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Оригинални научни рад

Academic Motivation in Primary and Secondary School Students: The Role of the Perceived Teachers' Motivating Styles[2]

***Abstract**: The aim of this research was to test whether students' school level (primary school or secondary school level) has a significantly moderating impact on relationships between students' perception of teachers' motivating styles (autonomy, structure and involvement support) and students' academic motivation (intrinsic, extrinsic, introjected motivation and amotivation) in the context of science-mathematics and socio-linguistics subjects. The sample was comprised of 494 students (females = 57.9%) divided into two school levels: 1) students in the final grades of primary school (53.8%); and 2) students in the first two grades of secondary school (46.2%). The results of the moderation analyses indicated that school level did not have a significant moderate influence on the tested relations in the context of socio-linguistic subjects, while it did in the context of science-mathematics subjects. The results of the simple slope tests indicated that the perceived structure support had a positive effect on the realization of intrinsic motivation, especially in the younger respondents, and that both perceived autonomy support and structure support displayed a negative association with amotivation in both age groups of students in the context of the science-mathematics subjects, but that these effects were stronger in the younger respondents. The results offer new insights into how teachers' motivational styles may influence different aspects of students' motivation to learn science-mathematics and socio-linguistics subjects in students at different school levels.*

***Keywords**: academic motivation, school level, Self-Determination Theory, teachers' motivating styles.*

Introduction

Academic motivation is one of the central issues in the field of educational psychology, given that it is seen as essentially related to various key functions and their corresponding outcomes, such as curiosity, learning, proactive behaviour, persistence, and performance. It can be defined as an internal state that energizes, directs, and maintains behaviour (Deci & Ryan, 1985). According to the Self-Determination Theory (SDT; Deci & Ryan, 1985;

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Ryan & Deci, 2017), motivation is described by the continuum of motivation, ranging from amotivation (absence of motivation), extrinsic motivation (a wide variety of behaviours which are not being done for one's own sake) to intrinsic motivation (doing an activity for one's own self, for the pleasure and satisfaction derived from the participation in the activity). According to SDT, there are three types of extrinsic motivation, which are ordered from a lower to a higher level of the self-determination continuum. External regulation refers to behaviour regulated by external means – i.e., rewards. Furthermore, introjected regulation is a type of regulation of behaviour that is not fully internalized and is performed because of the internalization of the past external contingencies. Identified regulation refers to a more self-determined regulation of behaviour that is self-chosen and valued, yet still not a part of the self. It has been asserted that a student can achieve more self-determined aspects of motivation if his/her basic psychological needs (need for autonomy, competence and relatedness) are being satisfied within the social context (Vansteenkiste & Ryan, 2013).

In adolescence, a turbulent period of development, maintaining motivation for learning can be very demanding. Many research results have shown that academic motivation declines during this particular period, which coincides with the transition from primary to secondary school. Contemporarily, this decline in motivation in secondary school is considered to be caused by a variety of factors, including socialization in new peer groups (Engels et al., 2017; Eccles & Roeser, 2011), school subject content (Henderlong & Lepper, 2002), changes in students' beliefs (Wentzel et al., 2019), non-adequate satisfaction of the basic psychological needs in school (Gnambs, & Hanfstingl, 2016) or changes in parent-child interaction (Ratelle et al., 2004; Grolnick et al., 2009). However, since motivation in school is highly related to scholastic activities and school life in general, it is essential to examine more thoroughly the effect of teachers on motivation as well – as they are the ones who provide all the school activities and who spend most of the time with students in classrooms (Bretherton & Munholland, 2008; Verschueren & Koomen, 2012). The teacher-student relationship is considered as a key determinant of the success of the teaching and learning process (Lalić-Vučetić, 2015). Even though many studies have linked positive academic outcomes to teacher-student relationship (e.g., Lalić-Vučetić & Mirkov, 2017; Jeffrey et al., 2013; Noddings, 2013; Scales et al., 2019), little is still known about how changes in these relationships over time may affect students' academic motivation (es. Yu et al., 2018). In this context, the impact of teacher-student relationships may be particularly relevant during critical developmental periods, such as adolescence (Ahnert et al., 2012; Wentzel, 2002, 2009). In this study, the focus is on the students' perception of teachers' motivating styles, as one aspect of teacher-student relationships, and the potential differences these perceived motivating styles might have on the motivation of students in the final grades of primary school and students of secondary school in Serbia, as this transitional period is considered to be a cornerstone for maintaining academic motivation for school in general, and for learning specific subjects.

Teachers' Motivating Styles

In the dialectical relation of students' and teachers' exchange, in line with the assumption of the three basic psychological needs of autonomy, competence, relatedness, three teacher motivating styles are distinguished – autonomy support, struc-

2 In foreign literature there is evidence that this decline is noticeable in the transition between junior high school / middle school to high school. In the Serbian educational system, this corresponds to the transition from the final grades of primary school to secondary school. Primary school in Serbia corresponds to grades 1-8, and thus includes the grades traditionally associated with middle-school or junior high school in other Western educational models (i.e., grades 6-8), while secondary school covers grades 9-12, thus corresponding directly to high school in these same Western educational models.

ture support, and involvement support, which are regarded universally as either effective or not depending on whether and to what degree they do or do not meet the basic psychological needs of each individual (Deci & Ryan, 2012; Reeve et al., 2004; Reeve, 2002; Vansteenkiste et al., 2020; Yu et al., 2018). The motivating style of autonomy support, which satisfies a student's need for autonomy, describes teacher behaviours aimed at creating an atmosphere of mutual respect between teachers and students in which students are given the opportunity to express their personal opinions, as well as multiple choices regarding teaching content and classwork (Reeve, 2009). Many positive outcomes are associated with autonomy support, such as: agentic engagement (Reeve & Shin, 2020), a deep learning style (Vansteenkiste et al., 2004), students' engagement (Reeve et al., 2004) and students' achievement (Vansteenkiste et al., 2005), greater self-esteem (Deci et al., 1981; Ryan et al., 1994), more active information processing (Grolnick & Ryan, 1987), and lower dropout rates (Vallerand et al., 1997). The polar opposite of the motivating style of the autonomy support is defined as the controlling teaching style. However, in an effort to maintain discipline in class, teachers often employ controlling strategies that can lead to students' negative perception of school (Bru et al., 2010; Eccles & Roeser, 2011; Eccles & Roeser, 2011; Reeve & Shin, 2020). When being controlling, teachers promote their own agenda and pressure learners to think and act, and even feel, in a certain way that is not autonomous to students (Aelterman et al., 2018). In doing so, teachers may use the methods of external control (involving threatening, sanctions, behaviourally-contingent rewards) or of internal control (involving shaming a student or guilt-induction) (De Meyer et al., 2016; Soenens & Vansteenkiste, 2010). In a recent study (Bartholomew et al., 2018), it was shown that students' perception of the controlling teaching style during the school year led to changes in students' need frustration, which, consequently, led to a decline in autonomous motivation and the enhancement of the controlled motivation and amotivation. Studies like this call for a greater attention to be given to the role of the needs frustration and controlling teaching styles in the poor quality motivation for learning.

The motivating style of structure support, which meets a student's need for competence, involves giving clear instruction to students, setting clear criteria and expectations in teaching and giving feedback (Reeve, 2009). Two key components of this style are clarifying and guiding, which help students attain a sense of competence (Aelterman et al., 2018). Even though it has been largely neglected in the SDT literature (Aelterman et al., 2018), this motivating style has been shown to correlate positively with autonomous forms of motivation (Mouratidis et al., 2008; Sierens et al., 2009), effective learning (Brophy, 1999) and engaging in school activities (Skinner et al., 2008). The polar opposite of the motivating style of structure support is the laissez-faire teaching style, characterized by inefficient time management resulting in chaos and a lack of discipline.

Involvement support, which meets a student's need for relatedness, is a motivating style which characterizes teachers whose relationships with students are enjoyable and filled with warmth and trust (Reeve, 2009). This style is positively related to students' intrinsic motivation and students' positive emotions (Wentzel, 2009; Skinner & Belmont, 1993). In this context, the realization of high-quality interpersonal relationships generally results in students, to a greater extent, perceiving the school environment as a safe base, which contributes to the adoption of teachers' goals and values as their own (Ryan et al., 1992). The polar opposite of the motivating style of involvement support is the impeded involvement style, characterized by remote and emotionally distant teachers.

Why are Academic Achievement and Academic Motivation lower at the secondary school level than at primary school level?

Both theoretical and empirical research point to a decrease in academic motivation and achievement as children progress through school (Eccles et al., 1993; Gottfried et al., 2001; Lepper et al., 1997). A recent meta-analysis of longitudinal studies has found the largest decreases in intrinsic motivation, in math and language academic self-concept, in mastery achievement goals and in performance-approach achievement goals in students transitioning from middle school (corresponding to higher grades of primary school in Serbia) to high school (corresponding to secondary school in Serbia) (Scherrer & Preckel, 2018). In secondary school, students are often faced with an increasing representation of a structured and controlled atmosphere in teaching (Eccles et al., 1993) alongside a competitive atmosphere among peers (Anderman & Midgley, 1997). Assuming the prevalence of developmental crises in the most sensitive period, adolescence, the attenuation of school success is common as well, for which the decline in motivation for learning is partly responsible (Eccles et al., 1993).

Researchers generally agree that there is a systemic decline in students' intrinsic motivation for learning when transitioning from primary school to secondary school (Harter, 1981; Harter & Jackson, 1992; Lepper et al., 2005; Scherrer & Preckel, 2018). The results of the longitudinal studies (Gottfried et al., 2001; Otis et al., 2005) have shown that intrinsic motivation does indeed decline with age, but that its linear decline ceases around the age of 16 (Gottfried et al., 2001; Otis et al., 2005).

Although researchers have established fairly clear ideas about intrinsic motivation, this is not the case with the second most studied type of motivation – external, i.e., extrinsic motivation. Lepper et al. (2005) did not detect any significant linear effects in external motivation, whereas Corpus et al. (2009) reported a relatively small degree of decline in extrinsic motivation in upper grades, specifically in the transition from primary school to secondary school. Finally, Otis et al. (2005) found that almost all types of extrinsic motivation (introjected, identified, external regulation) decline in the period from the age of 13 to the age of 15. Regarding amotivation, it has been found to slightly increase during the change from primary school to secondary school, although after the second year of secondary school its level has been seen to decline (Otis et al., 2005). Considering such a trend in extrinsic motivation and the even more drastic decline in intrinsic motivation in secondary school, it could be assumed that the general interest of students in school content is decreased during this period. Student motivation has been shown to decline most in learning math, then in learning the native language, while not when learning history (Gottfried et al., 2001). Furthermore, differences in students' and teachers' perceptions of subjects were observed, indicating that students, according to the results obtained, perceive mathematics as the most difficult subject and social sciences as being easier to learn, while mathematics teachers, in comparison with their counterparts in social subjects, consider that their curriculum provides much less autonomy in teaching (Gottfried et al., 2001).

Teachers' role in Academic Motivation changes from primary to secondary school

One of the reasons for the negative change in intrinsic motivation in secondary school students is the lack of challenges in school content, which can be attributed not only to students' developmental dynamisms, but also to teachers and their work style as well (Henderlog & Lepper, 2002). Many studies have shown that a negative change in academic motivation can result from a decline in the quality of relationships between students and teachers at different school levels. When compared to teachers in primary schools, teachers that students encoun-

ter in secondary schools are often perceived as distant, impersonal, and unresponsive to students' personal and developmental needs (Longobardi et al., 2016; Pianta, 2006). The results obtained by Feldlaufer et al. (1988) showed that students perceived mathematics teachers after the transition from elementary school to junior high school (corresponding to the higher grades of Serbian primary school) as less friendly, less warm, and less fair in grading in comparison to the teachers in their elementary schools. Other studies also confirmed a decline in interpersonal relationships with the teachers in secondary school (Hirsch & Rapkin, 1987; O'Connor et al., 2011). Recently, similar findings were documented by Chouinard et al. (2017) who, based on the results from a longitudinal study, argued that student-teacher relationships generally decline over this time of school transition, along with students' performance-approach goals. However, a sense of "school belonging" was linked to less socioemotional disruption as students moved from middle to secondary school and this was also linked to increases in school engagement across the transition to secondary school (Benner et al., 2017). In contrast, results obtained by Longobardi, et al. (2016) revealed different patterns in teacher-student interaction for students starting secondary school. Their results indicated that in the transition to secondary school the quality of interaction with the teachers is actually higher in terms of the reduction of conflicts and students' negative expectations. However, their results showed no variation in the terms of closeness and relatedness with the teachers (Longobardi et al., 2016).

Although there is a large body of research confirming the efficacy of the motivating styles described in SDT – autonomy support, structure support, involvement support – in the literature about changes in academic motivation in different school levels we find that these motivating styles are understudied. One of the rare studies in the SDT framework about this topic was performed by Gillison et al. (2008). Their results emphasized the importance of the satisfaction of basic psychological needs for autonomy and relatedness, though not for competence, in improving students' quality of life after enrolling in secondary school (Gillison et al., 2008). Ciani et al. (2011) did a three-point longitudinal study across a single semester, examining academic motivation and academic achievement. The results indicated that autonomy support by teachers is a 'buffer' against the decline of students' mastery-approach goals during the semester. Their study, however, did not include all the motivating styles, only autonomy support. Therefore, more research about the effects of the other motivating styles described in SDT is needed.

The Present Study

Although studies to date have examined the impact of teachers on students' academic motivation in different school levels, the impact of teachers' motivating styles described in SDT has not yet been examined to a great extent. Changes in academic motivation in primary and secondary school levels have been documented, with more autonomous aspects of motivation being more pronounced at the primary school level. In this study, we have focused particularly on the potential influence of teachers on student academic motivation, since it is teachers that contribute so greatly to the academic outcomes of students (Hatties, 2009). In line with the theoretical framework upon which our work is based on, the Self-Determination Theory, it was our assumption that those teachers who are able to promote students' autonomy, competence, and relatedness, as basic psychological needs, through employing motivating styles in teaching, substantially help their students in transitioning and adapting to the new school environment of secondary school after completion of primary school (Ryan & Deci, 2000; Madjar & Cohen-Malayev, 2016). As the principal basis behind conducting our study, we hypothesized that autonomy support, structure support, and involve-

ment support would significantly contribute to the growth of optimal student motivation for learning, while also result in the reduction of amotivation for learning in secondary school students. In order to test our assumption, we decided to measure the way students perceived their teachers' motivating styles, since our essential interest was in students' motivational outlook on school in relation to how they view their teachers' behaviour. Therefore, we did not take into account teachers' point of view. Accordingly, we presumed that relations between the students' perception of teacher motivating styles and different aspects of academic motivation could be impacted and that differences in effect could emerge based on the students' level of school.

A great deal of the research to date has been based on measuring general motivation for learning, while our research is based on the assumptions of the hierarchical model of motivation (Vallerand & Ratelle, 2002), according to which motivation should be measured in a specific context. When conducting research in the academic domain, where there are many different subjects which students learn, the need for contextualization is even more pronounced. In line with the aforementioned assumption, our research was designed to measure students' academic motivation and teachers' motivating styles (as perceived by the surveyed students) in four contexts, or subjects – two of which belong to the group of socio-linguistics (SL) and two to the group of science-mathematics (SM) scientific disciplines. According to similarity of the subjects and their epistemology, as well as according to convergent subject aims and curriculums, Serbian Language and Literature (hereinafter "Language") and History were selected as SL representatives and as SM representatives we selected Mathematics and Chemistry. Measuring was performed for all four subjects, whereupon the results obtained from the representatives of SL and SM fields were combined and these composite scores used in further analyses. Even though it is possible to make conclusions out of results based on separate subjects, in order to make stronger conclusions it is important to analyse results based on a group of related subjects. To confirm that any observed effects are a contribution of teachers' motivating styles and the content of the subjects, and not a contribution of some other teacher characteristics, it is necessary to observe these relations on a higher level of generalization – on a grouping of science-mathematics themed courses and a grouping of courses from the socio-linguistics discipline. Relevantly, motivation for learning mathematics and chemistry had higher intercorrelations than with Language and History, and this same relationship was observed for Language and History.

The aim of this research was to test for the moderating influence of school level (higher levels of primary school and secondary school) on the relationships between teacher's motivating styles (as perceived by students) and students' academic motivation in the context of socio-linguistics and science-mathematics subjects.

Research Method

Respondents and procedure

The sample was composed of 494 students (58.6% females). The sample included 266 primary school students (53.8%) from three state schools (7th and 8th grade, from 12 to 15 years old), and 228 students (46.2%) from two state secondary schools (1st and 2nd grade of secondary school, corresponding to 9th and 10th grades, respectively, from 16 to 18 years old). Since the majority of the students surveyed were minors, we collected parental signed consent for every student. When selecting the respondents, care was taken to ensure that there was a sufficient number of classes taught by different teachers to avoid the problem of the effect of the work/style of one or a few teachers skewing the results. These two groups of students, representatives of primary and secondary school students, were suitably comparable on some observable variables, such as gender, socio-cultural background, and socio-economic sta-

tus. The fact that many of the students from the primary schools surveyed go on to enter the secondary schools surveyed was another additional reason to consider these two subsamples as suitable for comparison.

Ethical approval for conducting this study was obtained from the Ethical Board of the Faculty of Philosophy of the University of Novi Sad. The scale was administered to participants using a standard paper-pencil method during their regular school classes. Participation in the study was voluntary and participants could withdraw from the study at any time.

Instruments and variables

Students filled out information about their gender, age, school level (1 = primary school, 2 = secondary school level) and school achievement. The following questionnaires were used:

1. Scales for measuring teachers' motivating styles according to autonomy support, structure support, and involvement support were taken from the battery of tests designed by Wellborn et al. (1988; Student report of teacher context). The three scales were applied four times, with students evaluating the motivating styles of their teachers in four subjects, two belonging to the socio-linguistics disciplines (Language, History) and two to the science-mathematics scientific disciplines (Mathematics, Chemistry). The content of items on all four applications of the scales was the same, except for the data on which teacher was being evaluated – the teacher of Language, History, Mathematics or Chemistry. The scale for measuring autonomy support consisted of 17 items (α in different subjects ranging from .85 to .87), the scale for measuring structure support consisted of 21 items (α in different subjects ranging from .89 to .91), and the third scale intended to measure involvement support was comprised of 14 items (α in different subjects ranging from .83 to .86).

2. A Serbian translation of The Academic Motivation Scale (AMS, Authors, 2015; Authors, 2014) was applied four times in total – to assess the students' motivation to learn Language, History, Mathematics and Chemistry. This version of the scale was based on the original questionnaire developed first in French (EME; Échelle de motivation en éducation; Vallerand et al., 1989). After several scale examinations on the domestic population, a stable four-factor solution was determined and applied: intrinsic motivation, extrinsic motivation, introjected motivation and amotivation (Authors, 2015). Four items were added in the Serbian version, with the aim of clarifying the obtained factor solution, so the scale contained 32 items. In this study, the items were formulated as answers to the question located at the beginning of the questionnaire which reads: *I am learning Language/History/Mathematics/Chemistry because...* Reliability coefficients in different measurement contexts (i.e., subjects) ranged: for intrinsic motivation from α=.92-.93; for extrinsic motivation from α=.92-.93; for introjected motivation from α=.83-.86; and for amotivation α=.79-.81. Such findings indicate that the AMS was a good enough indicator of academic motivation across all measured domains.

In all questionnaires, the items were answered by agreeing to the offered assertion – by circling one of the five edited or graded response categories so that a higher score on the items indicated a higher degree of a trait expression. Different aspects of academic motivation in different contexts had the status of criterion variables. Predictor variables were the measures of perceived teachers' motivating styles. The moderator variable was school level. The academic motivation of students and the perceived motivating styles of teachers of socio-linguistics subjects were obtained by summarizing the results on these scales in the context of Language and History, and for the science-mathematics group of subjects they were obtained in the same way but in the context of Mathematics and Chemistry. The results were obtained by summing the simple summation scores of the two contexts and dividing them by two (e.g., the intrinsic motivation for socio-linguis-

tics subjects = (intrinsic motivation for Language + History) / 2). Gender and school achievement were treated as covariates.

Statistical analyses

In order to test the effects of teachers' motivating styles on the academic motivation of students of different school level, moderation analyses were conducted in the PROCESS macro (Model 1; Hayes, 2012). Through the use of the Bootstrapping method, which is built-into the PROCESS, and by resampling 1000 times, as much as it is enabled in the program, with a 95% confidence interval, lower and upper confidence intervals of the tested effect are obtained (LLCI and ULCI), significant only if this range does not include zero. The predictor status included different perceived teachers' motivating styles (autonomy support, structure support and involvement support), the moderator was school level, and the criterion status included various aspects of academic motivation (intrinsic motivation, extrinsic motivation, introjected motivation and amotivation). The analyses were conducted separately for the group of the science-mathematics and socio-linguistics subjects. The simple slope test tested whether there were significant interaction effects in the predicting criteria. The interactions between motivating styles and moderators were entered as twofold: autonomy support × school level, structure support × school level, involvement support × school level.

Table 1. Measures of central tendency, dispersion, and normal distribution of students' academic motivation and students' perception of teachers' motivating styles in science-mathematics subjects and socio-linguistic subjects.

	N	Min	Max	M	SD	Skewness	Kurtosis	M	F	PS	SS
Science-mathematics subjects											
Intrinsic motivation	494	11	55	32	11	-.05	-.76	32	33	34	30
Extrinsic motivation	494	10	48	31	10	-.30	-.67	31	32	33	29
Introjected motivation	494	7	30	23	5	-.68	-.07	22	24	24	22
Amotivation	494	5	25	12	5	.30	-.65	13	12	12	12
Autonomy support	494	13	65	45	9	-.06	-.01	44	45	45	44
Structure support	494	26	92	66	13	-.05	-.54	65	67	66	66
Involvement support	494	14	60	38	8	-.02	-.01	38	37	39	36
Socio-linguistic subjects											
Intrinsic motivation	494	11	53	34	10	-.22	-.57	34	34	34	33
Extrinsic motivation	494	9	45	28	10	-.10	-.84	28	28	30	25
Introjected motivation	494	6	30	22	6	-.58	-.33	21	23	23	20
Amotivation	494	5	25	12	5	.40	-.50	12	11	12	11
Autonomy support	494	25	73	51	9	.20	-.32	50	52	51	52
Structure support	494	25	93	66	12	.07	-.59	64	68	65	68
Involvement support	494	13	55	35	8	-.01	.26	35	35	36	35

Note. N – number of respondents; Min – minimum; Max – maximum; M – mean; SD – standard deviation; Skewness and Kurtosis – horizontal and vertical deviation; M and F – mean of the measures in male and female participants; PS and SS – primary and secondary school students.

Results

Descriptive statistics

Intrinsic and extrinsic motivation were documented as almost equal in the science-mathematics subjects, while in the socio-linguistics subjects there was a greater difference (Table 1). In contrast, there were no significant discrepancies observed in the introjected motivation and amotivation in either group of subjects. In primary school students, motivation, regardless of type, was generally more pronounced compared to secondary school students, as opposed to amotivation, which was measured as equal in both cohorts. Intrinsic motivation for learning socio-linguistics subjects was found to be equal in both age groups. Teachers for both groups of subjects were indicated as perceived to most thoroughly employ structure support, followed by autonomy support, with involvement support invoked the least. When comparing the heights of arithmetic means for all perceived teachers' motivating styles, autonomy support was recorded as more dominant among teachers of socio-linguistics subjects than among their counterparts in the science-mathematics group of subjects. The age differences for these variables were not found to be greatly expressed.

Testing the Moderating Effects of School Level on the Relationship Between Students' Perception of Teachers' Motivating Styles and Students' Academic Motivation for Learning Science-Mathematics and Socio-Linguistics Subjects

The results of the analyses of the moderating effect of school level on the relationship between students' perception of teachers' motivating styles and their intrinsic motivation for learning science-mathematics subjects indicated that schoo000l level moderated the relationship between the perception of structure support and intrinsic motivation ($R = .40$, $R^2 = .16$, $F = 30.58$, $df1 = 3.00$, $df2 = 490.00$, $p < .01$; $B = -.15$, $p < .05$, $LLCI = -.29$, $ULCI = -.01$; Table 2). The interactions of the relationships are shown in Table 3 and Figure 1.

Table 2. The results of testing the moderating effect of school level on the relationship between the students' perception of teachers' motivating styles and different aspects of students' academic motivation for learning science-mathematics subjects.

	B	SE	T	P	LLCI	ULCI
Intrinsic motivation						
Autonomy support × School level	-.16	.10	-1.55	.12	-.36	.04
Structure support × School level *	-.15	.07	-2.06	.04	-.29	-.01
Involvement support × School level	-.12	.11	-1.13	.26	-.33	.09
Extrinsic motivation						
Autonomy support × School level	-.12	.10	-1.27	.21	-.31	.07
Structure support × School level	-.11	.07	-1.73	.08	-.24	.02
Involvement support × School level	-.15	.10	-1.49	.14	-.35	.05
Introjected motivation						
Autonomy support × School level	.04	.05	.89	.37	-.05	.14
Structure support × School level	-.01	.04	-.32	.75	-.08	.06
Involvement support × School level	-.02	.06	-.39	.70	-.13	.09
Amotivation						
Autonomy support × School level *	.13	.05	2.59	.01	.03	.22
Structure support × School level *	.07	.03	2.43	.02	.01	.13
Involvement support × School level	.08	.05	1.46	.14	-.03	.18

Table 3. Simple slope test for the significance of the moderating effect of school level on the relationship between students' perception of structure support and students' intrinsic motivation; a bd between students' perception of autonomy support and structure support and their amotivation for learning science-mathematics subjects.

Structure support x Intrinsic motivation							
	School level	B	SE(b)	t	P	LLCI	ULCI
Elementary	-.46	.35	.05	7.46	.00	.26	.44
Secondary	.54	.20	.05	3.78	.00	.10	.31
Autonomy support x Amotivation							
Elementary	-.46	-.25	.03	-8.93	.00	-.31	-.20
Secondary	.54	-.13	.04	-3.13	.00	-.20	-.05
Structure support x Amotivation							
Elementary	-.46	-.20	.02	-11.86	.00	-.24	-.17
Secondary	.54	-.13	.02	-5.31	.00	-.18	-.08

Regardless of age, intrinsic motivation was measured as greater in students who were indicated perceiving more pronounced structure support than in those who indicated perceiving that this style was less pronounced. Regardless of their expressed perception of structure support, secondary school students were recorded as having lower intrinsic motivation than primary school students. Correspondingly, the correlation between school level and intrinsic motivation was higher in students' indicating having experienced high structure support (Figure 1).

School level was documented as having no significant moderating effect on the relationship between students' perception of teachers' motivating styles and their extrinsic and introjected motivation (Table 2). According to the obtained results, it can be concluded that there was a significant moderating effect of school level on the relationships between student's perception of the teacher motivating styles of autonomy support and structure support and on students' amotivation for learning science-mathematics subjects ($R = .38$, $R^2 = .15$, $F = 30.92$, $df1 = 3.00$, $df2 = 490.00$, $p < .01$; $B = .13$, $p <$

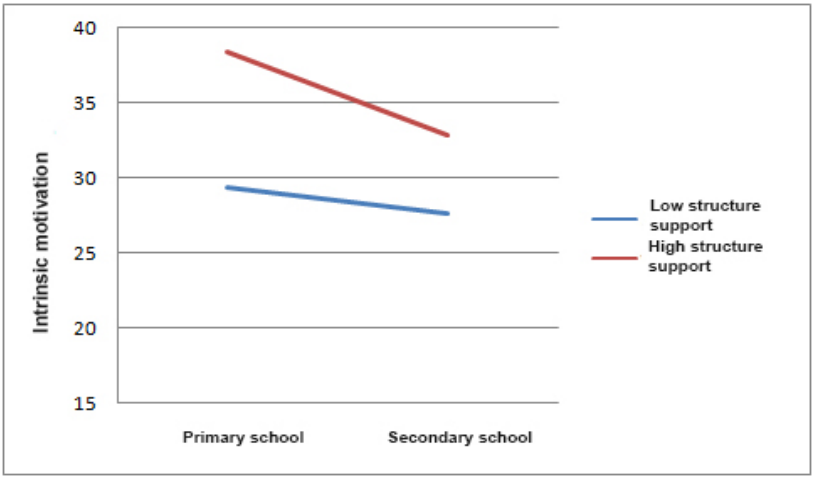

Figure 1. Graphic representation of interaction between students' perception of structure support and school level in predicting students' intrinsic motivation for learning science-mathematics subjects

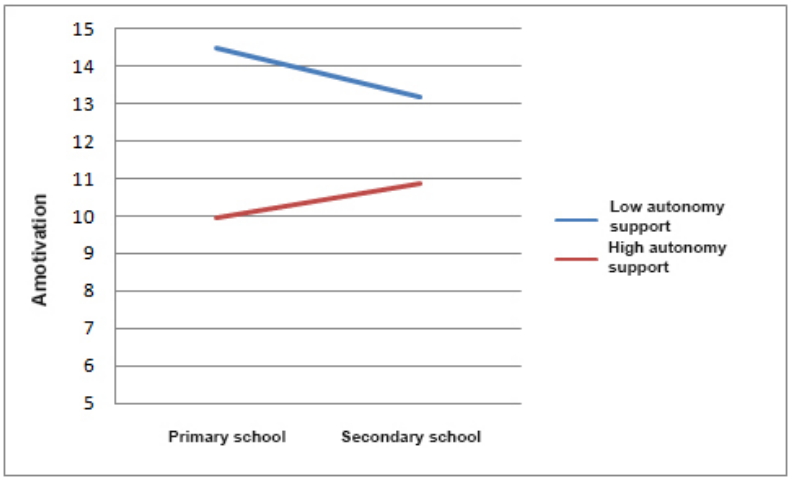

Figure 2. Graphic representation of interaction between students' perception of autonomy support and school level in predicting students' amotivation for learning science-mathematics subjects

.01, LLCI = .03, ULCI = .22; R = .47, R^2 = .22, F = 57.54, df1 = 3.00, df2 = 490.00, p < .01; B = .07, p < .05, LLCI = .01, ULCI = .13; Table 2). Table 3, as well as Figures 2 and 3, show the interaction of the relationships.

The students who indicated perceiving lower autonomy support displayed higher amotivation than students who indicated perceiving high autonomy support. More precisely, among respondents who indicated perceiving low autonomy support, primary school students displayed a higher level of amotivation, with secondary school students also displaying higher levels of amotivation than their peer respondents who indicated perceiving high autonomy support, though amotivation was seen as less pronounced in secondary school students indicating having perceived low autonomy support than in primary school students indicating having perceived low autonomy support (Figure 2).

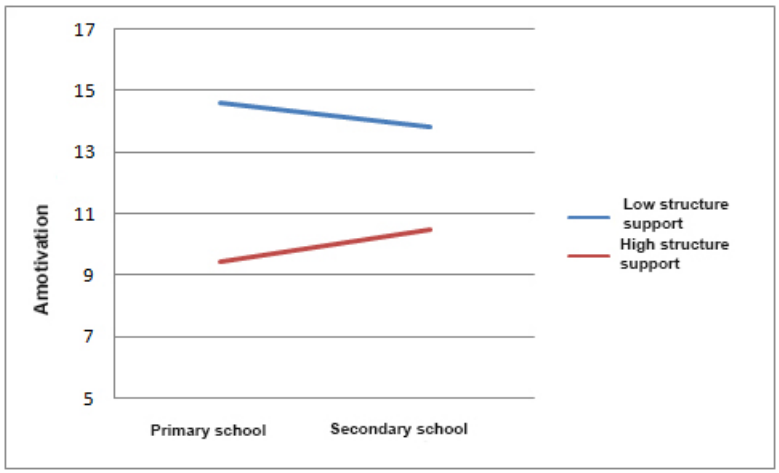

Figure 3. Graphic representation of interaction between students' perception of structure support and school level in predicting students' amotivation for learning science-mathematics subjects

Students who indicated having experienced low structure support displayed higher levels of amotivation than students who indicated perceiving high structure support. More precisely, among respondents who indicated perceiving low structure support, primary school students displayed a higher level of amotivation, with secondary school students also displaying higher levels of amotivation than their peer respondents who indicated perceiving high structure support, though amotivation was seen as less pronounced in secondary school students indicating having perceived low structure support than in primary school students indicating having perceived low structure support (Figure 3).

In the context of the socio-linguistics subjects, school level was not seen to exhibit a significantly impactful moderating effect on the relationship between perceived teachers' motivating styles and students' motivation for learning these subjects, as in the named relationships the range of lower and upper bootstrapping indicators included a zero (Table 4).

Discussion

The aim of this study was to examine the moderating effects of school level in relationships between students' perception of teachers' motivating styles and students' academic motivation for learning science-mathematics and socio-linguistics subjects. More specifically, the goal was to examine how students' perception of different teachers' motivating styles contributes to students' academic motivation in two different school levels – the final grades of primary school and the opening grades of secondary school. The research was conducted using transversal design, but in two separate age groups and in two different contexts, which provided a basis for comparing results by school level. Since earlier research had already documented a negative change in students' academic motivation in secondary school level when compared to the primary school level, our idea was to examine how this might be affected by students' perception of teachers' motivating styles.

Table 4. The results of testing the moderating effect of school level on the relationship between the students' perception of teachers' motivating styles and different aspects of students' academic motivation for learning socio-linguistics subjects.

	B	SE	t	p	LLCI	ULCI
Intrinsic motivation						
Autonomy support × School level	.11	.09	1.25	.21	-.07	.29
Structure support × School level	.02	.07	.28	.78	-.11	.15
Involvement support × School level	-.06	.10	-.57	.57	-.25	.14
Extrinsic motivation						
Autonomy support × School level	.15	.09	1.64	.10	-.03	.33
Structure support × School level	.00	.07	.02	.99	-.14	.14
Involvement support × School level	.02	.10	.22	.83	-.17	.21
Introjected motivation						
Autonomy support × School level	.11	.06	1.83	.07	-.01	.22
Structure support × School level	.03	.04	.69	.49	-.06	.12
Involvement support × School level	.07	.07	1.03	.30	-.06	.21
Amotivation						
Autonomy support × School level	-.03	.04	-.70	.48	-.11	.05
Structure support × School level	-.01	.03	-.28	.78	-.07	.05
Involvement support × School level	-.01	.05	-.21	.83	-.12	.10

It should first be noted that the moderating effects of school level were not exhibited in the group of the socio-linguistics subjects, confirming previous findings according to which student motivation for learning these subjects generally remains stable, regardless of age (Gottfried et al., 2001). Relatedly, these previous findings also indicated that the motivation for learning socio-linguistics subjects is generally more stable in both age groups, while the motivation for learning science-mathematics subjects is lower in older students, especially for Mathematics (Gottfried et al., 2001). Furthermore, students were found to perceive the socio-linguistics subjects as less demanding (Gottfried et al., 2001). It is thus possible that this could result in students' more favourably assessing the work of teachers in this group of subjects. Therefore, we can assume that students' academic motivation remains stable across age and school level due to students having a more favourable opinion about this group of subjects.

As for the second context examined – for learning science-mathematics subjects – the results of our study indicated that school level had a significantly moderating effect on relationships between students' perceived structure support and their intrinsic motivation, as well as between students' perceived autonomy support and structure support and their amotivation. Regardless of the school level, intrinsic motivation was documented greater in students who indicated perceiving more pronounced structure support than in those who indicated perceiving that this teacher motivating style was less prominent. In addition, regardless of the level of structure support indicated as perceived by students, secondary school students were found to have lower intrinsic motivation than primary school students. Similar to other studies, intrinsic motivation was found to be lower in the older group of students enrolled in secondary school than in the younger respondents from the final grades of primary school. While this type of motivation was observed as generally higher in those students who indicated perceiving higher structure support, the effect of structure support was documented as greater in younger students, which implies that establishing clear rules and giving clear feedback is more conducive to primary school students' motivation than secondary school students' motivation and encourages them to become interested in school content in science-mathematics subjects. According to the theoretical assumptions of the Cognitive Evaluation Theory, this alone already creates a stronger experience of competence in students, which contributes to the growth of intrinsic motivation (Ryan & Deci, 2017). Structure support has been regarded as especially important in this group of subjects as the concretization of largely abstract content can help with the learning of natural sciences. For students who have just entered the formal operational stage (Authors, 2012), learning abstract concepts in Chemistry and Mathematics (representatives of science-mathematics subjects) can be very demanding, which is why teacher assistance in the form of effective guidance through the teaching and learning process can be crucial. Though there could be doubts as to whether the results of this study would be different if they were generated by carrying out the study on separate subjects, the intercorrelations were higher between those subjects that were merged (Language and History, Chemistry and Mathematics, respectively), justifying the grouping of the subjects.

In terms of predicting amotivation, according to our research, school level was seen to have a significant moderating effect on the relationships between students' amotivation and students' perceived autonomy support and structure support. Students who indicated having experienced low autonomy support and structure support were recorded as having higher amotivation those students who indicated having experienced the opposite. Furthermore, amotivation was also registered as higher in secondary school students than in primary school students for those indicating conditions of high structure support and high autonomy support, though these differences were not very pronounced. The most important finding here is that there was a

large difference in the expression of students' amotivation depending on whether the students' indicated perception of autonomy support or structure support was high or low. Generally speaking, autonomy support and structure support are motivating styles which reduce amotivation in students. This implies that amotivation can be reduced by teachers' use of strategies prescribed within the styles of autonomy support and structure support. Providing choices, understanding, and respecting the needs of the students diminishes their negative attitude towards school. Moreover, teachers who set clear frameworks for teaching, establish clear rules of conduct, and provide constructive feedback also contribute to a more positive attitude among students toward school.

Upon comparing the level of amotivation in primary and secondary school students, in the conditions of perceived high autonomy support and structure support, students' amotivation was observed as higher in secondary school respondents. Such a finding does not necessarily entail that perceived high autonomy support and structure support on the part of students increases their amotivation, but only that the degree of amotivation is higher in secondary school students, compared to primary school students, even in conditions of perceived high autonomy support and structure support. Therefore, it can be assumed that part of the reason for the general decline in motivation among students at the secondary school level could be attributed to some other factors, such as peer influences and developmental changes in adolescence. Further research into such factors would be pertinent.

The described findings of our research generally correspond to the results of previous relevant research. First, many studies – both transversal and longitudinal – have found that there is a decline in students' intrinsic motivation in the transition from primary to secondary school (Eccles et al., 1993; Gottfried et al., 2001; Lepper et al., 1997; Gillet et al., 2012; Ratelle et al., 2004; Scherrer & Preckel, 2018), which was confirmed in our study. The obtained findings in thus study regarding student's motivation for learning science-mathematics subjects are also in line with previous findings which have indicated that student motivation for learning science-mathematics subjects declines the most of any subject fields in the transition to secondary school and that students perceive these subjects as the most difficult to learn (Gottfried et al., 2001).

In our study, the findings indicated that amotivation increases with age, similar to the results obtained by Otis (Otis et al., 2005). However, in some other studies, for example in the one by Gillet et al. (2012) it was observed that amotivation remained at the same level among primary and secondary school students. It should be emphasized that in relation to the research of Gillet et al. (2012), which measured general motivation for school, the measure of decreased motivation in our research is related to the context of a particular group of science-mathematics subjects, implying that it is the content of those subjects itself that may potentially lead to amotivation (Henderlong & Lepper, 2002). In our findings, similar to other studies, there were no significant differences in the expression of other aspects of motivation, such as introjected and extrinsic motivation, according to students' school level or age.

Gillet et al. (2012) noted that autonomy support had a significant effect in achieving the self-determined aspects of student motivation for learning, whereas in our study it was this style was only observed as having a significantly moderating effect on students' amotivation, whereas structure support was documented as having the greatest influence on the measures of the most self-determined type of motivation. Such a difference could probably be explained by the cultural differences between our native Serbian population and the Canadian-French populations. Taking into account that Serbia remains a more traditionally oriented country and that the effects of traditionalism are evident in the

school system (Authors, 2018, 2020), it would be expected that the most represented motivating style is structure support – even in achieving intrinsic motivation.

One of the strengths of this study lies in its design, which involved the measurement of motivating constructs in a number of different contexts, which made it possible to generalize the results according to a group of socio-linguistics and science-mathematics subjects. The findings demonstrated that the measurement of motivating constructs at the contextual hierarchical level is justified, as it was determined that different school subjects implied different epistemologies, values, and significance. This study has contributed to new insights in the field of academic motivation, especially in regard to enhancing knowledge of the impact of perceived teachers' motivating styles on students at different school levels (the primary school and secondary school levels) for the two groups of subjects. Above all, our results have contributed to the expansion of SDT in understanding the role of teachers' motivating styles in the academic motivation of both primary and secondary school students.

The obtained findings can serve as a basis for recommendations for the development of teaching competences in the form of training for the application of motivating styles in teaching. Our findings emphasize the importance of autonomy support and structure support in fostering intrinsic motivation, and in reducing amotivation, while involvement support has not been shown to be significant in predicting students' academic motivation in the transition from primary school to secondary school. This certainly does not mean that this teaching motivating style should not be supported; on the contrary, since it was found to be the least pronounced in comparison to the other two styles, in both groups of school subjects, then additional emphasis in teacher training should be placed on the importance of this motivating style, which contributes to the general learning atmosphere and influences interconnections in student-teacher relationships (Skinner et al., 2008; Wentzel, 2009).

One limitation of this study is reflected in the way the constructs were examined – students' self-assessments may be too subjective and saturated with their general attitude about a particular teacher, a group of teachers, and/or a particular group of school subjects. Therefore, it is recommended that future assessments also include independent assessors who would be able to evaluate teacher performance in the classroom. In addition, further research should extend the sample to include teachers in order to gain teachers' assessments of their ability to use, and the frequency of the use of, the described motivating styles in class, particularly as it has been previously documented that, in the midst of pressures, both from the 'top' and the 'bottom', they are unable to implement all their ideas in teaching (Reeve, 2009). Also, involving teachers would help foster a more nuanced and thorough understanding of the teacher-student relationship and its dynamics, since it has been shown that teachers' perception of their relations with students can induce a more positive evaluation of that relation in students (Prewet et al., 2019). Finally, one other limitation is that this study is cross-sectional, and it would be advantageous to conduct research under a longitudinal design for more reliable monitoring of changes in school transition.

Conclusion

The key conclusion of this study is that students' perception of teachers' motivating styles can be a valuable resource in explaining and understanding students' academic motivation in both primary and secondary school level. In particular, students' perception of the high presence of the motivating styles of autonomy support and structure support were found to be significant in reducing amotivation for learning science-mathematics subjects in students in both the primary and second-

ary school levels, with these effects seen as stronger in younger students, while perceived structure support on the part of the students was shown to play a measurable role in increasing the intrinsic motivation for learning science-mathematics subjects in primary school students. The relationships between students' perception of teachers' motivating styles and students' academic motivation for learning socio-linguistics subjects were found to remain unchanged in the transition of students from primary school to secondary school.

References

- Aelterman, N., Vansteenkiste, M., Haerens, L., Soenens, B., Fontaine, J. R. J., and Reeve, J. (2018). Toward an Integrative and Fine-Grained Insight in Motivating and Demotivating Teaching Styles: The Merits of a Circumplex Approach. *Journal of Educational Psychology,* 111 (3). https://doi.org/10.1037/edu0000293
- Ahnert, L., Harwardt-Heinecke, E., Kappler, G., Eckstein, T. and Milatz, A. (2012). Student-teacher relationships and classroom climate in first grade: How do they relate to students' stress regulation? *Attachment and Human Development.* 14 (3), 249–263. https://doi.org/10.1080/14616734.2012.673277
- Anderman, E. M. and Midgley, C. (1997). Changes in achievement goal orientation, perceived academic competence, and grades across the transition to middle-level schools. *Contemporary Educational Psychology.* 22 (3), 269–298. https://doi.org/10.1006/ceps.1996.0926
- Bartholomew, K. J., Ntoumanis, N., Mouratidis, A., Katartzi, E., Thøgersen-Ntoumani, C. and Vlachopoulos, S. (2018). Beware of your teaching style: A school-year long investigation of controlling teaching and student motivational experiences. *Learning and Instruction.* 53, 50–63. https://doi.org/10.1016/j.learninstruc.2017.07.006.
- Benner, A. D., Boyle, A. E. and Bakhtiari, F. (2017). Understanding Students' Transition to High School: Demographic Variation and the Role of Supportive Relationships. *Journal of Youth and Adolescence*. 46 (10), 2129–2142. https://doi.org/10.1007/s10964-017-0716-2
- Bretherton, I. and Munholland, K. A. (2008). Internal working models in attachment relationships: Elaborating a central construct in attachment theory. In: Cassidy, J. and Shaver, P. R. (Eds.). *Handbook of Attachment: Theory, research, and clinical applications* (102–127). New York: Guilford Press.
- Brophy, J. E. (1999). Toward a model of the value aspects of motivation in education: Developing appreciation for particular learning domains and activities. *Educational Psychologist.* 34 (2), 75–85. https://doi.org/10.1207/s15326985ep3402_1
- Bru, E., Stornes, T., Munthe, E. and Thuen, E. (2010). Students' perception of teacher support across the transition from primary to secondary school. *Scandinavian Journal of Educational Research.* 54 (6), 519–533. https://doi.org/10.1080/00313831.2010.522842
- Chouinard, R., Roy, N., Archambault, I. and Smith, J. (2017). Relationships with Teachers and Achievement Motivation in the Context of the Transition to Secondary School. *Interdisciplinary Education and Psychology.* 2 (1), 1–15. https://doi.org/10.31532/InterdiscipEducPsychol.2.1.001
- Ciani, K. D., Sheldon, K. M., Hilpert, J. C. and Easter, M. A. (2011). Antecedents and trajectories of achievement goals: A self-determination theory perspective. *British Journal of Educational Psychology.* 81 (2), 223–243. https://doi.org/10.1348/000709910X517399

- Corpus, J. M., McClintic-Gilbert, M. and Hayenga, A. O. (2009). Within-year changes in children's intrinsic and extrinsic motivational orientations: contextual predictors and academic outcomes. *Contemporary Educational Psychology.* 34 (2), 154–166. https://doi.org/10.1016/j.cedpsych.2009.01.001
- Deci, E. L. and Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior.* New York: Plenum Press.
- Deci, E. L. and Ryan, R. M. (2012). Motivation, personality, and development whitin embedded social contexts: An overview of self-determination theory. In: Ryan, R. M. (Ed.). *The Oxford handbook of human motivation* (85–107). Oxford: Oxford University Press.
- Deci, E. L., Schwartz, A. J., Sheinman, L. and Ryan, R. M. (1981). An instrument to assess adults' orientations toward control versus autonomy with children: Reflections on intrinsic motivation and perceived competence. *Journal of Educational Psychology.* 73 (5), 642–650. https://doi.org/10.1037/0022-0663.73.5.642
- De Meyer, J., Soenens, B., Aelterman, N., De Bourdeaudhuij, I. and Haerens, L. (2016). The different faces of controlling teaching: Implications of a distinction between externally and internally controlling teaching for students' motivation in physical education. *Physical Education and Sport Pedagogy.* 21, 632–652. https://doi.org/10.1080/17408989.2015.1112777.
- Eccles, J. S., Midgley, C., Wigfield, A., Buchanan, C. M., Reuman, D., Flanagan, C. and Iver, D. M. (1993). Development during adolescence: The impact of stage-environment fit on young adolescents' experiences in schools and in families. *American Psychologist.* 48 (2), 90–101. https://doi.org/10.1037//0003-066x.48.2.90
- Eccles, J. S., & Roeser, R. W. (2011). Schools as Developmental Contexts During Adolescence. *Journal of Research on Adolescence.* 21 (11), 225–241. https://doi.org/10.1111/j.1532-7795.2010.00725.x
- Eccles, J. S., Wigfield, A. and Schiefele, U. (1998). Motivation to suceed. In: Eisenberg N., (Ed.). *Handbook of child psychology: Vol 3. Social, emotional and personality development* (5th ed.) (1017–1095). New York: Wiley.
- Engels, M. C., Colpin, H., Van Leeuwen, K., Bijttebier, P., Van den Noortgate, W., Claes, S., Goossens, L. and Verschueren, K. (2017). School Engagement Trajectories in Adolescence: The Role of Peer Likeability and Popularity. *Journal of School Psychology.* 64, 61–75. https://doi.org/10.1016/j.jsp.2017.04.006
- Feldlaufer, H., Midgley, C. and Eccles, J. S. (1988). Student, teachers, and observer perceptions of the classroom environment before and after the transition to junior high school. *Journal of Early Adolescence.* 8, 133–156. https://doi.org/10.1177/0272431688082003
- Gillet, N., Vallerand, R. J. and Lafrenière, M-A. K. (2012). Intrinsic and extrinsic school motivation as a function of age: the mediating role of autonomy support. *Social Psychology and Education.* 15 (1), 77–95. https://doi.org/10.1007/s11218-011-9170-2
- Gillison, F., Standage, M. and Skevington, S. (2008). Changes in quality of life and psychological need satisfaction following the transition to secondary school. *British Journal of Education.* 78 (1), 149–162. https://doi.org/10.1348/000709907X209863
- Gnambs, T. and Hanfstingl, B. (2016). The decline of academic motivation during adolescence: An accelerated longitudinal cohort analysis on the effect of psychological need satisfaction. *Educational Psychology.* 36 (9), 1691–1705. https://doi.org/10.1080/01443410.2015.1113236
- Gottfried, A. E., Fleming, J. and Gottfried, A. W. (2001). Continuity of academic motivation from childhood through late adolescence: a longitudinal study. *Journal of Educational Psychology.* 93 (1), 3–13. https://doi.org/10.1037/0022-0663.93.1.3

- Grolnick, W. S., Friendly, R. W. and Bellas, V. M. (2009). Parenting and Childrens' Motivation at school. In: Wentzel, K. R. & Wigfield, A. (Eds.). *Handbook of Motivation at School* (279–300). New York, London: Routledge, Taylor & Francis Group.
- Grolnick, W. S. and Ryan, R. M. (1987). Autonomy in children's learning: an experimental and individual difference investigation. *Journal of Personality and Social Psychology.* 52 (5), 890–898. https://doi.org/10.1037/0022-3514.52.5.890
- Harter, S. (1981). A new self-report scale of intrinsic versus extrinsic orientations in the classroom: motivational and informational components. *Development Psychology.* 17 (3), 300–312. https://doi.org/10.1037/0012-1649.17.3.300
- Harter, S. and Jackson, B. K. (1992). Trait vs. nontrait conceptualizations of intrinsic/extrinsic motivational orientation. *Motivation and Emotion.* 16 (3), 209–230. https://doi.org/10.1007/BF00991652
- Hattie, J. A. C. (2009). *Visible learning: A synthesis of over 800 meta-analyses relating to achievement.* London & New York: Routledge.
- Hayes, A. F. (2012). *PROCESS: A versatile computational tool for observed variable mediation, moderation, and conditional process modeling* [White paper]. Retrieved June 15, 2020 from http://www.afhayes.com/public/process2012.pdf.
- Henderlong, J. and Lepper, M. R. (2002). The effects of praise on children's intrinsic motivation: A review and synthesis. *Psychological Bulletin.* 128 (5), 774–795. https://doi.org/10.1037//0033-2909.128.5.774
- Hirsch, B. J. and Rapkin, B. D. (1987). The transition to junior high school: A longitudinal study of self-esteem, psychological symptomatology, school life, and social support. *Child Development.* 58 (5), 1235–1243. https://doi.org/10.2307/1130617
- Jeffrey, A. J., Auger, R. W. and Pepperell, J. L. (2013). "If we're ever in trouble they're always there": A qualitative study of teacher-student caring. *The Elementary School Journal.* 114, 100–117. https://doi.org/10.1086/671062
- Lalić-Vučetić, N. (2015). *Postupci nastavnika u razvijanju motivacije učenika za učenje* (doktorska disertacija). Beograd: Filozofski fakultet.
- Lalić-Vučetić, N. Z. i Mirkov, S. I. (2017). Motivacija za učenje, opažanje postupaka učitelja i doživljaj samoefikasnosti učenika u matematici i prirodnim naukama. *Inovacije u nastavi.* 2, 29–48. https://doi.org/10.5937/inovacije1702029L
- Lepper, M. R., Sethi, S., Dialdin, D. and Drake, M. (1997). Intrinsic and extrinsic motivation: A developmental perspective. In: Luthar, S. S., Burack, J. A., Cicchetti, D. Weisz, J. R. (Eds.). *Developmental psychopathology: Perspectives on adjustment, risk, and disorder* (23–50). New York: Cambridge University Pres.
- Lepper, M. R., Henderlong Corpus, J. and Iyengar, S. S. (2005). Intrinsic and extrinsic motivational orientations in the classroom: age differences and academic correlates. *Journal of Educational Psychology.* 97 (2), 184–196. https://doi.org/10.1037/0022-0663.97.2.184
- Longobardi, C., Prino, L. E., Marengo, D. and Settanni, M. (2016). Student-teacher relationships as a protective factor for school adjustment during the transition from middle to high school. *Frontiers in Psychology.* 7, 1988. https://doi.org/10.3389/fpsyg.2016.01988
- Madjar, N. and Cohen-Malayev, M. (2016). Perceived school climate across the transition from elementary to middle school. *School Psychology Quarterly.* 31 (2), 270–288. https://doi.org/10.1037/spq0000129

- Mouratidis, M., Vansteenkiste, M., Lens, W. and Sideridis, G. (2008). The motivating role of positive feedback in sport and physical education: evidence for a motivational model. *Journal of Sport and Exercise Psychology.* 30 (2), 240–268. https://doi.org/10.1123/jsep.30.2.240
- Noddings, N. (2013). *Caring: A relational approach to ethics and moral education*. Berkeley: University of California Press.
- O'Connor, E., Dearing, E. and Collins, B. (2011). Teacher-Child Relationship and Behavior Problem Trajectories in Elementary School. *American Educational Research Journal.* 48 (1), 120–162. https://doi.org/10.3102/0002831210365008
- Otis, N., Grouzet, F. M. E. and Pelletier, L. G. (2005). Latent motivational change in an academic setting: a 3-year longitudinal study. *Journal of Educational Psychology.* 97 (2), 170–183. https://doi.org/10.1037/0022-0663.97.2.170
- Pianta, R. C. (2006). Classroom Management and Relationships Between Children and Teachers: Implications for Research and Practice. In: Evertson, C. M. and Weinstein, C. S. (Eds.). *Handbook of classroom management: Research, practice, and contemporary issues* (685–709). Lawrence Erlbaum Associates Publishers.
- Prewett, S. L., Bergin, D. A. and Huang, F. L. (2019). Student and teacher perceptions on student-teacher relationship quality: A middle school perspective. *School Psychology International*. 40 (1), 66–87. https://doi.org/10.1177/0143034318807743
- Ratelle, C. F., Guay, F., Larose, S. and Senécal, C. (2004). Family Correlates of Trajectories of Academic Motivation During a School Transition: A Semiparametric Group-Based Approach. *Journal of Educational Psychology*. 96 (4), 743–754. https://doi.org/10.1037/0022-0663.96.4.743
- Reeve, J. (2002). Self-determination theory applied to educational settings. In: Deci, E. L. and Ryan, R. M. (Eds.). *Handbook of self-determination research* (183–203). Rochester, NY: University of Rochester Press.
- Reeve, J. (2009). Why teachers adopt a controlling motivating style toward students and how they can become more autonomy supportive. *Educational Psychologist.* 44 (3), 159–175. https://doi.org/10.1080/00461520903028990
- Reeve, J., Jang, H., Carrell, D., Jeon, S. and Barch, J. (2004). Enhancing students' engagement by increasing teachers' autonomy support. *Motivation and Emotion.* 28, 147–169. https://doi.org/10.1023/B:MOEM.0000032312.95499.6f
- Reeve, J. and Shin, S. H. (2020). How teachers can support students' agentic engagement. *Theory Into Practice.* 59 (2), 150–161. https://doi.org/10.1080/00405841.2019.1702451
- Ryan, R. M., Connell, J. P. and Grolnick, W. S. (1992). When achievement is not intrinsically motivated: A theory of internalization and self-regulation in school. In: Boggiano, A. K. and Pittman, T. S. (Eds.). *Achievement and motivation* (167–188). New York: Cambridge University Press.
- Ryan, R. M. and Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist.* 55 (1), 68–78. https://doi.org/10.1037/0003-066X.55.1.68
- Ryan, R. M. and Deci, E. L. (2017). *Self-determination Theory – Basic psychological needs in motivation, development, and wellness.* New York, London: Guilford Press.
- Ryan, R. M., Stiller, J. D. and Lynch, J. H. (1994). Representations of relationships to teachers, parents, and friends as predictors of academic motivation and self-esteem. *The Journal of Early Adolescence.* 14 (2), 226–249. https://doi.org/10.1177/027243169401400207

- Scales, P. C., Pekel, K., Sethi, J., Chamberlain, R. and Van Boekel, M. (2020). Academic Year Changes in Student-Teacher Developmental Relationships and Their Linkage to Middle and High School Students' Motivation: A Mixed Methods Study. *The Journal of Early Adolescence*. 40 (4), 499–536. https://doi.org/10.1177/0272431619858414
- Scherrer, V. and Preckel, F. (2019). Development of Motivational Variables and Self-Esteem During the School Career: A Meta-Analysis of Longitudinal Studies. *Review of Educational Research*. 89 (2), 211–258. https://doi.org/10.3102/0034654318819127
- Sierens, E., Vansteenkiste, M., Goossens, L., Soenens, B. and Dochy, F. (2009). The synergistic relationship of perceived autonomy-support and structure in the prediction of self-regulated learning. *British Journal of Educational Psychology.* 79 (1), 57–68. https://doi.org/10.1348/000709908X304398
- Skinner, E. A. and Belmont, M. J. (1993). Motivation in the classroom: reciprocal effects of teacher behavior and student engagement accross the school year. *Journal of Educational Psychology.* 85 (4), 571–581. https://doi.org/10.1037/0022-0663.85.4.571
- Skinner, E. A., Furrer, C., Marchand, G. and Kindermann, T. (2008). Engagement and disaffection in the classroom: Part of a larger motivational dynamic? *Journal of Educational Psychology.* 100 (4), 765–781. https://doi.org/10.1037/a0012840
- Soenens, B. and Vansteenkiste, M. (2010). A theoretical upgrade of the concept of parental psychological control: Proposing new insights on the basis of self-determination theory. *Developmental Review.* 30, 74–99. https://doi.org/10.1016/j.dr.2009.11.001
- Šarčević, D. (2015). Struktura akademske motivacije u ranoj adolescenciji prema teoriji samoodređenja [Structure of academic motivation in early adolescence based on Self-Determination Theory]. *Zbornik Instituta za pedagoška istraživanja.* 47 (2), 222–249. https://doi.org/10.2298/ZIPI1502222S
- Šakan, D. and Manasijević, M. (2018). Postignuće učenika u matematici u TIMSS 2015 – efekti različitih načina rada učitelja. U: Pavlović Babić, D., Jovanović, D. i Simić, N. (ur.). *Zbornik radova Dijalozi u obrazovanju 2017* (61–77). [The effects of different teaching strategies on students' math achievement in TIMSS2015. In: Pavlović Babić, D., Jovanović, D. and Simić, N. (Eds.). *Dialogues in education*]. Belgrade: Educational research association of Serbia.
- Šakan, D. (2020). Validation of the Basic Psychological Need Satisfaction and Frustration Scale (BPNSFS) on adolescents in Serbia. *Current Psychology.* 41, 2227–2240. https://doi.org/10.1007/s12144-020-00742-z
- Vallerand, R. J., Fortier, M. and Guay, F. (1997). Self-determination and persistence in a real-life setting: Toward a motivational model of high school dropout. *Journal of Personality and Social Psychology.* 72 (5), 1161–1176. https://doi.org/10.1037/0022-3514.72.5.1161
- Vallerand, R. J., Blais, M. R., Brière, N. M. and Pelletier, L. G. (1989). Construction et validation de l'Échelle de Motivation en Éducation (EME). *Revue canadienne des sciences du comportement.* 21 (3), 323–349. https://doi.org/10.1037/h0079855
- Vallerand, R. J. and Ratelle, C. F. (2002). Intrinsic and extrinsic motivation: a hierarchical model. In: Deci, E. L. and Ryan, R. M. (Eds.). *Handbook of self-determination research* (37–63). Rochester, NY: University of Rochester Press.

- Vansteenkiste, M. and Ryan, R. M. (2013). On psychological growth and vulnerability: Basic psychological need satisfaction and need frustration as a unifying principle. *Journal of Psychotherapy Integration.* 23 (3), 263–280. https://doi.org/10.1037/a0032359
- Vansteenkiste, M., Ryan, R. M. and Soenens, B. (2020). Basic psychological need theory: Advancements, critical themes, and future directions: *Motivation and Emotion*. 44, 1–31. https://doi.org/10.1007/s11031-019-09818-1
- Vansteenkiste, M., Simons, J., Lens, W., Sheldon, K. M. and Deci, E. L. (2004). Motivating learning, performance, and persistence: The synergistic role of intrinsic goals contents and autonomy-supportive contexts. *Journal of Personality and Social Psychology.* 87 (2), 246–260. https://doi.org/10.1037/0022-3514.87.2.246
- Vansteenkiste, M., Simons, J., Lens, W., Soenens, B. and Matos, L. (2005). Examining the impact of extrinsic versus intrinsic goal framing and internally controlling versus autonomy-supportive communication style upon early adolescents' academic achievement. *Child Development.* 76 (2), 483–501. https://doi.org/10.1111/j.1467-8624.2005.00858.x
- Vasić, A. & Šarčević, D. (2012). *Psihologija i ontogeneza – teorije i istraživanja [Psychology and ontogenesis – theories and research]*. Novi Sad: Authors and Faculty of Legal and Business Studies dr Lazar Vrkatić.
- Vasić, A. & Šarčević, D. (2014). Struktura i korelati akademske motivacije u adolescenciji. U: Franceško, M. (ur.). *Vrednosne orijentacije mladih u Vojvodini - stanje i perspektive* (73–104). [Structure and correlates of academic motivation in adolescence. In: Franceško, M. (Ed.). *Value orientations of youth in Vojvodina – state and perspective*]. Novi Sad: Faculty of Legal and Business Studies dr Lazar Vrkatić.
- Verschueren, K. and Koomen, H. M. Y. (2012). Teacher–child relationships from an attachment perspective. *Attachment & Human Development.* 14 (3), 205–211. https://doi.org/10.1080/14616734.2012.672260
- Wellborn, J., Connell, J., Skinner, E. A. and Pierson, L. H. (1988). *Teacher as social context: A measure of teacher provision of involvement, structure and autonomy support* (Tech. Rep. No. 102). Rochester, NY: University of Rochester.
- Wentzel, K. R. (2002). Are effective teachers like good parents? Teaching styles and student adjustment in early adolescence. *Child Development.* 73 (1), 287–301. https://doi.org/10.1111/1467-8624.00406
- Wentzel, K. R. (2009). Students' Relationship with Teachers as Motivational Contexts. Parenting and Childrens' Motivation at school. In: Wentzel, K. R. and Wigfield, A. (Eds.). *Handbook of Motivation at School* (301–323). New York, London: Routledge, Taylor & Francis Group.
- Wentzel, K. R., Tomback, R., Williams, A. and McNeish, D. (2019). Perceptions of competence, control, and belongingness over transition to high school: A mixed-method study. *Contemporary Educational Psychology.* 56, 55–66. https://doi.org/10.1016/j.cedpsych.2018.11.005
- Wigfield, A. and Eccles, J. S. (1994). Children's competence beliefs, achievement values, and general self-esteem: change across elementary and middle school. *Journal of Early Adolescence.* 14 (2), 107–138. https://doi.org/10.1177/027243169401400203
- Yu, M. V. B., Johnson, H. E., Deutsch, N. L. and Varga, S. M. (2018). "She calls me by my last name": Exploring adolescent perceptions of positive teacher-student relationships. *Journal of Adolescent Research*. 33, 332–362. https://doi.org/10.1177/0743558416684958

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АКАДЕМСКА МОТИВАЦИЈА У ОСНОВНОЈ И СРЕДЊОЈ ШКОЛИ: УЛОГА ПЕРЦИПИРАНИХ МОТИВАЦИОНИХ СТИЛОВА НАСТАВНИКА

Према теорији самоодређења (ТСО), а посебно на основу премиса теорија когнитивне евалуације и организмичке интеграције, мотивација се може посматрати као сложен и вишеструк психолошки феномен. Приступ ТСО разумевању овог феномена огледа се у напуштању традиционалне дихотомије и промовисању идеје да, осим варирања у интензитету, мотивација варира и по врсти, те да је, у том смислу, могуће разликовати три типа: амотивацију, спољашњу мотивацију (која се на основу степена самоодређења и перципираног локуса контроле поткрепљења дели на спољашњу, интројектовану и идентификовану регулацију) и унутрашњу мотивацију. У дијалектичком односу размене ученика и наставника, сходно претпоставци о три базичне психолошке потребе за аутономијом, компетенцијом и повезаношћу, разликују се три мотивациона стила наставника – подршка аутономији, подршка структури и подршка укључености, који су универзално (не)ефективни јер (не)задовољавају базичне психолошке потребе сваког појединца. Већина истраживања у домену мотивационих аспеката школског постигнућа указује да постоје значајне разлике у мотивацији за учење код ученика средњих школа у односу на ученике основних школа, и то посебно у нижој изражености више аутономних облика мотивације као што су унутрашња и идентификована мотивација. Неке студије указују да се посебан пад у мотивацији очитује у контексту учења природно-математичких предмета, а нешто мање у контексту друштвено-хуманистичких предмета. С обзиром на то да значајну улогу у поспешивању мотивације за учење код ученика имају наставници, циљ овог истраживања био је да се испита да ли ниво образовања (основни и средњи ниво) модерира релације између перципираних мотивационих стилова наставника и академске мотивације ученика у контексту друштвено-хуманистичких и природно-математичких предмета. Скале за мерење перципираних мотивационих стилова наставника (подршка аутономији, подршка структури и подршка повезаности) и за мерење различитих аспеката академске мотивације (интринзичка мотивација, екстринзичка мотивација, интројектована мотивација и амотивација) примењене су на узорку од 494 ученика (57,9% испитаница) у два нивоа образовања – код ученика завршних разреда основних школа (53,8%) и ученика средњих школа (46,2%). Како би се проверили ефекти перципираних мотивационих стилова наставника на академску мотивацију ученика различитог нивоа образовања, спроведене су анализе модерације. У статус предиктора укључени су различити перципирани мотивациони стилови наставника, модератор је био ниво образовања, а у статусу критеријума били су различити аспекти академске мотивације. Анализе су спроведене посебно за групу природно-математичких и друштвено-хуманистичких предмета. Тестом једноставног нагиба тестирано је да ли постоје значајни интеракцијски ефекти у предвиђању критеријума. Резултати модераторских анализа указују да у контексту друштвено-хуманистичких предмета ниво

образовања нема значајну модерирајућу улогу, док у контексту природно-математичких предмета има. Прво, ниво образовања модерира релације између подршке структури и интринзичке мотивације. Друго, у објашњењу екстринзичке и интројектоване мотивације нема модерирајућих ефеката. Треће, ниво образовања модерира однос између подршке аутономији, подршке структури и амотивације. Резултати тестова једноставног наиба индикују да подршка структури има позитиван ефекат на реализацију интринзичке мотивације, посебно код млађих ученика, да подршка аутономији и подршка структури имају ефекат на пад амотивације у обе узрасне групе, али посебно код млађих ученика. Резултати су појаснили како наставници могу утицати на различите аспекте мотивације за учење природно-математичких предмета и друштвено-хуманистичких предмета код ученика основне и средње школе. У оквиру педагошких импликација резултати ове студије претендују да понуде смернице за креирање педагошких програма за наставнике ради оспособљавања њихових компетенција.

Кључне речи: *мотивациони стилови наставника, академска мотивација, ниво образовања, теорија самоодређења*