

Certain aspects of mental health and digital activity in youth during the COVID-19 pandemic

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Abstract

Research has shown that psychological distress and symptoms of poor mental health in youth have increased during the COVID-19 pandemic. Regression in socio-emotional development due to reduced interaction with peers, imposed social isolation, and lack of coping strategies has affected youth's mental health status, and presents risk for loneliness, depression, anxiety, stress, PTSD symptoms and avoidant behavior. This research aimed to explore certain aspects of youth's mental health status and digital activity during the pandemic, and to determine whether they correlate. The survey was conducted online during the second wave of the COVID-19 pandemic in Croatia, on 116 participants with an average age of 21 years. The questionnaire consisted of Positive and Negative Affect Schedule (PANAS), Impact of Event Scale-Revised (IES-R), Depression, Anxiety and Stress Scale (DASS-21), UCLA Loneliness Scale and Digital Activity Score scale. Depression, anxiety and stress levels are within non-clinical levels. Main findings include low positive correlation of digital activity with anxiety, intrusion and hyperarousal. Loneliness is moderately related to depression and negative affect. Both positive and negative affect are moderately related to depression. All mental health and PTSD symptomatology dimensions show positive moderate to high intercorrelations. Results of this study can be used in educating Croatian youth on possible effects of digital activity on mental health.

Keywords: COVID-19; digital activity; mental health; youth

Introduction

The mental health of youth

Mental health is our most valuable resource and the basis for positive youth development. Adolescents are most likely to experience depression

and anxiety. According to UNICEF's survey (2019), one-third of adolescents experienced anxiety, and 15% experienced depression symptoms. Early mental health issues tend to predict long-term impairments if left untreated (Kim-Cohen et al., 2003). Contributing factors for mental health issues include early trauma, family dynamics and non-nor-

mative life events (Lindert et al., 2020), such as the COVID-19 crisis.

Mental health during the COVID-19 pandemic

The outbreak of the coronavirus disease in 2020, along with national measures for disease prevention, significantly changed people's everyday habits and lifestyles. These changes included switching from attending schools to online classes, significant decrease and limitation in sports and social activities, unavailability of health systems and strong emotional reactions. Around that time, Croatia's capital Zagreb was struck by a devastating earthquake, jeopardizing the chances for psychological adjustment.

The prevalence of depression and anxiety has doubled during COVID-19, especially for older adolescents and girls (Racine et al., 2021), and Cohen et al. (2021) state that healthy adolescents were also affected. Disrupted personal freedoms, conflicting information, financial insecurities and loss of structure were significant stressors. Pfefferbaum and North (2020) suggest that in "conventional" natural disasters, post-traumatic stress disorder (PTSD) is expected. Levels of stress and loneliness worsened during the pandemic (Elmer et al., 2020), even forging the concept of lockdown loneliness (Shah et al., 2020).

Digital activity refers to any activity that occurs in a digital environment, such as using the Internet, social media or digital devices (Rothrock, 2018). The impact of digital activity on youth's mental health is ambiguous. While there are positive trends, such as using the Internet for health promotion and mental health interventions (De Witte et al., 2021), increased digital activity is also associated with depression (Kopilaš, 2022). Marciano et al. (2022) concluded that positive digital media effects include self-disclosure, friendship, entertainment and relief, while media addiction, social comparison, fear of missing out and violence are potential threats.

This research aimed to explore certain aspects of mental health status, and to determine the

levels and relations between depression, stress, anxiety, loneliness, mood (affect), event specific distress and digital activity during the pandemic in a sample of Croatian youth. Prior to COVID-19, technology overuse was mainly discussed in terms of mental and cognitive deterioration in youth, resulting in isolation, detachment, addiction, lowered social skills, ADHD and depression (Scott et al., 2017). Even the term digital self-harm was coined (Englander, 2012) to define online activities that lead to, support or exacerbate intentional violation of personal well-being. During the pandemic, many authors stated that technology could be a source of support for young people's mental health (Pretorius & Coyle, 2021). Most recent findings suggest that technology improves general mental and emotional well-being in students (Li, 2023). Hence, we expected to find a positive correlation between digital activity and positive affect, and more symptoms of impaired mental health (including loneliness) in participants with lower digital activity.

Method

Participants and Procedure

A total of 116 participants, with an average age of 21 years ($SD = 2.9$; range: 18-29), were recruited using the snowball method. In our sample, 37.1% were men, and 62.9% were women. The majority graduated from high school two years ago (60.3%). The survey was conducted online during the second wave of the COVID-19 pandemic in Croatia.

Instruments

The Positive and Negative Affect Schedule (PANAS; Watson et al., 1988) scale measures mood with 20 self-reported items describing positive (e. g., *excited*) and negative affect (e. g., *ashamed*). Participants respond on a 5-point scale, ranging from 1 (*not at all*) to 5 (*extremely*). The total score for each subscale is calculated as a sum of assessments on the corresponding items, where a higher score in-

icates a stronger affect. PANAS is a highly reliable instrument, with both subscales ranging from .80 to .90. In our research, Cronbach α was .84 for positive, and .88 for negative affect.

The Impact of Event Scale-Revised (IES-R; Weiss & Marmar, 1996) assesses the recent presence of PTSD symptomatology. It consists of 22 items divided into three subscales: Intrusion, Avoidance and Hyperarousal. Participants are asked to respond on a 5-point scale (0 - *not at all*; 4 - *extremely*). The total score for individual subscales is an average response value on the corresponding items, with higher scores indicating higher stress levels. The values of Cronbach alpha (.78- .89) for the current sample indicate satisfactory reliability for all subscales (.85- .90 in the original validity study).

The DASS-21 (Lovibond & Lovibond, 1995) is a self-report measure for clinically significant symptoms of depression, anxiety and stress that is used by clinicians and scientists. Each subscale consists of 7 items. Participants rate experienced symptoms over the past week on a 4-point scale (0 - *did not apply to me at all*; 3 - *applied to me very much or most of the time*), and scores for each scale are the sum of item scores. Results outline health status and assess symptom severance, but are not used for diagnosis. In this study, all subscales have proven to have high reliability (depression $\alpha = .90$; anxiety $\alpha = .82$; stress $\alpha = .88$).

The UCLA Loneliness Scale (Russell et al., 1978) consists of 20 items for assessing subjective loneliness. Participants estimate how much they agree with items using a scale from 1 (*I never feel this way*) to 4 (*I often feel this way*). The overall score is formed as a linear combination of estimates on each item, with a higher score indicating greater loneliness. It is a reliable and well-used instrument, with a Cronbach α varying from .90 to .94 (in this study $\alpha = .93$).

The Digital Activity Score Scale (Kopilaš, 2022) is a 10-item questionnaire for assessing daily digital activities (*e.g., Use of cell phone; Scroll through social media*), rated on a response scale ranging from 1 (*very slightly or not at all*) to 5 (*extremely*). The total score is calculated by summing up

responses on all items, and higher scores indicate increased digital activity. The scale shows good reliability, ranging from .80 (in this study) to .85 (Kopilaš et al., 2021).

Results

Descriptive data

The data were analyzed using SPSS software, version 26. Overall descriptive data indicates that depression, anxiety and stress are within the normal range. Regarding stressful life events, the highest score was obtained on the Avoidance scale, and the average result on positive affect was slightly higher than on the negative affect measure. The mean score on the UCLA scale indicates a moderate level of loneliness, the same as digital activity (Table 1). According to self-reported scores, 47.4% of participants estimate that they used mobile phones more often during lockdown, in comparison to the period before the COVID-19 pandemic, while 35.3% spent more time on their computers. Regarding social networks, 45.7% of them accessed Instagram and Facebook more frequently. That is in accordance with the data from comparable studies that show an overall increase of digital activity during the pandemic (Sorkin et al., 2021).

Correlations

Since we have not met all the criteria for parametric statistics, Spearman's correlation was used and presented in Table 2. As expected, participants with higher levels of loneliness are more depressed, anxious and stressed, experience a more negative affect, and are more prone to hyperarousal, although these correlations were low to moderately high. Greater engagement in digital activity is associated with higher levels of depression, anxiety, stress, intrusion and hyperarousal. Although digital activity is significantly related to most variables, the values of Spearman's coefficient were low.

Table 1. Descriptive statistics for all studied variables ($N=116$)

	Scale	Min.	Max.	$M (SD)$	$C(IQR)$	Kolmogorov-Smirnov test
DASS	Depression	0	40	12.03 (11.16)	8 (14)	<.001
	Anxiety	0	34	7.6 (8.2)	4 (10)	<.001
	Stress	0	40	12.59 (9.97)	10 (14)	<.001
IES	Avoidance	1.13	4.13	2.34 (0.73)	2.25 (1.13)	.148
	Intrusion	1	4.63	2.03 (0.82)	1.88 (1.13)	<.001
	Hyperarousal	1	4.5	2.01 (0.89)	1.83 (1.13)	<.001
PANAS	Positive	14	46	29.9 (7.39)	29.5 (12)	.200
	Negative	10	47	23.23 (8.06)	22 (12)	<.001
	Loneliness	21	73	42.79 (12.54)	43 (18)	.200
	Digital activity	11	37	21.12 (6.09)	21 (9)	<.01

Note. M =mean; SD =standard deviation; C =median; IQR = interquartile range

Table 2. Correlation matrix for all studied variables ($N=116$)

	1	2	3	4	5	6	7	8	9
Depression (1)	-								
Anxiety (2)	.62**	-							
Stress (3)	.70**	.81**	-						
Intrusion (4)	.58**	.57**	.69**	-					
Avoidance (5)	.42**	.47**	.49**	.63**	-				
Hyperarousal (6)	.64**	.65**	.72**	.79**	.57**	-			
Positive affect (7)	-.48**	-.22*	-.27**	-.16	-.08	-.20*	-		
Negative affect (8)	.62**	.65**	.66**	.55**	.45**	.62**	-.19*	-	
Loneliness (9)	.38**	.28**	.35**	.19*	.20*	.34**	-.22*	.39**	-
Digital activity (10)	.23*	.29**	.24**	.28**	.21*	.28**	-.04	.20*	.03

Note. * $p \leq .05$; ** $p \leq .01$

Discussion

Most restrictions during the COVID-19 lockdown reduced social interactions, and consequently increased digital activity that could act as a risk or protective factor for youth's mental health. When prolonged, restricted social functioning, solitude and fear could entice PTSD symptoms and loneliness, especially in youth who rely on peer support (Almeida et al., 2022). Despite some evidence of increased loneliness in young adults (Horigian et al., 2021), our participants

reported moderate level of loneliness during the pandemic.

Some longitudinal data suggest that the COVID-19 pandemic had a negative psychological impact on adolescents' mental health and adjustment (Elmer et al., 2020). Anxiety in students after the first outbreak of COVID-19, compared to national norms, was rising (Wang et al., 2020). However, not all youth were equally affected. Positive effects could be seen in the domains of self-care, reflection and the absence of everyday stressors, while the predominant negative effect

refers to disrupted relationships with peers (Bell et al., 2023). Our findings suggest that depression, anxiety and stress levels during the COVID-19 pandemic were mostly within the normal range, according to the DASS manual. It should be taken into account that all mental health self-reports are time-bounded and non-specific, which means that they relate to the mental health state of participants within the last week, and do not address stress levels caused by the fear of exposure to COVID. In a similar study, Kopilaš et al. (2021) found that students who were affected by COVID had higher avoidance tendencies. Also, participants who were in lockdown had higher stress, depression, avoidance and intrusion.

Furthermore, our participants reported slightly more positive emotions such as interest and excitement, which could be an indication of positive adjustment to COVID regulations, reaction to mitigation of lockdown restriction or to alleviated everyday stressors. However, digital activity was not related to positive affect, as we would have expected. For some students, the pandemic facilitated attainability of online tools for mental health protection and alleviated everyday stress by improving their mental health. Contrary to our main hypothesis, digital activity in our sample was not related to positive affect at all, but was related to negative affect and symptoms of impaired mental health. When compared to previous studies, it appears different digital tools are used for different purposes, and we missed out on the opportunity to detect whether our participants used technology for gaming, school (video conferencing), social networking or support.

The findings of Wang et al., (2020) indicate the presence of intrusive thoughts, anger and irritability during the pandemic. This causes young adults to avoid thoughts and feelings related to traumatic situations, and digital activity as one of the coping behaviors during the COVID-19 pandemic (Marciano et al., 2022). Our findings linked digital activity to infringed mental health, represented by anxiety, PTSD and depressive symptoms, but not with loneliness. It is unclear if participants used digital tools to shift focus from

uncertainties or defy loneliness, as was determined in other studies (Karsay et al., 2022; Marciano et al., 2022), since the association of digital activity with mental health indicators suggests otherwise. Given the limitations of the correlation method, we cannot say if anxiety, intrusive thoughts and hyperarousal could emerge after extended digital usage, or if individuals who are inclined to these unpleasant thoughts and feelings also spend more time in digital environment. Despite limited experimental studies, some evidence supports the idea that reduced digital usage results in significantly improved self-reported well-being and mood (Pedersen, 2022).

Further qualitative research should identify the sources of resilience and strengths that were gained through digital tools, accompanied by evaluation of programs promoting mental health that use digital tools and platforms.

Limitations

Main limitations of our research lie in omitted variables such as online school experience, family income, availability of mental health care system, and other variables that covariate with studied variables. We have not included them in order to keep our questionnaire as short as possible and avoid fatigue in our participants. Also, this study examined the relationship between digital activity and certain psychological variables without distinguishing interactive (messaging, learning or content creating) from passive users (browsing, scrolling and overall escapism). Other limitations include well-established shortcomings of self-reported measures and cross-sectional studies, as well as a rather small sample size.

Conclusion

Taking into account all the limitations of this study, we can say, not without caution, that its results suggest that youth in Croatia were within the non-clinical range for depression, anxiety and stress

levels during the second wave of the COVID-19 pandemic, with moderate stressful life events and loneliness levels. Findings showed that increased digital activity was associated with negative emotions, PTSD symptoms, depression, anxiety and stress levels. In contrast to our main hypothesis, digital activity was not related to positive mental health outcomes and emotions.

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