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## The Tripartite Model of Students' Basic Psychological Needs—Relationship with Teachers' (De)Motivating Styles

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### Abstract

*According to self-determination theory, students with satisfied psychological needs for autonomy, competence, and relatedness have higher levels of motivation and achieve better results at school. On the other hand, need frustration is related to negative outcomes. Recently, Reeve et al. (2023) have expanded this dual model of need states into a tripartite model, adding the dormant state of psychological needs within the school context. This study aimed to evaluate the Croatian translation of the Three States Questionnaire (TSQ), focusing on psychological needs and their relationship with students' perceptions of teachers' (de)motivating styles. A total of 274 high school students from Croatia participated in an online study conducted during regular school hours. Results generally support the validity of the Croatian version of the TSQ. Its internal structure and reliability are in line with the original, while correlational patterns between need states and correlations with other need states operationalizations speak in favour of concurrent and discriminant validity. Consistent with previous research, teachers' motivating styles of autonomy support and structure were related to need satisfaction, while demotivating styles of control and chaos were related to need frustration. A significant association was found between chaotic teaching styles and the dormant need state. Strong associations of chaotic teaching with both the dormant and frustrated need states are not only in line with theoretical expectations but highlight practical interventions for teachers.*

**Keywords:** *basic psychological needs, tripartite model of needs, teachers' (de)motivating styles, high school students, self-determination theory*

## Introduction

A recent synthesis of meta-analytic studies based on self-determination theory (SDT) showed the importance of basic psychological needs satisfaction for higher well-being and better performance in numerous life areas and various cultures (Ryan et al., 2022). Basic needs for autonomy (the desire for choice, volition, and self-direction in one's actions), competence (the desire to feel effective, experience mastery, and undergo challenging tasks), and relatedness (the desire to feel connected to others, receive care, and care for others, fostering a sense of belonging within a community) represent "psychological nutrients" that are crucial for individuals' ongoing psychological development, integrity, and overall well-being (Ryan & Deci, 2017).

According to SDT, our needs can either be satisfied or frustrated/thwarted (Ryan & Deci, 2020). A satisfied need state can be described as an energy-mobilising experience that occurs when one's current activity aligns with one's desires, such as fostering good relationships with friends (relatedness). On the other hand, a frustrated state occurs when one's activity is not aligned with one's desire (e.g., working alone in the context of the need for relatedness) or in cases where the environment imposes restrictions (Reeve et al., 2023). Another important postulate from the basic psychological need theory is that a stimulating environment enables the satisfaction of psychological needs, which consequently lead to increased engagement and motivation (Deci et al., 2001; Jang et al., 2016), while a controlling environment encourages the "dark side" of the frustration process that is associated with inefficient functioning and many negative outcomes (Bartholomew et al., 2011).

However, several authors have recently proposed expanding this view to a third (dormant) need state which describes an unsatisfied or diminished need state (see Vansteenkiste et al., 2020 for review). The dormant needs state arises when a person's actions are not aligned with their fundamental psychological needs for autonomy, competence, or relatedness (Reeve et al., 2023). In this state, individuals may not be consciously aware of their unmet needs, yet the lack of fulfilment gradually depletes their motivation and engagement. Unlike frustration, which is an energy-blocking experience that occurs when one's current activity directly contradicts psychological needs. Reeve et al. (2023) further emphasised that this third need state of diminished or dormant needs might be especially useful in the school/classroom context to explain how and why students become disengaged from their lessons, ultimately leading to poorer academic outcomes. In this study, we seek to validate these ideas in a different cultural and educational context. In addition, we investigate which teacher classroom behaviours create a context for students' needs to be satisfied, frustrated, or dormant.

### Students' Basic Psychological Need States in the Classroom

Satisfaction and frustration of basic psychological needs in the school context significantly impacts students' emotional and academic well-being. When teachers support basic psychological needs of their students, students are more likely to engage actively in class, achieve better learning outcomes, and show greater motivation to participate in school activities (Haerens et al., 2015; Kanat-Maymon et al., 2015). Conversely, when teachers do not support students' needs, that is when students experience need frustration, they have a pronounced feeling of obligation, perceptions of failure and inadequacy, and feelings of loneliness and exclusion, leading to disobedience and class disruptions (Bartholomew et al., 2011; Reeve, 2009; Vansteenkiste & Ryan, 2013). In addition, this has been linked to higher levels of students'-controlled motivation (Behzadnia et al., 2018).

Recently, Reeve et al. (2023) proposed the existence of dormant needs as a third state. Several au-

thors had already hypothesised the existence of this third state (Bhavsar et al., 2019; Cheon et al. 2019; Costa et al., 2015). According to them, the third, so-called, indifferent need style may result in a state of dormancy regarding one's psychological needs, characterised as a condition between satisfaction and frustration. The anticipated outcomes of such a state include amotivation, maladaptive behaviour, boredom, and disengagement. Reeve et al. (2023) noticed that students are sometimes passive, unengaged, and seem to have no energy to engage in learning activities, and they tried to apply this third need state to the school context. They call this third state the dormant need state and define it as an experience of the absence of energy that occurs when a person's current action or activity is not congruent with the person's desire to realise their need for autonomy, competence, or relatedness (e.g., "Desiring relatedness, but having no opportunity for warm social interaction.", pp. 695, Reeve et al., 2023).

They proposed a new questionnaire, the *Three States Questionnaire* (TSQ, Reeve et al., 2023), to operationalise the newly added need state. They contrast their questionnaire to other major ones designed to assess self-reported psychological needs (e.g., BPNSFS; Chen et al., 2015; BMPN, Sheldon & Hilpert, 2012), and advocate not to confound the need state with its presumed cause. The TSQ focuses on personal experiences and feelings rather than relying only on contextual items (e.g., is my need for relatedness hurt, fulfilled, or irrelevant, regardless of whether that happens in the context of a group of people I want to belong to or not). They believe that this provides a clearer and more unbiased assessment of the need state.

In two other studies conducted as part of the research by Reeve et al. (2023), the impact of need states on classroom functioning was examined using the TSQ. Their results showed that the tripartite model outperformed the existing dual-process model, particularly in predicting various indicators of diminished classroom functioning (amotivation, behaviour and agentic disengagement, boredom, deactivated affect). More precisely, the dormant state was an individually significant predictor of diminished functioning. The satisfied state was a predictor of effective functioning (intrinsic motivation, behavioural engagement, agentic engagement, vitality, academic progress, self-concept, positively activated affect) and a low level of the dormant state was a supplemental predictor that explained additional independent variance across all seven outcomes. The frustrated state was an individually significant predictor of the most indices of defiant functioning (anti-internalisation, resentment, antisocial behaviour, problematic relationships). The last indicator of defiant functioning—negatively activated affect—was solely predicted by the dormant state. The most important result from their research was the fact that the dormant state explained additional variance in both low engagement and high defiance. Overall, the study emphasises the importance of assessing the dormant psychological need state to improve adolescents' educational experiences and outcomes.

### **Motivating and Demotivating Teaching Styles**

As we previously mentioned, whether our needs are going to be satisfied, frustrated, or dormant is mostly contingent on the context around us. Given that adolescents spend most of their time at school, the question arises as to how various teacher behaviours influence need states. So far, studies based on self-determination theory have mostly focused on the styles that teachers use to motivate their students. When teachers are autonomy supportive, students' basic psychological needs for autonomy, competence, and relatedness are being satisfied. In other words, when teachers provide meaningful choices to students, give them opportunities to voice their opinions, incorporate student interests and struggles in their lessons, students show higher levels of satisfaction for all three needs, ultimately resulting in higher intrinsic motivation, higher engagement, and superior academic outcomes (Reeve & Jang, 2006; Cheon et al., 2023; Van-

steenkiste et al., 2020). On the other hand, when teachers are controlling, impose their way of doing things, leave little room for students' feelings and interests, raise their voice, cause shame and guilt, students report frustrated levels of all three needs and inferior academic outcomes (Reeve, 2009; Soenens et al., 2012).

Recently, Aelterman et al. (2019) have formulated a more comprehensive model of teachers' (de) motivating styles. They distinguished between two dimensions which describe four distinct teaching styles. Alongside the dimension of need satisfaction/frustration which describe the already mentioned autonomy supportive and controlling teaching styles, Aelterman et al. (2019) added a dimension of directiveness in teaching which describes two additional styles of structure and chaos. Providing informative feedback, clarifying tasks and assignments, scaffolding learning activities are all teacher behaviours which direct students in their learning and at the same time are associated with satisfied needs. Hence, a teachers' structuring style should also be viewed as a motivating style (Aelterman & Vansteenkiste, 2023). A chaotic style is associated with abandoning students to their own devices, not planning teaching activities, and leaving the initiative for learning solely to students. Low effort and direction do not enable students to satisfy their psychological needs, making chaos a demotivating teaching style (Aelterman & Vansteenkiste, 2023).

So far, studies focusing on the circumplex model have mainly tried to investigate which individual teacher characteristics are associated with them using more (de)motivating styles (e.g. Huić et al., 2024a; Moè & Katz, 2021, 2022; Vermote et al., 2020, 2022), or on the consequences of using these styles for teachers' professional well-being (Huić et al., 2024b; Katz & Moè, 2024; Moè & Katz, 2020). A few available studies focusing on students found that student-perceived autonomy-supportive and structuring styles exhibit a positive correlation with student need satisfaction (Cheon et al., 2020). On the contrary, students' perception of controlling and chaotic styles leads to them experiencing higher levels of need frustration (Haerens et al., 2015). Additionally, Aelterman et al. (2019) showed that students who report having autonomy supportive and structuring teachers have higher levels of autonomous motivation and self-regulated learning, and lower levels of amotivation. These students also rated their teachers' quality of teaching with higher marks and showed lower levels of defiance in their classrooms. In accordance with the dual process model of school functioning (Bartholomew et al., 2011), demotivating styles of control and chaos were associated with disengagement, controlled motivation, and higher levels of oppositional defiance in the classrooms. Similarly, but with observational data, Cents-Boonstra et al. (2021) found motivating styles of autonomy support and structure to be associated with student engagement while they observed disengagement especially when teachers exhibited chaotic behaviours.

In their seminal paper, Reeve et al. (2023) confirmed the expectations of the dual process model and found that autonomy supportive teaching style was associated with higher levels of student classroom engagement, specifically through students' need satisfaction. The teacher's controlling behaviours were associated with higher levels of classroom defiance, through students' need frustration. However, their expanded tripartite model, which assumes that a need-indifferent environment will be associated with the third dormant need state and ultimately with student disengagement was also confirmed. Moreover, a neglecting teaching style (but not other styles) was specifically associated with higher levels of student disengagement, specifically through the new dormant need state (but not other need states). Their results are similar to a study by Bhavsar et al. (2019) in which the third state of psychological needs (which they referred to as the indifferent state) was connected to a chaotic style of interpersonal communication. A chaotic style is characterised by unpredictability and uncertainty, while a controlling style is characterised by outward control and pressure. Therefore, it is highly plausible to expect that students will react by disengaging and showing a lack of care in the first case, and by reactivity and opposition in the second case. As Reeve et al. (2023) also point out, the dormant need state and its antecedents might be the missing link needed to explain so many quiet and unfulfilling classrooms in which students fail to reach their full potential.

## Current Study

In order to contribute to theoretical claims, set forth by Reeve et al. (2023), this study had two research aims. First, we wanted to examine the validity of the *Three States Questionnaire* (TSQ) and the dormant need state in a culturally different educational system.

Reeve et al. (2023) conducted their study on high school students in the USA, whose average age was slightly lower than that of the students included in this research. Additionally, our study includes students from both general education (gymnasium) and vocational programmes, whereas no such distinction was made in the original research.

Second, to expand on the original study, we incorporate the full circumplex model of teachers' (de) motivating styles in order to obtain a more nuanced picture of how different (de)motivating styles are associated with all three basic psychological need states.

We expected to confirm the proposed internal structure and reliability of the Croatian translation of the TSQ. In addition, we expected to extend data on the concurrent validity by contrasting the TSQ with another, previously highly validated instrument operationalising need satisfaction and frustration, something not done in the original study. Furthermore, we expected to establish discriminant validity of the new dormant need state, by showing low associations between the dormant need state and the frustrated/satisfied need state through different operationalisations.

In line with the dual-process and the tripartite model we expected teachers' motivating styles of autonomy support and structure to be associated with students' need satisfaction, teachers' demotivating style of control to be associated with students' need frustration, and teachers' demotivating style of chaos to be associated with students' dormant need state. According to our knowledge, this is the first research in which the new TSQ was translated and used, which enables a comparison with the original results. Furthermore, this study extends previous literature by examining the concurrent validity of the TSQ and investigating all motivating and demotivating teaching styles.

## Method

### *Participants*

A total of 274 high school students (52% boys, 44% girls, 4% others) from two high schools in Croatia participated in the study (48% from a gymnasium programme, and the other half from a vocational programme). They were 14 to 19 years of age ( $M = 17$  years,  $SD = 15.015$ ). Most students attended the third grade (33%), and the fewest the fourth grade (16%). Their average final grade was 4.05 ( $SD = 0.758$ ) on a grading scale ranging from 1 (lowest) to 5 (highest).

### *Procedure*

The students filled out an online questionnaire during regular school hours under supervision of a school psychologist (first author). The sample was convenient. When selecting classes, we aimed to ensure a roughly equal number of participants from each grade (first to fourth) in both schools and achieve equal representation of students from three-year and four-year programmes in the vocational school. The students were informed about the aim of the study and their right to withdraw at any time and were advised to ask for clarification if they had any questions. The questions that the students answered did not evoke negative emotions, nor did they involve the collection of sensitive information. The questionnaire

was anonymous, and the students were not asked about any particular teacher or class (we further discuss this decision in the description of the Three States instrument in the following paragraph, as well as in the Discussion section). The study was approved by the Ethics Committee of the Department of Psychology, Faculty of Humanities and Social Sciences, University of Zagreb. Additional consent to conduct the study was secured by the principals of the aforementioned schools. In line with the Ethical Code of Research with Children (Ajduković & Keresteš, 2020), the students provided informed consent to participate in the study, while their parents/caregivers were informed of the research study taking place.

## Measures

*Basic Psychological Needs Satisfaction and Frustration Scale* (BPNSF; school context; Chen et al., 2015) consists of 24 items rated on a 7-point scale (1—*completely untrue*; 7—*completely true*). The questionnaire has six subscales: autonomy satisfaction (e.g., “*I feel that my choices express who I really am*”), autonomy frustration (e.g., “*I felt forced to do things I would not choose to do*”), competence satisfaction (e.g., “*I am capable of learning new knowledge at school*”), competence frustration (e.g., “*I feel like a failure because of the mistakes I make*”), relatedness satisfaction (e.g., “*Teachers and classmates care about me at school*”), and relatedness frustration (e.g., “*I feel that colleagues dislike me*”). Following Reeve et al.’s (2023) analytical strategy, we used aggregated scores in our analyses (see also Chen et al., 2015). The reliability coefficients are  $\alpha = .87$  for need satisfaction and  $\alpha = .84$  for need frustration.

*The Three States Questionnaire* (TSQ; Reeve et al., 2023) was translated by the authors of this study using the standard “back-translation” method. Specifically, the items were first translated from English into Croatian by the researchers. Then, an expert in the English language, who was neutral to the study, conducted a back-translation from Croatian into English to verify accuracy. The TSQ consists of a three-page format with each page featuring a vignette related to a specific psychological need. Reeve et al. (2023) started from the fact that in order to understand the motivational nature of psychological needs, it is necessary to exclude the contextual precondition of frustration or satisfaction of needs. To evaluate the satisfied need state, the authors developed a 4-item scale comprising the following indicators—*satisfied, fulfilled, fully realised, and deeply satisfied*. For the assessment of the dormant need state, a 5-item scale was created, which includes the items *unengaged, inactive, irrelevant, disconnected from what I was doing, and switched off*. Lastly, the frustrated state is measured using a 4-item scale that encompasses the terms *thwarted, destroyed, hurt, and injured*. The participants’ task is to determine how much the given adjective/phrase describes their psychological need described in the vignette on a scale from 1 (*strongly disagree*) to 7 (*strongly agree*). In sum, each psychological need consists of 13 items, with a total of 39 items in the questionnaire.

The original instruction is: “*During my Wednesday, 2nd period class, my desire for choice and personal freedom to do interesting and important activities typically feels...*”. For the purpose of this research, the questionnaire instructions were generalised. The students were asked to assess their needs without referring to a specific subject or teacher. For example: “*In class, my desire to establish a good and close relationship with the teacher and classmates is mostly...*”). This was done to ensure anonymity and honesty, and to avoid any possible back-lash against the students. Psychometric characteristics are shown in the results section.

*The Situations in School Questionnaire—Student Version* (SIS-S; Aelterman et al., 2019) was used to measure the students’ perception of the teachers’ (de)motivating styles. This instrument contains 15 scenarios that occur in the classroom (e.g., “*At a difficult moment in the lesson, students start complaining*”) together with four possible responses that can be given by the teacher to handle the situation (autonomy support: “*Accept our negative feelings as OK. Assure us that he/she is open to our input and suggestions*”; structure: “*Show and teach us a helpful strategy for how to break down the problem to solve it step-by-step*”; control: “*Insist for us to pay attention. We must learn this material for our own good*”; chaotic: “*He/she just ignores the whining and complaining. We need*

to learn to get over the obstacles by ourselves”) Students report their general perception of their teacher’s behaviour for each individual response (a total of 60 ratings) on a scale from 1 (*does not describe my teachers at all*) to 7 (*describes my teachers very well*). The questionnaire demonstrates good internal consistency across various styles—autonomy style ( $\alpha = .88$ ), structuring style ( $\alpha = .90$ ), chaotic style ( $\alpha = .85$ ), and controlling style ( $\alpha = .83$ ).

## Results and Discussion

### Internal Structure

Firstly, we examined the internal structure of the TSQ by conducting exploratory factor analysis (promax rotation) like in the original study by Reeve et al. (2023). Following their analytical strategy, we first aggregated the scores for each experienced need state into a single variable. The EFA identified three factors with eigenvalues higher than 1.0, which together explained 74.58% of the total variance (Table 1).

**Table 1**

*Descriptive statistics and standardised parameter estimates for the EFA 3-factor solution for the Three States Questionnaire*

Items	Descriptive statistics				Factor scores		
	<i>M</i>	<i>SD</i>	$m_3$	$m_4$	Frustrated ( $\lambda$ )	Satisfied ( $\lambda$ )	Dormant ( $\lambda$ )
Dormant state items							
1. Inactive	2.72	1.250	0.496	-0.122	.418	-.064	.450
2. Unengaged	2.89	1.129	0.434	-0.176	.026	-.019	.828
3. Irrelevant	2.71	1.517	0.719	-0.280	.049	.033	.855
4. Disconnected from...	2.92	1.442	0.634	-0.087	.284	-.103	.573
5. Switched to “Off”	3.44	1.538	0.250	-0.637	-.282	.056	.968
Satisfied state items							
1. Satisfied	4.63	1.148	-0.334	0.152	.048	.796	-.163
2. Fulfilled	4.12	1.162	-0.108	0.135	.077	.932	.011
3. Fully realised	3.94	1.184	0.059	0.017	-.049	.904	.047
4. Deep satisfaction	3.40	1.206	-0.137	-0.004	-.023	.923	.096
Frustrated state items							
1. Thwarted	2.93	1.261	0.356	-0.236	.881	-.072	-.195
2. Destroyed	2.21	1.242	1.147	0.946	.836	.031	.152
3. Hurt	2.31	1.187	0.832	0.279	.944	.055	-.077
4. Injured	2.19	1.209	1.047	0.592	.891	.059	.017
Intercorrelations							
Factor 1					-	-.348	.443
Factor 2						-	-.220
Factor 3							-

Note.  $N = 274$  Possible range for each variable, 1–7.

$M$  = mean,  $SD$  = standard deviation,  $m_3$  = skewness,  $m_4$  = kurtosis.

A clear distribution of items across three need state factors aligns with the theoretical framework and is comparable to Reeve et al.’s study (2023), in which the same three factors explained 76% of the vari-

ance. The range of lambda values on the frustrated scale varies from .836 to .944 (average .89), on the satisfied scale from .796 to .932 (average .89), and on the dormant scale from .450 to .968 (average .73), and the values are again comparable with Reeve et al.'s results (2023) where the average lambdas for frustration, satisfaction, and dormancy were .85; .85 and .81, respectively.

Individual item saturations as well as factor intercorrelations provide important information about the discriminant validity of the three need states. For the most part, items load onto their respective factors, which is in accordance with the tripartite model and our expectations. Furthermore, the dormant need state is clearly distinguishable from both the frustrated and satisfied need states.

What is also comparable to the original research are the reliability coefficients, which are presented in Table 2. It is evident that the reliability coefficients for the three states of psychological needs are of almost equal values and are notably high, indicating a strong level of reliability. High Cronbach alphas are an additional indicator of the expected internal consistency of the TSQ. A recommendation for future research is to verify this reliability using the test-retest method. This approach would provide valuable information regarding the consistency and repeatability of the results. In conclusion, factor and reliability analysis of our data provide evidence for the expected internal structure of the Croatian version of the TSQ, and for the discriminant validity of the third, dormant need state proposed by the tripartite model.

**Table 2**

*The reliability coefficients of the subscales from the TSQ (from this research study) and comparison with the original research (Reeve et al., 2023)*

	This study	Reeve et al. (2023)
Satisfied need state (TSQ)	.90	.87
Frustrated need state (TSQ)	.91	.92
Dormant need state (TSQ)	.89	.90

### *Descriptives*

By comparing the descriptive statistics obtained in our study with those from Reeve et al. (2023), we observe that the means and standard deviations for items across all three factors are almost equal (see Table 3). We found some differences in skewness and kurtosis estimates, indicating that the results for the dormant and frustrated need state in our study are more concentrated around higher values (Table 1). In addition, the kurtosis indices indicate fewer extreme values in our findings compared to Reeve et al. (2023).

Overall, the students in our study reported on experiencing the satisfied need state the most, then the dormant need state, while experiencing need frustration the least ( $F(1,671) = 161.74, p < .01$ ; post hoc testing using the Bonferroni method indicated significant differences among all arithmetic means analysed at  $p < .01$  level). As can be seen in Table 3, our results are again similar to those of Reeve et al. (2023). It is encouraging that need frustration—identified as the motivational state associated with the dark pathway and poor academic outcomes (Bartholomew et al., 2011; Buzzai et al., 2021; Haerens et al., 2015)—is not highly pronounced among our students. However, at the same time our students on average neither agree nor disagree that their needs are satisfied. Given that previous studies found important links between need satisfaction and positive academic outcomes (e. g. Buzzai et al., 2021; Jang et al., 2016), this is a somewhat deflating result. The fact that the students reported on experiencing the dormant need state to a significantly higher degree than need frustration gives further credence to our efforts to further investigate this special need state.

**Table 3***Average results for the experienced need states in this study and Reeve et al. (2023)*

Need state	<i>M</i>	<i>SD</i>
Satisfied state (TSQ)	4.17 (3.87)	1.041 (1.32)
Frustrated state (TSQ)	2.41 (2.38)	1.073 (1.22)
Dormant state (TSQ)	2.94 (3.03)	1.120 (1.23)

*Note.* (xy) = the values as shown by Reeve et al.'s (2023) study.

### **Construct Validity**

All three need states are significantly associated with each other. The students who reported higher levels of need satisfaction reported lower levels of need frustration and dormant needs at the same time. Frustrated and dormant needs, since they are both undesirable need states, were positively correlated (see Table 4). Overall correlations are low to moderate in size, which points to good discriminant validity of the three need states.

**Table 4***Intercorrelations among the three subscales of the TSQ*

Variable	1	2	3
1. Satisfied	1	-.26** (-.24**)	-.32** (-.01)
2. Dormant		1	.49** (.67**)
3. Frustrated			1

*Note.* (xy) = the intercorrelation from Reeve et al.'s (2023); \*\* =  $p < .01$ .

In relation to the original study by Reeve et al. (2023), the correlation between satisfied and frustrated states in this study is higher, which aligns more closely with the theoretical framework and other studies in the field (Vansteenkiste & Ryan, 2013; Zhang & Jiang, 2023). A smaller association between the dormant and frustrated scales has been observed in this study. Reeve et al. (2023) assumed that the possible multicollinearity complicates the ability of the two states to account for independent variance in the outcomes and that this correlation may indicate more than just a measurement issue; it suggests a potential reciprocal relationship between the two states. For example, experiencing a dormant state during a lesson today could lead to the development of a frustrated state over time. On the other hand, encountering a frustrated state during today's instruction might eventually result in a dormant state. Investigating this potential reciprocal relationship will necessitate future longitudinal studies.

We examined the concurrent validity of the TSQ for the satisfied and frustrated need states by investigating correlations between the subscales of the BPNSF questionnaire by Chen et al. (2015) and the TSQ (see Table 5). The correlation between the satisfied state from the BPNSF and TSQ is positive, statistically significant, and moderate to high in value. This finding supports concurrent validity for the need satisfaction subscale from the TSQ. The correlation between the need frustration scale from the BPNSF and TSQ is only of moderate value. In order to establish good concurrent validity, we would expect a moderate to high correlation. In addition, correlations between need satisfaction and need frustration in both instruments are of comparable value giving further credence to the concurrent validity of the TSQ. Considering that the TSQ does not have the confounding effect of experienced state and context (in relation to the BPNSF), a statistically significant moderate negative correlation between the subscales measuring satisfaction and frustration of needs indicates that these are two dimensions. That supports the assumptions of self-determination theory that the satisfaction and frustration of needs are two separate, moderately associated, dimensions (Bartholomew et al., 2011).

**Table 5***Intercorrelations among subscales from BPNSF and TSQ*

Variable	1	2	3	4	5
1. Frustrated state (TSQ)	-	.49**	-.32**	.35**	-.32**
2. Dormant state (TSQ)		-	-.26**	.27**	-.25**
3. Satisfied state (TSQ)			-	-.29**	.52**
4. Frustrated (BPNSF)				-	-.39**
5. Satisfied (BPNSF)					-

Note. \*\*. Correlation is significant at the 0.01 level (2-tailed).

Assessing the concurrent validity of the dormant state was not feasible due to the absence of a comparable questionnaire. It is important to note that our findings cannot be directly compared to previous studies, as concurrent validity was not examined in the original research. Future studies should continue to examine the concurrent validity of the TSQ and possibly find comparable instruments to examine the concurrent validity of the dormant need state in particular.

### *Relationships to Teachers' (De)motivating styles*

Our second research aim was to examine the relationships between the three states of students' psychological needs and their perception of teachers' (de)motivational styles according to the circumplex model (Aelterman et al., 2019). As expected, (see Table 6), there were statistically significant positive correlations between teaching styles—autonomy and structure with the satisfaction of psychological needs, as well as statistically significant positive correlations between teaching styles—chaos and control with frustration of psychological needs.

**Table 6***Intercorrelations among students' psychological need state according TSQ and their perception of teachers' (de)motivating styles*

Variable	1	2	3	4	5	6	7
1. Frustrated state (TSQ)	-	.49*	-.32*	.03	-.05	.20*	.47*
2. Dormant state (TSQ)		-	-.26*	-.14*	-.24*	.12	.45*
3. Satisfied state (TSQ)			-	.41*	.39*	.00	-.10
4. Autonomy				-	.87*	.10	-.09
5. Structure					-	.20*	-.18*
6. Control						-	.46*
7. Chaos							-

Note.\*. Correlation is significant at the 0.05 level (2-tailed).

The obtained results are in line with previous studies (Aelterman et al., 2019; Cheon et al., 2012; Reeve & Cheon, 2021) which indicate that teaching behaviours that foster student autonomy are linked to the fulfilment of their needs.

Specifically, such teacher actions provide students with the opportunity to make their own decisions regarding learning and participate in the classroom. Studies evaluating the effectiveness of teaching autonomy support to teachers further show that such endeavours lead to increases in student need satisfaction (Cheon et al., 2023). Similarly, just like our results show, providing structure in teaching helps meet students' psychological needs (Aelterman et al., 2019; De Meyer et al., 2014). This teaching style aligns

students' expectations with their abilities and offers support, which helps students feel competent (Ryan & Deci, 2017).

The obtained association between demotivating styles and need frustration is also consistent with previous research (Aelterman et al., 2019; Bartholomew et al., 2011). The imposition of restrictions, pressure on students, a commanding tone, or leaving students to their own devices in the learning process negatively affects the fulfilment of psychological needs and is, moreover, associated with their frustration. Such an environment, for example, prevents students from being autonomous and from establishing a quality relationship with the teacher. In the study by Aelterman et al. (2019), need frustration had a greater correlation with chaotic rather than with controlling (de)motivating teaching style, which is in line with our results.

The most similar study for comparison of results is that of Reeve et al. (2023), but it is important to keep in mind that Reeve et al. (2023) did not apply the complete circumplex model of teaching styles. Ultimately, they analysed the association between the need states and three distinct teaching styles, which were named: supporting, neglecting, and controlling. For this reason, the full comparison between their results and ours is limited; however, findings from both studies are rather similar.

Reeve et al. (2023) reported a significantly positive correlation between need satisfaction and supportive style, while neglecting and controlling styles did not show such a correlation, which aligns with our results. Although it was expected that there would be a stronger or more equal association between need frustration and the controlling, rather than chaotic style, our research reveals a high positive correlation between the need frustration scale and chaos, and a somewhat lower correlation with control. These results align with those from the study by Aelterman et al. (2019), with the exception that they observed results in a sample of teachers. Reeve et al. (2023) reported almost equal moderate correlation between the frustrated state and controlling and abandoning style, which is not completely aligned with our findings. Our results may indicate that adolescents are more affected by an uncertain environment and a lack of guidance than by the application of a controlling style. Given that this is a correlational study, definitive conclusions cannot be drawn, but this certainly deserves more future attention.

What is interesting is the association of these teaching styles with the new dormant state. As we can see, the dormant state is statistically significantly negatively associated with autonomy and structure and positively associated with chaos. We did not obtain a significant correlation with the controlling style, but Reeve et al. (2023) did. Bhavsar et al. (2019) emphasised that chaos is a specific communication style because it does not lead to the satisfaction of psychological needs but also does not exclusively lead to frustration of needs. According to Aelterman et al. (2019), chaos style consists of two subareas—abandoning and awaiting. Compared to the controlling style, teacher behaviours that fall under these two subareas do not necessarily lead to the frustration of psychological needs, but they also do not lead to satisfaction, which is actually the definition of a dormant state of psychological needs. Therefore, it can be concluded that the obtained relationship between dormant state and chaos style is expected.

## General Discussion

This study provides valuable insights into the validity of the Croatian translation of the Three States Questionnaire (TSQ) and its relationship with students' perceptions of teachers' motivating and demotivating styles. The findings confirm assumed hypotheses regarding the questionnaire's internal structure, along with its concurrent and discriminant validity. Positive associations between motivating teaching styles and psychological need satisfaction, as well as between demotivating styles and need frustration, and a statistically significant association of chaotic style with the dormant need state are further in line with our hypotheses, theoretical proposition of the SDT, as well as other studies in the field. It seems that, next to the

bright and dark students' motivational pathways (Haarens et al., 2015; Jang et al., 2016), a third dormant path might help explain why so many students are disengaged in their classrooms, assuming passive roles and precluding the best academic outcomes. Clearly, before such conclusions can be made, future studies are needed which will circumvent some of the limitations of this study.

One such limitation may be the generalisation of the instructions in the TSQ to all the classes rather than focusing on a specific lesson like in Reeve et al. (2023). Such a change in the instructions may have resulted in less precise estimates and a reduction in overall variance. Conversely, the TSQ's format differs from most questionnaires, as it does not include contextual items, only experiential states. During testing, the students had an opportunity to ask for clarifications on less familiar terms, which helped ensure the validity of the research implementation—an opportunity not afforded in study by Reeve et al. (2023). Additional research on construct validity and the possibility of applying the TSQ in different samples (e.g., primary school students, employees, teachers, college students) and with different instructions is needed. For example, future studies should examine predictive validity to see whether the TSQ can determine students' academic success, mental health, college enrolment, and alike.

In addition, our participants were from two schools in the same city, limiting the generalisability of the results. However, our results do not deviate significantly from Reeve et al. (2023) giving further credence to them. Moreover, the similarity of our results to those from the USA supports one of the main assumptions of self-determination theory, which is that the need must be pervasive, meaning that the outcomes related to its satisfaction and frustration must be the same across all social levels and cultures (Ryan and Deci, 2017). However, future studies which will help examine cultural invariability of the TSQ are needed.

Additionally, employing more objective measures for the included variables and conducting longitudinal research could clarify relationships between need states and teacher (de)motivating styles, and even examine both between- and within-person variability, and/or reciprocal relationships between the teaching context and student needs.

By focusing only on need frustration and satisfaction, there is a danger of neglecting the third need state. At the same time, this dormant state seems to be equally represented, compared to the frustration of needs, and it would be advisable to examine to which short- and long-term consequences this state leads. Additionally, our findings suggest that the application of a chaotic style is more related to need frustration than is the controlling style. This might mean that structure is of great importance to adolescents, even in cases where it is set in a controlling manner. These findings emphasise the necessity for educators to adopt motivating teaching strategies to promote student engagement and psychological well-being through need satisfaction. Given that average results of the dormant state are close to the average result on need satisfaction, there is a need to raise awareness among teachers about how their actions in the classroom impact student motivation and engagement.

This study confirmed the validity of the questionnaire and provided valuable insights into the psychological needs that influence students' functioning. Furthermore, we recommend future research to validate the factor structure using Confirmatory Factor Analysis (CFA) across different samples (e.g., primary school, high school, and university students). Additionally, relationships between teaching styles and students' psychological needs were reaffirmed, highlighting the importance of educating teachers about the significance of teaching styles, as well as the associated consequences and benefits.

The implication for future research is to identify the predictors of teachers' styles to create practical conditions that facilitate the application of the most effective teaching styles in the classroom.

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