishing optimism from neuroticism (and trait anxiety, self-mastery, and self-esteem): A re-evaluation of the Life Orientation Test. *Journal of Personality and Social Psychology*, 67, 1063-1078.
- Strawbridge, W. J., Cohen, R. D., Shema, S. J., & Kaplan, G. A. (1996). Successful aging: Predictors and associated activities. *American Journal of Epidemiology*, 144(2), 135-141.
- Tucak Junaković, I., & Nekić, M. (2016). Skala samoprocjene uspješnog starenja [The Self-Rated Successful Aging Scale]. In I. Tucak Junaković, I. Burić, V. Čubela Adorić, A. Proroković, & A. Slišković (Eds.), *Zbirka psihologijskih skala i upitnika, svezak 8 [Collections of Psychological Scales and Questionnaires, vol. 8]* (pp. 37-43). Zadar: Sveučilište u Zadru.
- Vahia, I. V., Thompson, W. K., Depp, C. A., Allison, M., & Jeste, D. V. (2012). Developing a dimensional model for successful cognitive and emotional aging. *International Psychogeriatrics*, 24(4), 515-523.
- Windsor, T. D., Curtis, R. G., & Luszcz, M. A. (2015). Sense of purpose as a psychological resource for aging well. *Developmental Psychology*, 51(7), 975-986.

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The contribution of some characteristics of family processes to sibling relationship quality

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Abstract

The research on sibling relationship quality during the period of adolescence was initially focused on the influence of the so-called constellation factors (e.g. the number of siblings, the birth sequence) which could clarify the differences in the relationship quality. Due to the fact that the research of the mentioned factors resulted in inconsistent findings, the researchers became more focused on family processes and wider family system. Consequently, the aim of this research was to investigate the contribution of some characteristics of family processes (perception of parental behavior and parental conflict management strategies) to the sibling relationship quality during early adolescence period. The research involved boys (n=160) and girls (n=192) from 13 to 15 years of age, who had sisters no more than 5 years older or 6 younger than them. An adapted version of the Sibling Relationship Questionnaire, The Parental Behavior Perception Scale and The Scale of Parental Management of Sibling Conflict were applied in this research. The correlation and the regression analyses were conducted individually on the male and female sample. The results show that boys and girls have a better relationship with their older sibling. In addition, when it comes to mixed dyads (brother-sister), it is more likely that boys who perceive a higher level of maternal acceptance, and those whose mother applies constructive strategies in solving conflicts between them and their siblings will have a better relationship with their sibling. In the same-gender dyads (sister-sister), girls whose mother applies constructive strategies in solving conflicts between them and their siblings will perceive a higher level of warmth in the sibling relationship. Furthermore, it is more likely that girls whose mothers attempt to resolve conflicts with their siblings in a non-constructive manner and girls whose mothers control the behavior of their children through threats will have a more conflicting relationship with their siblings.

Key words: adolescence, family processes, sibling relationship quality

Over the last several decades, researchers investigating sibling relationships have become more focused on the period of adolescence. Adolescence is a transitional period, not only for children and parents but also for siblings. For children, it is a period of significant physical (biological) changes, a period of gender maturity and development of identity. Along with significant developmental changes, this period is also characterized by changes in social relationships: adolescents start spending less time with their family and become more focused on their peers. The sibling relationship, along with the parent-child relationship, needs to be adjusted to the changes mentioned above (Lacković Grgin, 2006). When younger siblings mature and become more independent, they allow less guidance from their older siblings, and that is the reason why the influence of older siblings decreases during this period (Feinberg, McHale, Crouter & Cumsille, 2003). The sibling relationship becomes less intensive, in both positive and negative feelings. Teenagers become more engaged in friendships and romantic relationships and they spend less time with their family, including siblings (Noller, 2005). Due to developmental changes, this period is most often connected to the perception of growing differences between siblings. However, the affection between siblings, as well as the parent-child affection remains strong for the majority of young people, despite the decrease in the amount of time they spend together. The siblings whose parents are warm and supporting, and with whom they have established a positive connection during the period of early childhood, also continue to express growing affection and care during their teenage years.

Some correlates of sibling relationship quality during the period of adolescence

The research on sibling relationship quality during adolescence initially focused on the influence of the so-called *constellation factors*, which could explain individual differences in the relationship quality (e.g. Kim, McHale, Osgood & Crouter, 2006; Scharf, Shuman & Avigad-Spitz, 2007). The constellation factors that were most frequently involved in research are sibling gender, the relative age of the sibling, the number of siblings, birth sequence, the number of family members etc. Due to the fact that sibling relationship cannot be regarded separately from the family climate and interaction within the family, researchers became more focused on *family processes and on a wider family system* while studying this relationship. It is also relevant to mention that research must not neglect the role of constellation factors because they can be connected to sibling characteristics and/or they can be a mediator in the relationship between, for example, parental behavior and sibling relationship quality. Along with the mentioned factors, this research involved the gender of the participants and the relative age of the siblings.

Parental behavior

Parental behaviour is emphasized in research concerning sibling relationships in almost all periods of life. Namely, the emotional climate in a family is reflected through the quality of marital relationship, parent-child relationship, and the sibling relationship quality. Adult interaction within a family is an important aspect of a family context, which helps children to adopt representations of family relationships and close relationships. Taking that into consideration, internal representations of close relationships that children develop through interaction with their primary guardian (most often the mother) are also important for the children's adjustment. Later on, these representations are used in other close relationships, like the relationship with their brothers and sisters (Brody, Stoneman & Gauger, 1996; Ijzendoorn et al., 2000). The research (McHall, Updegraff & Whiteman, 2012) has confirmed these assumptions and it has been verified that a closer parent-child relationship is connected to a better sibling relationship and prosocial forms of reactions in children. Parental care and affection develop positive feelings for others in children and it is less likely that children would use self-protective behavior in their relationship with other people (Bryant & Crockenberg, 1980). As most of the studies concerning this topic, this research will also investigate maternal relationship as a primary guardian, on the assumption that the mother is the most involved person in child's upbringing and that the quality of this relationship has long-term effects on the social and emotional development of the child, as well as on the sibling relationship quality.

The parent-child relationship is not simple because the family system is incredibly dynamic and, therefore, not easy to measure. This relationship must always be observed as a dynamic process that changes with the development of the child, as well as the parent. Due to an extreme complexity of family processes and difficulties in the operationalization, a large number of constructs and measurements for this issue are present in contemporary literature (Keresteš, 2001). Research often deals with the study of dyadic relations within a family: primarily the parent-child dyad, and therefore indicates the existence of two fundamental dimensions of parental behavior in all developmental periods: emotionality and control (Keresteš, 2001; Macuka, 2007). This research also contains one aspect of family processes that have been operationalized through two fundamental dimensions of parental behavior: emotionality and control.

Emotionality refers to the emotions that a parent experiences and demonstrates within the relationship with the child, and it is also called support, warmth, sensitivity, acceptance or nourishment. The control dimension refers to the actions that parents take to influence and modify the behavior and the experiences of the child. Given the fact that the key dimensions of parental behavior (emotional acceptance opposed to rejection and high opposed to low control) are a source from which basic parenting styles derive (e.g. *authoritarian, authoritative, permissive and indifferent*), the following overview of the research on the influence of parental behavior on sibling relationship quality will contain results of the research which operationalized parental behavior through various dimensions and styles of parental behavior.

The research conducted by Milevsky, Schlechter and Machlev (2011) claims that higher levels of support between siblings are present in children whose parents are more prone to an authoritative style of upbringing compared to the children whose parents apply the authoritarian style of upbringing. The authoritative style is characterized by warmth and understanding by the parent with moderate control of the child's behavior. On the other hand, authoritarian parents are characterized by strictness towards their children, a high level of control of the child's behavior, coldness and rejection. Some other research (e.g. Brody, Stoneman & MacKinnon, 1986; Stocker, Dunn & Plomin 1987) produced similar results; mother's criticizing and mocking the child's behavior is connected to a lower perception of positive aspects in a sibling relationship, while mother's coldness and rejection is connected to a higher perception of negative aspects in a sibling relationship. Oliva and Arranz (2005) operationalized parental behavior through two dimensions: emotionality and control. The results of their research indicate that there are differences in the connection between parental behavior and sibling relationship quality regarding gender. Girls, who perceive a higher level of acceptance and warmth in parental relationship, perceive a higher level of closeness in the sibling relationship. No significant connection between parental behavior and sibling relationship quality was noted in boys. The control dimension was not in any significant relationship with sibling relationship quality.

Parental management of sibling conflict

Considering the fact that sibling conflict is a part of family dynamics, they often go undetected by parents. Some research (e. g. McHale, Updegraff, Tucker & Crouter, 2000) shows that children deliberately engage in conflict with others in order to get their parents' attention. Parents most often attempt to resolve or prevent sibling conflict by various interventions and strategies. Some findings (e.g. Dunn & Munn, 1986; McHale et al., 2000) support the assumption that parental intervention in sibling conflict increases its repetition and decreases the probability of independent problem solving and active confrontation with stressful events. Furthermore, parental intervention in conflicts is often interpreted as taking sides, which increases rivalry in sibling relationships (McHale et al., 2000). Some findings (e.g. Perlman & Ross, 1997) also show that direct punishment of children conflict is related to the development of aggressive behavior in children. On the other hand, other research within this domain converges towards the conclusion that parental management of sibling conflict is an important characteristic of family processes that can contribute to sibling relationship quality in a manner that leads to the development of prosocial interactions and active problem solving (Brody, Stoneman & Gauger, 1996; Perlman & Ross, 1997; Brody, Stoneman & MacKinnon, 1986). The research on parental conflict management (e. g. Howe, Aquan-Asse & Bukowski, 2001) emphasizes primarily the importance of the maternal role through direct interventions (such as preventing or stopping children conflict; conflict punishment) and through some indirect approaches, which also aim to prevent conflict (encouraging conversation and open/friendly behavior between children; participating in children's games and conversations). Intervention is supposed to include rewarding cooperative behavior, and punishing aggressive behavior, which should eventually contribute to a decrease in sibling conflict (Perlman & Ross, 1997). Thereat, it is important that parents remain neutral (not to take sides), that they focus on problem solving between children and that they encourage conversation and cooperation (Perlman & Ross, 1997).

Aims, problems and hypothesis of the research

In order to improve our knowledge about the importance of family processes in explaining sibling relationship quality, this research aims to determine to what extent family processes (*perception of maternal behavior in dimensions of emotionality and control, maternal management of sibling conflict*) contribute to the perception of the quality of relationship with a sister in early adolescence (perception of warmth and conflict) in mixed (brother-sister) and same-gender (sister-sister) dyads. It is assumed that the perception of maternal acceptance and constructive conflict management will be positive predictors of

warmth, and negative predictors of conflict in both dyads. Rejection/control as measurements of the perception of mother's behavior towards her child will be positive predictors of conflict, and negative predictors of warmth. This study focused solely on the relationship children have with their sisters because it has proven to be important for the psychological well-being of an individual, not only in childhood and adolescence but in adulthood as well. Cicirelli (1991) pointed out that people actually have different expectations from their brothers and different ones from their sisters, which originates from traditional differences between men and women; greater emotional expressiveness of women and their traditional role of educators explain why the relationship with sisters is important for subjective well-being.

Method

This research involved 352 children from 13 to 15 years of age. In total, 192 girls, and 160 boys participated in this research. One subgroup of participants perceived their relationship with the older sister ($n=181$) and the other subgroup perceived their relationship with the younger sister ($n=171$). There was no significant difference in the number of boys and girls within these two subgroups ($\chi^2=2.02$, $df=1$, $p>.05$). The highest number (68%) of the children had two siblings and 38% of the children had three or four siblings. More specifically, 66% of the children had one sister, 22% had two sisters and 11% of the children had three or more sisters. Furthermore, 46% of the children did not have brothers, and 50% of the children had one or two brothers. Regarding birth order, 30% of the children were first-born and 29% were second-born.

Table 1

Socio-demographic characteristics of the sample regarding relationship they assessed

Sample of children	
Gender:	
1- Boys	160 (45.3%)
2- Girls	192 (54.4%)
Age:	
<i>M (sd)</i>	13,78 (0.637)
Number of siblings:	
<i>M (sd)</i>	2.32 (1.61)
Assessed relationship	
Relative age:	
1- Elder sister	181 (51.7%)
2- Younger sister	171 (48.3%)
Age:	
1. Elder sister <i>M (sd)</i>	17.38 (1.5)
2. Younger sister <i>M (sd)</i>	10.14 (2.0)

Measuring instruments

The Sibling Relationship Questionnaire (Furman & Buhrmester, 1985) adapted by Jurkin(2013).

The *Sibling relationship questionnaire* consists of 45 items in total, which describe six positive, and four negative aspects of the sibling relationship. An analysis of the latent structure of the entire questionnaire, where the matrix of correlation between certain scales was the entry matrix, resulted in a three-factor solution, which explains about 60% of the general variance. The scales that describe positive aspects of a sibling relationship (love, affection, similarity, admiration, intimacy and nurturance) have high saturations ($>.50$) on the first extracted factor. This first factor corresponds to the dimension which Furman and Buhrmester (1985) entitled "warmth". The scales that describe negative aspects of a sibling relationship (competition, quarrelling, dominance, and antagonism) have high saturations on the second extracted factor, and it corresponds to the dimension which authors (Furman & Buhrmester, 1985) entitle "conflict" and it explains 37% of the general variance. The third factor explains 8% of the general variance and it corresponds to the dimension of "rivalry" because only maternal favoritism scale has a significant and high saturation on this factor (an example of the items is "Do you think your mother is closer to you or this

sibling?”). We excluded this factor from the correlational and regression analysis due to the skewness of the distribution of this variable.

For all SRQ items, participants rate how characteristic each item is of themselves and of their sibling using the range from hardly at all (1) to extremely much (5). The total result on the scale (dimension) of warmth (an example of the items from this composite variable is *“How much do you and this sibling have in common?”*) is an average value of the perceptions gathered on the scales that describe positive aspects of a sibling relationship (a total of 28 items). The total result on the scale of conflict (an example of the items from this composite variable is *“How much does this sibling disagree with you about things?”*) is an average value of the perceptions gathered on the scales that describe negative aspects of a sibling relationship (a total of 14 items). In theory, the range of results on the scales of warmth and conflict can vary from 1 to 5. Distribution on the scale of warmth moved to higher values in this research, while the distribution on the scale of conflict moved to lower values, which is expected when it comes to a sibling relationship.

The parental behavior perception scale (Macuka, 2004). This scale consists of 25 items that describe the previously mentioned dimensions of parental behavior: emotionality (acceptance and rejection) and control. The Acceptance subscale consists of 7 items (e. g. *“My mother comforts me when I am sad”*) and the rejection subscale consists of 9 items (e. g. *“My mother does not show me that she loves me”*). The control subscale consists of 10 items, and an example of the items from this subscale is *“My mother often yells at me”*. The participants have to mark on a three degree scale (1 – false, 2 – partially true, 3 – completely true) the answer that best describes the way their mother treats them. Considering the aims and problems of this research, participants completed only part of the questionnaire which assesses maternal treatment. A higher mark on an individual subscale shows that children perceive more maternal acceptance, rejection or control.

The scale of parental management of sibling conflict (Jurkin, 2013). The scale of parental management of sibling conflict consists of 11 items that describe constructive and non-constructive procedures through which a mother can intervene in a sibling conflict. An example of the items for non-constructive procedures is *“When I argue with my sister, my mother punishes me and my sister”*, and for constructive procedures is *“Mother encourages me and my sister to solve our disagreements through conversation”*. The participants had to perceive on a 4 -degree scale how often their mother used each procedure (0-never, to 3-almost always). The analysis of the latent structure of the entire scale resulted in the extraction of two factors, which together explain 57.43% of the variables. A possible theoretical range on both subscales ranges from 0 to 3, where a higher result represents the more frequent use of constructive or non-constructive procedures in sibling conflict management.

Table 2

Basic descriptive statistics of individual measures used in this research

The Sibling Relationship Questionnaire				
	<i>M</i>	<i>SD</i>	Range	α
Warmth	3.66	0.69	1.54-4.89	.90
Conflict	2.66	0.82	1-4.3	.80
The Parental Behavior Perception Scale				
	<i>M</i>	<i>SD</i>	Range	α
Maternal acceptance	2.46	0.39	1-3	.73
Maternal rejection	1.30	0.35	1-2.63	.76
Maternal control	1.50	0.36	1-3	.90
The Scale of Parental Management of Sibling Conflict				
Subscale of constructive conflict management	1.82	0.77	0-3	.84
Subscale of non-constructive conflict management	1.05	0.76	0-3	.81

Procedure

In total, this research involved over 50 school classes from Zadar, Split and Šibenik, with prior authorization from the principal of each school. Considering the fact that only pupils with elder or younger sisters were able to participate in the research, the psychologist, with the consent of the teachers, conducted a written survey with the purpose of attaining information on the number of siblings in each class. To be more specific, the pupils answered questions in the survey like *“How many sisters do you*

have?”, “How old are your sisters?” Based on the obtained information, the head researcher formed the questionnaires and arranged an application only for those pupils who fitted the required sample criteria, that is, for the children who delivered a written parental consent and volunteered to participate in the research. To be more specific, the research involved male and female pupils of 7th and 8th grade who had sisters up to five years older, and those who had sisters up to six years younger than them. We tried to ensure that children included in this study assessed the relationship with a sister who lived with them and that their relationship was part of complex family interactions and dynamics. It was also taken into account that the number of boys and girls and the number of children with older and younger sisters were almost equal. The completion of the questionnaire mostly took part in classes and lasted one school lesson.

Results

Considering the fact that previous research (e.g. Jurkin & Ombla, 2016; Jurkin, Nekić & Delin, 2016) demonstrated the existence of significant differences in sibling relationship quality regarding gender, all analyses involved subsamples of boys ($n=160$) and girls ($n=192$).

Descriptive analysis

Table 3 shows the results of t-tests for independent samples, that is, gender effects on the perception of sibling relationship quality and the perception of maternal treatment examined on different measurements of family processes.

Table 3
Gender effects on the perception of sibling relationship quality and the perception of maternal treatment examined on different measurements of family processes.

	Boys ($n=160$)	Girls ($n=192$)	p
	<i>M</i>	<i>M</i>	
Maternal acceptance	2.40	2.52	.00
Maternal rejection	1.31	1.28	.32
Control	1.50	1.48	.63
Constructive conflict management	1.85	1.82	.74
Non-constructive conflict management	1.04	1.06	.79
Warmth	3.50	3.79	.00
Conflict	2.61	2.70	.31

In comparison to boys, girls perceive a significantly higher level of warmth in a sibling relationship. The results shown in Table 3 demonstrate that statistically significant differences were determined in the perception of maternal acceptance between boys and girls. Girls perceive a significantly higher level of maternal acceptance, compared to boys. No significant gender difference was determined in the other measurements of family processes included in this research.

Correlation analysis

Table 4 consists of the inter-correlations between individual characteristics of family processes and the perception of warmth and conflict in a sibling relationship regarding gender.

Table 4

Correlations between characteristics of family processes and the perception of warmth and conflict in mixed dyads (n=160) and same gender dyads (n=192).

	Mixed dyads		Same gender dyads	
	Warmth	Conflict	Warmth	Conflict
1. Maternal acceptance	.34**	-.19*	.31**	-.32**
2. Maternal rejection	-.08	.23**	-.16*	.27**
3. Maternal control	-.04	.30**	-.25**	.46**
4. Constructive conflict management	.29**	-.08	.29**	-.23**
5. Non-constructive conflict management	-.04	.38**	-.36**	.51**
7. Relative age (direction of age difference)	-.19*	.05	-.17*	.15*

*p<.05, **p<.01

Mixed dyads

In mixed dyads (brother-sister relationship), out of the three measurements of the perception of parental behavior, the perception of warmth is in positive correlation only with the perception of maternal acceptance. Boys, who perceive a higher level of maternal acceptance, have a better relationship with their sibling. An opposite pattern of correlation was evidenced between the perception of maternal acceptance and the perception of conflict. In mixed dyads, maternal rejection and control are not in significant correlation with the perception of warmth. When it comes to the negative aspect of this relationship, a different pattern of correlation was noted. The perception of conflict in a sibling relationship is in a significantly positive correlation with maternal rejection and maternal control. Boys, who perceive a higher level of maternal control and rejection, perceive a higher level of conflict in a sibling relationship. When it comes to conflict management, boys whose mothers use constructive conflict management more often perceive a higher level of warmth in a sibling relationship. Furthermore, there is a positive correlation between maternal non-constructive conflict management and the perception of conflict; boys whose mothers use non-constructive strategies more often perceive a higher level of conflict. The direction of age difference is in negative correlation with the perception of warmth. According to the results of the research, it seems that boys have a better relationship with their older sibling.

Same-gender dyads

Unlike in mixed dyads, all three measurements of the perception of parental behavior are in a significant correlation with the perception of warmth and conflict same-gender dyads. The direction of correlations refers to the fact that girls, who perceive a higher level of acceptance, and a lower level of maternal control and rejection, have a better relationship with their sibling. This fact is contributed by the correlation between the dimensions of parental behavior and measurements of negative aspects in a sibling relationship, where girls, who perceive a lower level of acceptance, and a higher level of maternal control and rejection, also perceive a higher level of conflict with their siblings. Furthermore, girls whose mothers attempt to resolve sibling conflicts in a constructive manner perceive a higher level of warmth in this relationship, and a lower level of conflict. An opposite pattern of correlation is produced between the non-constructive strategies in conflict management and the sibling relationship quality. More precisely, girls whose mothers attempt to resolve conflicts using non-constructive strategies perceive a higher level of conflict in this relationship, and a lower level of warmth. The direction of age difference is in negative correlation with the perception of warmth in a sibling relationship, and in positive correlation with the perception of conflict. A higher level of warmth, and a lower level of conflict in a sibling relationship is perceived by girls who assessed the relationship with their older sibling.

Regression analysis

The following paragraph contains results of the standard regression analysis with the characteristics of family processes as predictors and the perception of warmth and conflict as criteria. All the analyses were conducted on the subsamples of boys (n=160) and girls (n=192) separately. Also, considering the fact that in a sibling relationship the relative age was in a significant correlation with the perception of warmth and conflict, this variable was introduced in the regression analysis. The characteristics of family processes together and the relative age of the sibling explain around 22% variance of the warmth and 20% variance

of the conflict in the sample of boys. In girls, the percentage of the explained variance with the mentioned predictors was around 24% for the perception of warmth and 34% for the perception of conflict.

Mixed dyads

The perception of conflict in boys is mostly contributed by the use of non-constructive maternal management of sibling conflict. There is a higher probability that the boys whose mothers attempt to resolve conflict between them and their siblings in a non-constructive manner will perceive a higher level of conflict in the sibling relationship. The perception of warmth is most contributed by the maternal acceptance. Boys, whose mothers express a higher level of warmth, will have a better relationship with their sibling. Furthermore, there is a higher probability that boys whose mothers manage conflicts between them and their siblings in a constructive manner will have a warmer sibling relationship. The relative age has proven to be a significant negative predictor for the perception of warmth. The relationship with older sibling contributes to a higher perception of warmth in mixed dyads.

Same-gender dyads

In girls, when it comes to the perception of conflict, the significant predictors are maternal non-constructive conflict management between them and their siblings, and maternal control. Girls whose mothers attempt to resolve conflicts between them and their sibling in a non-constructive manner will have a worse relationship with their siblings (higher marks on the measurements of conflict). The perception of warmth is predicted by the maternal non-constructive management of the sibling conflict. It is more likely that girls whose mothers do not use non-constructive conflict management strategies will often perceive a higher level of warmth in this relationship. The relative age has proven to be a significant negative predictor of the perception of warmth in a sibling relationship. It seems that the relationship with the older sibling contributes to a higher perception of warmth between siblings.

Table 5

The results of standard regression analysis (β – standardized regression coefficients) with the characteristics of family processes as predictors and warmth and conflict as criteria on the sample of boys ($n=160$) and girls ($n=192$)

Predictors / β coefficients	Mixed dyads	Same gender	Mixed dyads	Same gender dyads
	CONFLICT		WARMTH	
	β (SE)	β (SE)	β (SE)	β (SE)
Maternal acceptance	-.05 (.08)	-.07 (.08)	.29** (.08)	.19* (.09)
Maternal rejection	-.08 (.09)	-.08 (.09)	.01 (.09)	.07 (.10)
Maternal control	.14 (.09)	.25** (.10)	.04 (.09)	.04 (.10)
Constructive conflict management	-.08 (.08)	-.12 (.07)	.24** (.08)	.23** (.07)
Non-constructive conflict management	.32** (.08)	.36** (.07)	.02 (.08)	-.30** (.08)
Relative age (the direction of age difference)	.05 (.07)	.12 (.06)	-.24** (.07)	-.18** (.07)
	R=.44, R ² =.20 F (6.153)=6.29 p<.001	R=.58, R ² =.34 F (6.184)=15.94 p<.001	R=.46, R ² =.22 F (6.153)=6.781 p<.001	R=.49, R ² =.24 F (6.184)=9.74 p<.001

Legend: 1- maternal acceptance, 2 – maternal rejection, 3 – maternal control, 4 – constructive conflict management in sibling relationship, 5 – non-constructive conflict management in sibling relationship, 6 – the direction of age difference between the participants and their sisters (1= older sibling; 2=younger sibling)
* $p<.05$, ** $p<.01$

Discussion

As argued in previous chapters, warmth and conflict, regarded as the criteria variables of this research are two fundamental dimensions of a sibling relationship. Warmth in a sibling relationship is described through the perception of affection or confiding, love, similarity, cooperation, companionship, care and admiration, while the conflict dimension is described by quarrelling, antagonism, competition and dominance in a sister relationship. The purpose of this research was to determine the role of some

characteristics of family processes (the perception of maternal behavior in the dimensions of emotionality and control, maternal conflict management in a sibling relationship) in the explanation of the perception of warmth and conflict in a sibling relationship in mixed and same-gender dyads. The selection of the mentioned characteristics of family processes is based on the findings of numerous previous studies (e. g. Brody, 2004; Milevsky et al., 2001) which have determined their correlation with the quality of close relationships within the family.

The results of this research have shown that the characteristics of family processes and the relative sister age explain around 22% variance of warmth and 20% variance of conflict in mixed dyads, and 24% variance of warmth and 34% variance of conflict in the same gender dyads. Of all dimensions of parental behavior, maternal acceptance has proven to be the only independent predictor of warmth in both mixed and same-gender dyads. The perception of warmth is most contributed by the maternal acceptance; boys and girls, whose mothers demonstrate a higher level of warmth, will have a better relationship with their sibling. These findings can be explained by the postulates of the theory of parental acceptance/rejection (Rohner, 1999), which state that maternal emotionality has important consequences on the behavior of their children, as well as on the quality of their social interaction and psychological adjustment (Ripoll, Carrillo & Castro, 2009; Ronhner, Varan & Koberstein, 2013). In accordance with this fact, boys and girls whose mothers demonstrate a higher level of warmth and positive emotions to them, have a better relationship with their siblings. On the other hand, negative parental behavior is operationalized through the dimension of control; it is a negative predictor of warmth, but only in the same-gender dyads. It seems that a higher perception of the manipulation of the children's behavior through criticizing, creating a sense of guilt and degradation of children's emotions has negative implications on the children's adjustment, as well as their communication with their siblings, which is primarily evident in the negative aspect of sibling relationship. Also, some other studies determined that lower perception of maternal control is in correlation with a lower level of conflict in sibling relationship, and with a higher level of cooperation (Brody, Stoneman & McCoy, 1992). The research conducted on the sample of Croatian adolescents also indicates that adolescents whose parents express strict control have problems in their relationships with others (Lacković Grgin, Opačić & Žitnik, 1988). The obtained results were also in accordance with the theory of affection. According to Bowlby (Cicirelli, 1991; Teti & Ablard, 1989), inner working models have a significant role in the formation and maintenance of the quality of social interaction. If the objects of affection are consistent, devoted, responsible and accessible, the children learn how to count on others when they need them. Therefore, it is probable that they will engage in a free exploration of their surroundings and initiate warm and friendly relationships with others, including their brothers and sisters. Consequently, the adolescents who have developed a safe relationship with their mother will function more successfully; they will possess a higher level of self-respect and social competences that contribute to the efficiency of their social relations, not only with their parents, but in general (Lacković Grgin, 2006).

The results of this research also emphasize the role of other family processes in the explanation of sibling relationship quality, one of which is maternal management of sibling conflict. The produced results show that parental interventions in conflicts ought to be constructive (parents encourage children to talk, teach them to put themselves into the position of others) in order to have positive implications in a sibling relationship. Namely, the maternal constructive conflict management is an independent predictor of warmth in both mixed and same-gender dyads. Other studies in this field (e.g. Dunn & Munn, 1986) also demonstrate that constructive parental intervention in children conflict is in positive correlation with sibling care and positive aspects of this relationship. On the other hand, direct punishment of children conflict is in correlation with the development of aggressive behavior in children, as well as with the problem in sibling communication (Perlman & Ross, 1997). Non-constructive conflict management has been proven to have negative implications for sibling relationship quality in this research also (negative contribution to the explanation of warmth in same-gender dyads, or a positive contribution to the explanation of conflict in mixed and same-gender dyads), considering the fact that the role of this aspect is more evident in same-gender dyads. It seems that girls are truly more sensitive to punishment in conflict and prefer discussing the problem and expressing emotions. The obtained results mostly support the postulates of social learning theory (Bandura, 1977), which state that the children model their behavior in sibling relationship through observation and interaction with their parents. Therefore, the perception and observation of positive interactions of other members of the family, as well as parental conflict management, will improve sibling communication and mutual conflict solving – by observing parents and their mutual interactions, as well as their interaction with their own children, children learn how to behave in sibling relationship (Fabes & Eisenberg, 1992). In both mixed and same-gender dyads the results show that boys and girls have a better relationship with their older sibling. These findings are in accordance with the findings of some previous studies on the role of age difference in the perception of

sibling relationship quality (e.g. Furman & Buhrmester, 1985; 1992), which indicate that there is a higher probability that adolescents will form a relationship of mutual understanding and trust with their older siblings.

This research involves an insufficiently explored aspect of family interaction – sibling relationship. Even though siblings are an important subsystem of a family system and one of the most lasting relationships, until several decades ago their role had been neglected, not only in the theoretical contemplations of family relationships, but even more in the empirical study. The studies regarding this relationship are rare in our surroundings, so the results of this study represent a considerable contribution to the understanding of a sibling relationship with all its vital determinants. Among other conclusions, the results also demonstrate that maternal behavior can play an important role in the explanation of sibling relationship quality, which can lead to practical interventions for the purpose of guiding the parents towards behaviors and activities that will improve children relationships and contribute to a successful adaptation in the period of adolescence. It is also important to mention certain limitations of this research. The research was conducted on a convenient sample of elementary school children and as such limits to an extent the possibility of generalizing its results. The next methodological deficiency regards the very approach to the research of sibling relationship. This research focused on the individual and his or her perception of a sibling relationship, and not on the dyad analysis of this relationship, which would be preferable due to the fact that the data gathered in the research of close relationship, including sibling relationship, are in fact dyadic. Furthermore, due to the need of control of a number of relevant variables, this research was limited to the study of a relationship with sisters, and only one family process; the parental behavior of the mother, which prevents the generalization of the perception of the brother relationship and parental behavior of the father.

Conclusion

Some characteristics of family processes have a significant contribution to the explanation of sibling relationship quality during the period of early adolescence in mixed and same-gender dyads. Maternal acceptance and constructive conflict management are significant predictors of the perception of warmth in mixed dyads. Non-constructive maternal conflict management is a relevant predictor for the explanation of conflict in mixed dyads. Relevant predictors for the explanation of conflict in the same-gender dyads are non-constructive maternal conflict management and maternal control. Non-constructive maternal conflict management is a significant predictor of the perception of warmth. The role of certain structural factors has been confirmed in the explanation of sibling relationship quality, to be more specific, the role of relative age; there is a higher probability that adolescents of both genders will have a better relationship with their older sibling. The characteristics of family processes and relative age of the sibling explain about 22% variance of warmth and 20% variance of conflict in mixed dyads, and 24% variance of warmth and 34% variance of conflict in the same gender dyads.

References

- Bandura, A. (1977). *Social Learning Theory*. New York: General Learning Press.
- Brody, G. H. (2004). Siblings' direct and indirect contribution to child development. *Current in Psychological Science*, 13 (3), 124-126.
- Brody, G., Stoneman, Z., & Gauger, K. (1996). Parent child relationships, family problem solving behavior and sibling relationship quality: the moderating role of sibling temperaments. *Child Development*, 67, 1289-1300.
- Brody, G., Stoneman, Z., & MacKinnon, C. (1986). Contributions of maternal childrearing practices and play contexts to sibling interactions. *Journal of Applied Developmental Psychology*, 7, 225-236.
- Brody, G. H., Stoneman, Z., & McCoy, J. K. (1992). Associations of maternal and paternal direct and differential behavior with sibling relationships: contemporaneous and longitudinal analyses. *Child Development*, 63, 82-92.
- Bryant, B. K., & Crockenberg, S.B. (1980). Correlates and dimensions of prosocial behavior: A study of female siblings with their mothers. *Child Development*, 51, 529-544.
- Cicirelli, V. G. (1991). *Sibling relationships across the life span*. New York: Plenum Press.
- Dunn, J., & Munn, P. (1986). Sibling quarrels and maternal intervention: individual differences in understanding and aggression. *Journal of Child Psychology and Psychiatry*, 27, 583-595.
- Fabes, R. A., & Eisenberg, N. (1992). Young children's coping with interpersonal anger. *Child Development*, 63, 116-128.

- Feinberg, M. E., McHale, S. M., Crouter, A. C., & Cumsille, P. (2003). Sibling differentiation: Sibling in parent relationship trajectories in adolescence. *Child Development*, 74 (5), 1261-1274.
- Furman, W., & Buhrmester, D. (1985). Children's perceptions of the qualities of sibling relationships. *Child Development*, 56, 448-461.
- Furman, W., & Buhrmester, D. (1992). Age and sex differences in perceptions of networks of personal relationships. *Child Development*, 53, 103-115.
- Howe, N., Aquan-Asse, J., & Bukowski, W. M. (2001). Predicting sibling relations over time: Synchrony between maternal management styles and sibling relationship quality. *Merril-Palmer Quarterly*, 47, 121-141.
- Ijzendoorn, M. H., Moran, G., Belsky, J., Pederson, D., Bakermans-Kranenburg, M. J., & Kneppers, K. (2000). The similarity of siblings' attachment to their mother. *Child Development*, 71 (4), 1086 - 1098.
- Jurkin, M. (2013). *Uloga nekih obilježja obiteljskih procesa u objašnjenju kvalitete odnosa među braćom i sestrama* [The role of family processes in explaining the quality of relationship between brothers and sisters (unpublished dissertation)]. Sveučilište u Zagrebu, Zagreb.
- Jurkin, M., Nekić, M., & Delin, S. (2016). Percepcija kvalitete odnosa sa sestrom u mlađih adolescenata [Quality of sister relationship in youth adolescents]. *Acta Iadertina*, in press.
- Jurkin, M., & Ombla, J. (2016). Rodne razlike u percepciji odnosa sa sestrom i manifestaciji proaktivne i reaktivne agresivnosti kod mlađih adolescenata [Gender differences in the perception of relationships with sisters and the manifestation of proactive and reactive aggression in young adolescents]. *Ljetopis socijalnog rada*, 22 (3), 393-414.
- Keresteš, G. (2001). Roditeljsko ponašanje i obiteljska klima u obiteljima samohranih majki [Parental behavior and family climate in single parent families]. *Društvena istraživanja*, 10 (4/5), 903-925.
- Lacković Grgin, K. (2006). *Psihologija adolescencije [Psychology of adolescence]*. Jastrebarsko: Naklada Slap.
- Lacković Grgin, K., Opačić, G., & Žitnik, E. (1988). Neki aspekti self – koncepta mladih iz obitelji s ocem i bez njega. [Some aspects of self-concept of youth in families with and without father] *Radovi, Razdio FPSP*, 27, 115-126.
- Macuka I. (2004). Skala percepcije obiteljskih odnosa [Family relationship perception scale]. In: A. Proroković, K. Lacković Grgin, V. Čubela Adorić, & Z. Penezić (Eds.). *Zbirka psiholoških skala i upitnika II (str. 33-37)*. Sveučilište u Zadru.
- Macuka, I. (2007). Skalapercepcije roditeljskog ponašanja – procjena valjanosti [The parental behavior perception scale – validation assesment]. *Suvremena psihologija*, 10 (2) 179-199.
- McHale, S. M., Updegraff, K. A., Tucker, C. J., & Crouter, A. C. (2000). Step in or stay out? Parents' roles in adolescent sibling relationships. *Journal of Marriage and Family*, 62, 746-760.
- McHale, S. M., Updegraff, K. A., & Whitemam, S. D. (2012). Sibling relationships and influences on childhood and adolescence. *Journal of Marriage and Family*, 74 (5), 913-930.
- Milevsky, A., Schlechter, M. J., & Machlev, M. (2011). Effects of parenting style and involvement in sibling conflict on adolescent sibling relationships. *Journal of Social and Personal Relationships*, 28 (8), 1130-1148.
- Noller, P. (2005). Sibling relationship in adolescence: Learning and growing together. *Personal Relationships*, 12, 1-22.
- Oliva, A., & Arranz, E. (2005). Sibling relationship during adolescence. *European Journal of Developmental Psychology*, 2 (3), 253 - 270.
- Perlman, M., & Ross, H. (1997). The benefits of parent intervention in children's disputes: An examination of current changes in children's fighting styles. *Child Development*, 68, 690-700.
- Ripoll, K., Carrillo, S., & Castro, J. A. (2009). Relationship between siblings and psychological adjustment in adolescents: Effects of the quality of parent - child relationship. *Avances en Psicología Latinoamericana*, 27, 125-142.
- Rohner, R. P. (1999). Acceptance and rejection. In Levinson D., Ponzetti J., Jorgensen P. (Eds.), *Encyclopedia of Human Emotions*, vol. 1 (pp. 6-14). New York: Macmillian Reference.
- Rohner, R. P., Varan, A., & Koberstein, N. (2013). Relative contributions of elder siblings' versus parents' acceptance and behavioral control to the psychological adjustment of younger siblings in Turkey. *International Journal of Youth and Family Studies*, 2, 209-223.
- Scharf, M., Shulman, S. & Avigad Spitz, L. (2007). Sibling relationship in emerging adulthood and in adolescence. *Journal of Adolescent Research*, 20, 64-90.
- Stocker, C., Dunn, J., & Plomin, R. (1989). Sibling relationships: Links with child temperament, maternal behavior and family structure. *Child Development*, 60, 715-728.
- Teti, D. M., & Ablard, K. E. (1989). Security of attachment and infant-sibling relationships: a laboratory study. *Child Development*, 60 (6), 1519-1528.

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Community connectedness, LGB activism and aspects of LGB sexual identity

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Abstract

The aim of this study was to expand the knowledge of community connectedness and activism among lesbian, gay and bisexuals as well as examine the role of identity aspects in explaining community connectedness and activism. Questionnaires were used to assess community connectedness, activism and aspects of lesbian, gay and bisexual identity (LGBIS). In order to examine community connectedness and activism we used questions designed for this particular study, and for examining aspects of identity we used LGBIS scale (Mohr and Kendra 2011). Within the first problem, differences were explored among lesbian, gay and bisexuals in community connectedness, LGB activism and aspects of their identity. Within the second problem, the role of these identity aspects in community connectedness and activism was explored. The online survey was conducted on a sample of 411 participants aged 15-53 years (187 gays, 98 lesbians, 99 bisexual women and 27 bisexual men). Results showed that bisexuals scored lower levels of community connectedness and activism than homosexuals and that homosexuals scored higher levels on positive aspects of LGB identity such as identity superiority, identity affirmation, and identity centrality than bisexuals. Bisexuals scored higher levels of concealment motivation, identity uncertainty, and internalized homonegativity than homosexuals. Gays scored higher levels of concealment motivation, internalized homonegativity and difficult process than lesbians. Concealment motivation contributes to the explanation of community connectedness among lesbians, gays and bisexual women. In explaining activism, concealment motivation and difficult process contribute to explanation among the group of lesbians and among the group of gays, concealment motivation and identity affirmation contribute to the explanation of activism.

Keywords: community connectedness, activism, aspects of identity

The identity can be defined as a continuous experience of one's own "I" and one's personality (Petz et al, 2005). In order to create a complete experience of identity, it is important to reconcile two aspects; self-concept and self-awareness. Self-concept refers to one's knowledge about who he or she is, while self-awareness refers to one's thinking about himself or herself (Aronson, Wilson, and Akert, 2005).

Sexual identity development is defined as a process during which a person begins to realize who he or she finds sexually attractive, internalizes this knowledge into existing self-concept and accepts one's sexual minority identity (Mohr and Fassinger, 2000). Vivienne Cass, a pioneer researcher in homosexual identity development, proposed a model to which homosexual identity develops in six phases. Phase one is called the confusion of identity, during which a person becomes aware of their difference. This is followed by a phase in which a person thinks that he or she is gay, but still attempts to act as if he or she is not. The third phase is the tolerance of identity phase in which a person realizes that he or she is attracted to persons of the same sex. In the next phase, which is called identity acceptance, a person explores LGB community. During phase five, called the pride of identity, a person becomes an active member of the LGB community, and his or her contacts with heterosexual persons are minimal. The last phase is called identity synthesis in which a person fully accepts his or her LGB identity and integrates it in other aspects of his or her identity. (Cass, 1979).

With regard to sexual orientation, we can distinguish heterosexual, homosexual and bisexual identity. At the beginning of homosexual and bisexual identity research, researchers were directed to the development phases of identity, while today's research is mainly directed to positive and negative aspects of identity. Although lesbians, gays, bisexual males and bisexual females develop their identity individually, some researchers suppose that they all develop one superior identity as LGB community members who are stigmatized because of their same-sex preferences (Mohr and Kendra, 2011). However, differences between them exist. Firstly, most bisexuals reveal their orientation twice, once to heterosexuals and once to homosexuals. Also, bisexuals are challenged with double discrimination and negative views from heterosexuals and from homosexuals as well, which makes their identity knowledge process more difficult (Rust, 2002). Homosexuals have more developed and more visible community which is the source of social support, while bisexuals don't have as developed community so their possibility of receiving social support is limited (Rust, 2002). Homosexuals also think that bisexuals deny and cover up their "real" homosexual orientation (Sarno and Wright, 2013). Research has also shown that bisexuals are not accepted in the gay and lesbian community (Balsam and Mohr, 2007).

In recent times, researchers have proposed a multidimensional lesbian, gay and bisexual identity model and thereby rely on the insights of social psychology, keeping in mind important part of social stigma (Mohr and Fassinger, 2000; 2006; Mohr and Kendra, 2011). In the latest, revised version of their model, Mohr and Kendra (2011) speak of eight aspects of lesbian, gay and bisexual identity. These are (1) Acceptance Concerns (*defined as concerns of potential stigmatization because of one's sexual orientation*); (2) Concealment Motivation (*defined as a degree to which people hide their sexual orientation*); (3) Identity Uncertainty (*defined as uncertainty about their own sexual orientation*); (4) Difficult Process (*refers to a perception that one's development process and one's identity knowledge process was difficult*); (5) Internalized Homonegativity (*rejection of their LGB identity*); (6) Identity Superiority (*preference to LGB persons over heterosexual persons*); (7) Identity Centrality (*one's experience that his or her LGB identity is central inside his or her whole identity*) and (8) Identity Affirmation (*satisfaction with one's LGB identity*). This model explains identity aspects of homosexuals and bisexuals and therefore allows you to compare experiences and prominence of various aspects of identity among these groups.

Concealment motivation, uncertainty about their identity, internalized homonegativity and difficult process are the negative aspects of the LGB identity of LGB individuals. Identity centrality, Identity superiority and identity affirmation are positive aspects of the LGB identity of LGB people (Mohr and Kendra 2011).

Recent research that has focused on variations in the forming of identity suggests that the development of sexual identity is an ongoing process that develops and varies on an individual basis (Thompson and Morgan, 2008). However, the question remains in which part homosexuals and bisexuals follow the same path in their identity development and whether they meet the same level of stress. Mohr and Kendra presuppose that lesbians, gays, and bisexuals each develop separate identities, but it is likely that they all develop one superior identity as LGB community members who are all stigmatized because of their same sex preferences (Mohr and Kendra, 2011). Nevertheless, bisexuals are often referred to as a double minority due to the fact that homosexual community tends to discriminate against them. Research confirms this by showing that their identity forming path can be more complicated than that of their homosexual colleagues. Namely, some studies showed that bisexual males and females express a higher

degree of identity insecurity and internalized homonegativity than lesbians and gays (Sarno and Wright, 2013; Balsam and Mohr, 2007).

Researchers point out to the key role that social support plays in the mental health of LGB people. However, in Croatia, homosexuals and bisexuals usually grow up in an environment which stigmatizes all forms of non-heterosexual identity and behaviour, considering the referendum against gay marriage, which limited LGB rights. That kind of society particularly denies the rights of LGB individuals, such as the right to marry and raise a family. In this way, the social environment sends a message that LGB people are less valuable than heterosexuals.

Therefore, LGB community is expected to be the main source of social support. Indeed, some studies have shown that community connectedness is a factor of resistance in dealing with the social environment, which does not accept people of non-heterosexual orientation (Russel and Richards, 2003). Through involvement in the LGB community, LGB minority members are given the possibility of social support which can be defined as providing psychological and material resources, which seeks to enhance the individual's ability to cope with stress (Cohen, 2004).

Although previous research mainly dealt with social support essential for the development of identity among homosexuals and bisexuals, only a small number of studies focused on the distinction between community connectedness and activism. Community connectedness represents a big aspect of the LGB identity, especially for lesbians, and is referred to as cognitive-affective construct (Frost and Meyer, 2012). Activism, on the other hand, includes an active struggle for the rights of LGB people, but also the interest in the broader aspects of social problems (Riggle, Whitman, Olson, Rostosky, & Strong, 2008). This represents behavioural construct (Frost and Meyer, 2012). It is this research, we focus on the difference between community connectedness and activism and their relationship with aspects of identity. More specifically, the goal of this study was to explore homosexuals' and bisexuals' LGB community connectedness and their LGB activism. Also, we wanted to determine the role of certain aspects of sexual identity in explaining their community connectedness and activism. We hypothesised that bisexuals would achieve higher results on negative identity scales and lower results on positive identity scales than homosexuals, and also that bisexuals would achieve lower results on community connectedness and activism than gays and lesbians. We also hypothesised that gays would achieve higher levels of negative sexual identity than lesbians. Considering the prediction of activism and community connectedness, we hypothesised that positive aspects of identity would determine activism, wherein persons who showed higher levels of positive aspects of identity would show higher levels of activism and negative aspects of identity would determine community connectedness, wherein persons with higher levels of negative identity aspects would show higher levels of community connectedness.

Method

This study was part of a bigger research project which examined Minority stress model on LGB population as a part of Summer School of Psychology. In this study we examined eight aspects of identity, the level of community connectedness and activism among our participants.

The questionnaire was anonymous and ran on the Internet, using the snowball method. Participants were sent an online form to fill and were asked to send the same form to their friends through social networks. Link on the questionnaire was also forwarded to the NGO-s working with LGB population and website www.gay.hr. Filling the form took 30 minutes on average. This research was conducted in June and July of 2014.

Instruments

To examine the level of eight aspects of identity, the authors used Lesbian, Gay and Bisexual Identity Scale (LGBIS) (Mohr & Kendra, 2011). The scale is composed of a total of 27 items and measures eight factors. Five factors include negative aspects of identity: Acceptance Concerns (3), Concealment Motivation (3), Identity Uncertainty (4), Difficult Process (3), Internalized Homonegativity (3) and 3 factors refer to positive aspects of identity: Identity Centrality (5), Identity Superiority (3), Identity Affirmation (3).

Items are rated on a 6-point Likert-type scale ranging from 1 „Totally Disagree“, to 6 „Completely Agree“. Items 11 and 23 are inversely scored. The total score is a simple linear combination of average results in the specific factor and the higher score in one factor shows the higher expression of identity aspect. The theoretical range of scores goes from 27 to 162. Table 1 shows data on the number of items per factor and reliability index for specific factor on a Lesbian, Gay and Bisexual Identity Scale (Mohr &

Kendra, 2011) obtained in this study (*in Appendix*). The factor structure of this questionnaire was confirmed (Kamenov, Jelić and Huić, 2014).

Community connectedness was administered with four questions we took from Balsam & Mohr survey (2007) and modified with examples for this specific research: „How often do you read journals, magazines and websites focused on LGB population?“, “How often do you visit or participate in events or activities organized by LGB population (e. g. Zagreb Pride, Queer festival, etc.) ?“; “How often do you go out to places that gather LGB persons?“ Participants answered these three questions on a scale from 1 to 5 (1-never, 5 – almost always). The last question was “How many LGB people would you consider being your close friends, and not just acquaintances?“ to which participants answered on a 5 degree- scale (1-no one, 2-one, 3-two, 4 – three or four, 5 – five or more). The final result was calculated as a simple linear combination of all answers to these questions (total range 4-20) so that a higher score indicates a higher level of community connectedness.

Activism was examined using two questions: “Are you involved in any LGB organization’s activity?“ and “How important is it for you to fight for LGB rights?“ The final result was calculated as a sum of answers to these two questions. The total theoretic range was from 2 to 10, and a higher score in total indicated a higher level of activism. Questions which measure activism have been designed for this particular survey.

Participants

In this research participants were 410 LGB individuals. 96 of our participants identified themselves as lesbians (23.4 %), 188 of our participants identified themselves as gay men (45.9 %), 98 participants identified themselves as bisexual women (23.9 %) and 28 of them identified themselves as bisexual men (6.8 %). The age of participants ranged from 15 to 53 years. Participants were predominantly with higher education; 63.8 % of them had a level of education higher than high school and participants were predominantly from Zagreb.

Results

To answer the first problem referring to the differences between groups of lesbians, gays, bisexual men and bisexual women considering community connectedness, activism and aspects of identity we conducted a multivariate variance analysis 2x2 (sexual orientation x sex) for community connectedness, activism and all eight subscales of LGBIS-8. Collected data were processed in SPSS 20 programme. In Tables 2 to 9, we can also find M for all variables for each group (in the Appendix).

Results show that women, in general, are more connected with community than men ($M_w=16.40$, $SD_w=5.43$, $M_m=14.93$, $SD_m=4.95$, $F=17.963$, $p<.001$) and that homosexuals are more connected with community than bisexuals ($M_h=15.98$, $SD_h=5.16$, $M_b=14.84$, $SD_b=5.32$, $F=14.985$, $p<.001$), while the interaction of sex and sexual orientation is not statistically significant.

When talking about activism, the results of this research show that women show higher levels of activism than men ($M_w= 9.22$, $SD_w=7.33$, $M_m= 7.32$, $SD_m= 5.56$: $F=9.216$, $p<.01$) and that homosexuals show higher levels of activism than bisexuals ($M_h= 15.98$, $SD_h= 5.16$, $M_b= 14.84$, $SD_b=5.32$, $F=4.862$, $p<.05$). These results confirm our third hypothesis that bisexuals will show lower levels of community connectedness than gays and lesbians.

Considering positive and negative aspects of identity, generally, men show a higher level of some negative aspects of identity subscales than women and bisexuals show higher levels of negative identity subscales than homosexuals. Particularly, on subscale Acceptance concern there is no significant difference between the groups. However, on subscale Concealment motivation, men report a higher level of hiding their sexual identity than women ($M_m=3.88$, $SD_m= 1.33$, $M_w=3.73$, $SD_w= 1.34$, $F=8.339$, $p<.05$). In result interpretation, it should also be taken into account that the values obtained for women and men are just slightly above average. Bisexuals also report a higher level of concealment motivation than homosexuals ($M_b=4.04$, $SD_b=1.31$, $M_h=3.71$, $SD_h=1.33$, $F=12.090$, $p<.05$). Results show that bisexual men show higher levels of Identity uncertainty than gays ($M_{bm}= 3.03$, $SD_{bm}= 1.61$, $M_g=1.36$, $SD_g=0.77$), and bisexual women show higher levels on that same scale than lesbians ($M_{bw}=2.44$, $SD_{bw}=1.21$, $M_l=1.57$, $SD_l=0.96$, $F=9.843$, $p<.01$). Considering Difficult process, men report more difficult process than women ($M_m=3.72$, $SD_m=1.49$, $M_w=3.29$, $SD_w=1.55$, $F=11.431$, $p<.001$) and bisexual men show higher levels of difficult process than gays ($M_{bm}=4.21$, $SD_{bm}=1.49$, $M_g=3.65$, $SD_g=1.47$), while lesbians report higher levels of difficult process than bisexual women ($M_l=3.60$, $SD_l=1.59$, $M_{bw}= 2.98$, $SD_{bw}= 1.44$, $F= 9.926$, $p<.01$). Men also show a higher level of internalized homonegativity than women ($M_m= 2.11$, $SD_m=1.35$, $M_w=1.79$, $SD_w=1.12$, $F=18.953$, $p=.001$) and bisexuals show a higher level than gays on the same scale

($M_b=2.13$, $SD_b=1.35$, $M_h=1.88$, $SD_h=1.20$, $F=15.002$, $p<.001$) wherein bisexual men report a higher level of internalized homonegativity than gays, and bisexual women show a higher level of internalized homonegativity than lesbians ($F=5.082$, $p<.05$).

When speaking about positive aspects of identity, Identity superiority is more expressed in homosexuals than in bisexuals ($M_h=1.65$, $SD_h=0.92$, $M_b=1.41$, $SD_b=0.68$, $F=4.258$, $p<.05$) as well as Identity centrality ($M_h=3.26$, $SD_h=1.09$, $M_b=2.77$, $SD_b=0.98$, $F=16.056$, $p<.05$). On the subscale Identity affirmation, women are more satisfied than men ($M_w=4.38$, $SD_w=1.28$, $M_m=4.01$, $SD_m=1.42$, $F=22.843$, $p<.001$) and on the same subscale homosexuals show higher levels than bisexuals ($M_h=4.32$, $SD_h=1.32$, $M_b=3.88$, $SD_b=1.41$, $F=25.200$, $p<.001$). From the subscales measuring positive aspects of identity, it is clear that bisexuals show lower levels of positive identity aspects than homosexuals, as we hypothesized.

Furthermore, in this research, we wanted to examine the role of these identity aspects in community connectedness and activism so we conducted a correlation and multiple regression analysis. Because of the assessment stability, only lesbian, gay and bisexual women have been taken for further processing. Given the number of predictors in the multiple regression, bisexual men are excluded from further processing because of the insufficient sample. Correlation of predictors with both criteria is presented in Table 10 (*in Appendix*). We can see that both criteria correlate with predictors approximately the same and mutually predictors correlate moderately high.

Table 11 shows a correlation between predictors which indicates how negative aspects of identity mutually correlate as well as a correlation of positive aspects of identity which mutually correlate significantly, but not too high so we decided to consider them all in regression analysis (*see page 22 in Appendix*).

Tables 12 and 13 show multiple regression analysis results for 'Community Connectedness' criteria and 'Activism' criteria and predictors: Acceptance Concerns, Concealment Motivation, Identity Uncertainty, Internalized Homonegativity, Difficult Process, Identity Superiority, Identity Affirmation and Identity Centrality (*Appendix*).

From Tables 12 and 13 we can see how predictors Concealment Motivation and Identity Affirmation explain 24.7 % variance of community connectedness criteria in the group of lesbians. Higher Concealment Motivation predicts a lower level of community connectedness while higher Identity Affirmation predicts a higher level of community connectedness.

In the group of gays, positive and negative aspects of identity together explain 29.7 % variance of Community Connectedness criteria. In the group of gays, more predictors are significant and those are Concealment motivation, Identity Uncertainty, difficult process and Identity Affirmation. A higher level of Concealment Motivation, Identity Uncertainty and Difficult process predicts a lower level of community connectedness while a higher level of Identity Affirmation predicts a higher level of community connectedness.

In the group of bisexual women, predictors explain only 13.2% variance of criteria. It is interesting that a higher level of Concealment motivation predicts a higher level of community connectedness. Also, a higher level of identity centrality predicts a higher level of community connectedness.

In the group of lesbians, a higher level of concealment motivation and difficult process predicts a lower level of activism, while in the group of gays a higher level of concealment motivation predicts a lower level of activism and a higher level of identity affirmation predicts a higher level of activism.

Discussion

The aim of this research was to expand the knowledge of community connectedness and activism among lesbian, gay and bisexuals and examine the role of identity aspects in explaining community connectedness and LGB activism.

In line with the expectations, results showed that bisexuals are more uncertain about their own sexual orientation and more prone to rejecting it than homosexuals. On positive identity subscales, bisexuals report lower levels of all positive aspects of identity than homosexuals, which is in line with previous studies. These results are expected considering previous research, which shows that bisexuals do not find support within LGBTIQ communities. Bisexual men within these communities are not often accepted because other members of minority community consider them to be actually gay but deny it, while bisexual women are not accepted because their relationships with men are considered as a reflection of their overly patriarchal attitudes (Brewster & Moradi, 2010). Also, bisexuals achieved a higher level on the concealment motivation subscale, which can be explained by double discrimination of bisexuals, who are discriminated by both homosexuals and heterosexuals, shown in previous studies

(Israel & Mohr, 2007, in Costa, Pereira, & Leal, 2013). Mulick & Wright (2002) (in Sarno and Wright, 2013) showed that 53% of heterosexuals and 87% homosexuals, *regardless of gender*, report of a mild biphobia.

Also, we examined if gays achieve higher levels of negative identity aspect than lesbians. Results show that gays have shown a higher level of internalized homonegativity than lesbians. Also, results of this study indicate that men have shown higher levels of concealment motivation than women and such findings should not surprise us, if we take into consideration that in the Republic of Croatia female sexual minorities are more accepted than male sexual minorities (Parmač, 2005). Brown (2002) showed that it is more comfortable for women to identify as bisexuals than men, which is perhaps formed by society's view on the same-sex attractions, which disrupts masculinity and social status associated with it. Furthermore, female sexuality is considered more fluid so that female non-heterosexual orientation is more acceptable than male-to-male attraction (in Brewster and Moradi, 2010). Baumeister (2000) also states that men's sexual attitudes and behaviors are more stable and consistent over time, and are not context-dependent, while sexual fantasies and behavior of women are more influenced by socio-cultural factors. Accordingly, female sexuality, as well as sexual orientation is more fluid than sexual orientation of men (Baumeister, 2000).

We hypothesized that bisexuals were involved less in community and activism than lesbians and gays and results confirm our hypothesis. Balsam & Mohr (2007) obtained the results that bisexuals are less involved in community than homosexuals, which is explained by the fact that homosexuals reject bisexuals because bisexuality is considered unstable and not fully determined sexual orientation.

We examined the role of identity aspects in explaining community connectedness and LGB activism. Community connectedness represents the extent to which lesbian, gay, bisexual women and bisexual men socialize with other LGB people within the LGB community and the extent to which they gather in places that support non-normative sexual orientation, while community connectedness is primarily seen as a source of social support. We assume that LGB activism includes the fight for certain rights of LGB community and is, therefore, to be expected that people who have pronounced positive aspects of identity to be more focused on activism and activities aimed at a direct fight for certain social changes.

It is interesting to see how concealment motivation as a negative identity aspect is a significant factor in predicting community connectedness in the groups of lesbians, gays and bisexual women. It was expectable that persons concealing their identity will be less involved in community and less in contact with LGB people. In the group of gays, identity uncertainty and difficult process are also a significant factor which predicts the level of community connectedness. Identity uncertainty predicts a lower level of community connectedness, while difficult process predicts a higher level of community connectedness. A possible explanation can be that gays who feel uncertain about their sexual identity are not ready to be part of an LGB community. Gays who had a difficult process of developing their sexual identity show higher levels of community connectedness, which confirms the hypothesis of LGB community as a source of social support during sexual identity development (Brewster & Moradi, 2010). While explaining these results, it is important to notice that more predictors are significant in the group of gays than in the groups of lesbians and bisexual women and the reason can be that most of the previous research was more focused on gays than on lesbians and bisexuals so that these predictors are more suitable to explain the behaviour of gays.

Considering positive aspects of identity, identity affirmation predicts community connectedness in a positive direction both in the group of gays and lesbians, while identity centrality predicts community connectedness in the group of bisexual women, also in positive direction.

Explaining the connection between identity aspects and community connectedness, we encounter the first problem. There is no validated instrument that measures community connectedness. Different surveys measure community connectedness in a different way, usually constructed only for that specific survey. In this study, due to a small sample of bisexual men which can reduce the stability of estimates and results, we decided not to engage this group in further statistical analysis.

Furthermore, we need to consider the very low percentage of explained variance in all three groups, which points to the conclusion that some other factors, rather than identity aspects, play a role in predicting community connectedness. Also, in explaining these results, one should consider the possibility that community connectedness in Croatia is somewhat different than in Western countries where previous research has been conducted.

Results showed that concealment motivation was significant in predicting the level of activism in the groups of gay and lesbians in a negative way. It is expected that individuals who hide their identity are not ready to get actively involved in the fight for LGB rights. In contrast to community connectedness, in the group of bisexual women identity aspects do not predict the level of activism and that leads us to the conclusion that the relationship between bisexuality and activism is more complex than we at first

hypothesized. Bisexuals in LGB communities don't encounter social support as a result of lesbian's and gay's negative attitudes towards bisexual men and women (Brewster & Moradi, 2010). Also, inside LGB communities, homosexual's problems are a priority over specific bisexuals problems (Bubalo, 2014), therefore, it is not surprising that there is less involvement in the community, as well as lower levels of the active struggle for the rights of sexual minorities by bisexuals.

Identity affirmation in the group of gays positively predicts the level of activism. Gays who are more satisfied with their identity, show higher levels of activist behaviour and this can be explained by their sexual identity development being in later developmental phases. In the later phases of sexual identity development, individuals are more satisfied with their sexual identity and more ready to fight for the rights of LGB population.

Finally, it is important to notice the two-way relationship between identity aspects and community connectedness and activism and the fact that community can also influence positive identity aspects within LGB people, still developing their sexual identity. Considering the specific sample in our survey of young people still developing their sexual identity, who at that time lived in Zagreb with a developed LGB community, it is possible that they find support in the LGB community, which positively affects their sexual identity development.

Contributions and Limitations

In the analysis involving groups of gays, lesbians, bisexual women and bisexual men, this research, contrary to previous studies, allows us a direct comparison of these four groups.

Discussing the results of this research, certain methodological limitations should be taken into consideration. The survey was conducted online, and participants were mostly young people living in Zagreb, and this limits us to conclude about older people living in smaller cities and rural areas who do not have opportunities to involve in the community and activist behaviour. In future studies, these groups should be taken into consideration, especially older people not living in Zagreb who developed their sexual identity in different surroundings.

It is important to highlight that over 93% of our participants were outed and from that we can conclude that they are in the last phases of their sexual identity development, which limits our conclusions about LGB people who are not outed or just began their sexual identity development.

In this study, we seek to improve the operationalization of community connectedness which is tested in different ways, which sometimes results in contradictory findings. Because of that, we caught two related but distinct theoretical constructs - community connectedness and activism. However, it should be noted that there are shortcomings in our operationalization of these two constructs as well. In the questionnaire, both constructs are affected with only a few questions and we cannot be certain to what extent these questions really appropriately excel community connectedness as we assumed. Furthermore, community connectedness and activism moderately correlate, which indicates a need for further clarifying the relationship between community connectedness and activism as different constructs.

Conclusion

The aim of this study was to expand the knowledge of community connectedness and activism among lesbians, gays and bisexuals and to examine the role of identity aspects in explaining community connectedness and LGB activism. Results showed that bisexuals report lower levels of positive identity aspects and that gays show higher level of internalized homonegativity and difficult process than lesbians and bisexuals. Bisexuals also show higher levels of concealment motivation, identity uncertainty, internalized homonegativity and difficult process. Bisexuals show lower levels of community connectedness and activism than homosexuals.

In predicting community connectedness, in the group of lesbians concealment motivation and identity affirmation are significant predictors, while in the group of gays, concealment motivation, identity uncertainty, difficult process and identity affirmation are significant predictors for these criteria. In the group of bisexual women, for predicting community connectedness, significant predictors are concealment motivation and identity centrality. For the criteria of activism, in the group of lesbians concealment motivation and difficult process are significant predictors, while in the group of gays, concealment motivation and identity affirmation are significant predictors for these criteria. Also, for these criteria, in the group of bisexual women, there are no significant predictors in this study.

References

- Aronson, E., Wilson, T. D., & Akert, R. M. (2005). *Social Psychology*. Zagreb: Mate.
- Balsam, K. F., & Mohr, J. J. (2007). Adaptation to sexual orientation stigma: A comparison of bisexual and lesbian/gay adults. *Journal of Counseling Psychology, 54*(3), 306-319.
- Baumeister, R. F. (2000). Gender differences in erotic plasticity: the female sex drive as socially flexible and responsive. *Psychological bulletin, 126*(3), 347.
- Brewster, M. E., & Moradi, B. (2010). Personal, relational and community aspects of bisexual identity in emerging, early and middle adult cohorts. *Journal of Bisexuality, 10*(4), 404-428.
- Cass, V. C. (1979). Homosexuality identity formation: A theoretical model. *Journal of homosexuality, 4*(3), 219-235.
- Cohen, S. (2004). Social relationships and health. *The American psychologist, 59*(8), 676-684.
- Costa, P. A., Pereira, H., & Leal, I. (2013). Internalized homonegativity, disclosure, and acceptance of sexual orientation in a sample of Portuguese gay and bisexual men, and lesbian and bisexual women. *Journal of Bisexuality, 13*(2), 229-244.
- Frost, D. M., & Meyer, I. H. (2009). Internalized homophobia and relationship quality among lesbians, gay men, and bisexuals. *Journal of counseling psychology, 56*(1), 97-109.
- Kamenov, Ž., Jelić, M., Huić, A. (2016). Minority stress of LGB persons. XXIV. Psychology Summer School Report, Komiža.
- Mohr, J., & Fassinger, R. (2000). Measuring dimensions of lesbian and gay male experience. *Measurement and Evaluation in Counseling and Development, 33*(2), 66-90.
- Mohr, J. J., & Kendra, M. S. (2011). Revision and extension of a multidimensional measure of sexual minority identity: the Lesbian, Gay, and Bisexual Identity Scale. *Journal of Counseling Psychology, 58*(2), 234-245.
- Parmač, M. (2005). Attitudes toward homosexuals Zagreb: Faculty of Humanities and Social Sciences, Department of Psychology. Unpublished thesis. Zagreb: Department of Psychology, Faculty of Humanities and Social Sciences, University of Zagreb.
- Petz, B. (2005). *Dictionary of Psychology*. Jastrebarsko: Naklada Slap.
- Riggle, E. D., Whitman, J. S., Olson, A., Rostosky, S. S., & Strong, S. (2008). The positive aspects of being a lesbian or gay man. *Professional Psychology: Research and Practice, 39*(2), 210-217.
- Rust, P. C. R. (2002). Bisexuality: The state of the union. *Annual Review of Sex Research, 13*(1), 180-240.
- Sarno, E., & Wright, A. J. (2013). Homonegative microaggressions and identity in bisexual men and women. *Journal of Bisexuality, 13*(1), 63-81.
- Thompson, E. M., & Morgan, E. M. (2008). "Mostly straight" young women: variations in sexual behavior and identity development. *Developmental psychology, 44*(1), 15-21.

Appendix

Table 1

Metrical characteristics display of the Lesbian, Gay and Bisexual Identity Scale (LGBIS) (Mohr & Kendra, 2011) (N=410).

Factor	Number of Items	Cronbach α	M	SD	Item example
Acceptance Concerns	3	.79	3.31	1.45	<i>I often wonder whether others judge me for my sexual orientation.</i>
Concealment Motivation	3	.77	3.81	1.33	<i>I prefer to keep my same-sex romantic relationships rather private.</i>
Identity Uncertainty	4	.84	1.78	1.14	<i>I keep changing my mind about my sexual orientation.</i>
Difficult Process	3	.81	3.51	1.53	<i>Admitting to myself that I am an LGB person was a very painful process.</i>
Internalized Homonegativity	3	.82	1.96	1.25	<i>I wish I were heterosexual.</i>
Identity Centrality	5	.74	3.11	1.08	<i>My sexual orientation is the central part of my identity.</i>
Identity Affirmation	3	.83	4.19	1.36	<i>I am proud to be an LGB person.</i>
Identity Superiority	3	.62	1.57	0.86	<i>I look down on heterosexuals.</i>

Table 2

Descriptive statistics for the Acceptance Concerns subscale

	sexual orientation	gender	M	SD	N
Acceptance Concerns	homosexuals	male	3,29	1,49	186
		female	3,34	1,42	98
		all	3,31	1,46	284
	bisexuals	male	3,75	1,47	27
		female	3,20	1,39	99
		all	3,32	1,42	126
	all	male	3,35	1,49	213
		female	3,27	1,4	197
		all	3,31	1,45	410

Table 3

Descriptive statistics for the Concealment Motivation subscale

	sexual orientation	gender	M	SD	N
Concealment Motivation	homosexuals	male	3,77	1,31	186
		female	3,60	1,38	98
		all	3,71	1,33	284
	bisexuals	male	4,65	1,21	27
		female	3,87	1,3	99
		all	4,04	1,31	126
	all	male	3,88	1,33	213
		female	3,73	1,34	197
		all	3,81	1,33	410

Table 4
Descriptive statistics display for the Identity Uncertainty subscale

	sexual orientation	gender	M	SD	N
Identity Uncertainty	homosexuals	male	1,36	0,77	186
		female	1,57	0,96	98
		all	1,43	0,85	284
	bisexuals	male	3,03	1,61	27
		female	2,44	1,21	99
		all	2,57	1,32	126
	all	male	1,57	1,07	213
		female	2,01	1,18	197
		all	1,78	1,14	410

Table 5
Descriptive statistics display for the Internalized Homonegativity subscale

	sexual orientation	gender	M	SD	N
Internalized Homonegativity	homosexuals	male	1,99	1,23	186
		female	1,67	1,08	98
		all	1,88	1,2	284
	bisexuals	male	2,93	1,75	27
		female	1,92	1,14	99
		all	2,13	1,35	126
	all	male	2,11	1,35	213
		female	1,79	1,12	197
		all	1,96	1,25	410

Table 6
Descriptive statistics display for the Difficult Process subscale

	sexual orientation	gender	M	SD	N
Difficult Process	homosexuals	male	3,65	1,47	186
		female	3,60	1,59	98
		all	3,63	1,51	284
	bisexuals	male	4,21	1,49	27
		female	2,98	1,44	99
		all	3,25	1,53	126
	all	male	3,72	1,49	213
		female	3,29	1,55	197
		all	3,51	1,53	410

Table 7

Descriptive statistics display for the Identity Superiority subscale

	sexual orientation	gender	M	SD	N
Identity Superiority	homosexuals	male	1,71	0,98	186
		female	1,53	0,77	98
		all	1,65	0,92	284
	bisexuals	male	1,38	0,65	27
		female	1,42	0,69	99
		all	1,41	0,68	126
	all	male	1,67	0,95	213
		female	1,47	0,74	197
		all	157	0,86	410

Table 8

Descriptive statistics display for the Identity Affirmation subscale

	sexual orientation	gender	M	SD	N
Identity Affirmation	homosexuals	male	4,15	1,33	186
		female	4,64	1,26	98
		all	4,32	1,32	284
	bisexuals	male	3,02	1,65	27
		female	4,11	1,25	99
		all	3,88	1,41	126
	all	male	4,01	1,42	213
		female	4,38	1,28	197
		all	4,19	1,36	410

Table 9

Descriptive statistics display for the Identity Centrality subscale

	sexual orientation	gender	M	SD	N
Identity Centrality	homosexuals	male	3,23	1,12	186
		female	3,21	1,03	98
		all	3,26	1,09	284
	bisexuals	male	2,63	0,92	27
		female	2,81	0,99	99
		all	2,77	0,98	126
	all	male	3,2	1,12	213
		female	3,01	1,03	197
		all	3,11	1,08	410

Table 10

Correlations of identity aspects, community connectedness and activism on the whole sample

Identity Aspects	Community	
	connectedness	Activism
Acceptance Concerns	-.104*	-.006
Concealment Motivation	-.441**	-.338*
Identity Uncertainty	-.268**	-.127*
Internalized Homonegativity	-.322**	-.201**
Difficult Process	-.106*	-.025
Identity Superiority	-.018	-.030
Identity Affirmation	.369**	.281**
Identity Centrality	.237**	.143**
Community connectedness	1	.596**

p<0.01**p<0.05*

Table 11

Correlation between subscales of LGBIS

Variables	1	2	3	4	5	6	7	8
1. Acceptance Concerns	1	,344**	,275**	,381**	,432**	,080	-,131**	,206**
2. Concealment Motivation		1	,337**	,371**	,335**	-,012	-,261**	-,168**
3. Identity Uncertainty			1	,443**	,235**	,050	-,233**	-,135**
4. Internalized homonegativity				1	,368**	,062	-,497**	-,011
5. Difficult Process					1	-,053	-,191**	,092
6. Identity Superiority						1	,124*	,340**
7. Identity Affirmation							1	,310**
8. Identity Centrality								1

p<0.01** p<0.05*

Table 12

The percentage of explained variance, beta coefficients and their significance to the criterion of community connectedness in a lesbian (N = 92), gay (N = 187) and bisexual women (N = 97) sample

Predictors	Lesbians		Gays		Bisexual women	
	Beta	p	Beta	p	Beta	p
Acceptance Concerns	0.015	.891	0.058	.457	0.060	.591
Concealment Motivation	-0.341	.001	-0.341	.001	-0.300	.008
Identity Uncertainty	-0.178	.091	-0.196	.011	0.100	.392
Internalized Homonegativity	-0.031	.782	-0.121	.169	-0.038	.765
Difficult Process	-0.146	.226	0.165	.021	-0.043	.722
Identity Superiority	-0.043	.647	-0.041	.558	-0.136	.228
Identity Affirmation	0.291	.009	0.163	.030	0.107	.339
Identity Centrality	0.088	.397	0.099	.182	0.243	.047
	R ² =.247	p=.001	R ² =.297	p=.001	R ² =.132	p=.008

Table 13

The percentage of explained variance, beta coefficients and their significance to the criterion of activism in a lesbians (N = 92), gay (N = 187) and bisexual women (N = 97) sample

Predictors	Lesbians		Gays		Bisexual women	
	<i>Beta</i>	<i>p</i>	<i>Beta</i>	<i>p</i>	<i>Beta</i>	<i>p</i>
Acceptance Concerns	0.076	.468	0.051	.563	0.225	.056
Concealment Motivation	-0.507	.001	-0.284	.001	-0.183	.113
Identity Uncertainty	-0.061	.549	-0.140	.103	0.121	.319
Internalized Homonegativity	-0.133	.219	0.064	.514	-0.016	.902
Difficult Process	0.232	.046	0.127	.110	-0.019	.876
Identity Superiority	0.094	.309	-0.055	.483	-0.192	.102
Identity Affirmation	0.175	.110	0.223	.008	0.151	.197
Identity Centrality	-0.022	.831	-0.011	.894	0.102	.419
	$R^2=.319$	$p=.001$	$R^2=.157$	$p=.001$	$R^2=.146$	$p=.074$

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Implicit attitudes towards the adoptive parents and their children: What does it matter how we become a family?

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The contribution of life stress, trait anxiety, anxiety sensitivity and perimenopausal complaints to depressive symptoms in middle-aged women

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Psychological correlates of resistance to mandatory child vaccination

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Social interactions as self-esteem predictors in young boys and girls of two countries

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Community connectedness, LGB activism and aspects of LGB sexual identity

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