



*Journal of the Institute for Educational Research*  
Volume 54 • Number 1 • June 2022 • 41–59  
UDC 37.064.2  
37.014.5

ISSN 0579-6431  
ISSN 1820-9270 (Online)  
<https://doi.org/10.2298/ZIPI2201041N>  
Original research paper

## **TEACHERS' SUPPORT AND STUDENTS' PERCEPTIONS OF SCHOOL CONNECTEDNESS: A MULTILEVEL STUDY**

**Stefan Ninković and Olivera Knežević Florić**  
*Faculty of Philosophy, University of Novi Sad, Serbia*

---

**Dejan Đorđić\***  
*Faculty of Education in Sombor, University of Novi Sad, Serbia*

---

### **ABSTRACT**

School connectedness is a significant construct that has various positive outcomes for students, so it is important to investigate its determinants. Students' connectedness to school depends on their interaction with teachers. The aim of this study was to examine the relationship between teachers' support and students' perceptions of school connectedness. Participants were 325 students from 29 high school classes. Data were collected using research tools for assessing students' perceptions of teachers' support, homeroom teachers' support, and school connectedness. Multilevel modeling was applied, since students were nested within classrooms. The obtained results revealed that, after controlling the effects of gender and type of school, the teacher's support significantly predicted the students' connectedness to school at the individual (student) level. In addition, class-level homeroom teacher's support was positively associated with students' school connectedness at the class level. The relation between teachers' support and students' school connectedness did not significantly vary across classes. This study indicates that teachers' support plays an important role in fostering students' connectedness to school. Implications of this study are relevant for teachers' initial education and professional development.

---

#### **Key words:**

School connectedness, teachers' support, homeroom teachers, multilevel modeling, high school.

---

\* E-mail: [dejan.djordjic@uns.ac.rs](mailto:dejan.djordjic@uns.ac.rs)

## ■ INTRODUCTION

The contemporary literature suggests that a sense of school belonging is important for students' learning and development (Korpershoek, Canrinus, Fokkens-Bruinsma & de Boer, 2020). Moreover, researchers have tried to identify characteristics of school settings that are related to students' connectedness to school (Waters, Cross & Shaw, 2010). There is a fair amount of evidence that indicates that a teacher's social support is positively associated to a student's connection to school (Allen, Kern, Vella-Brodrick, Hattie & Waters 2018; Hallinan, 2008). However, there is a lack of research that has examined the relationship between a homeroom teacher's support and students' school connectedness.

This study aims to better understand the relationship between a teacher's support and students' connectedness to school. We rely on the fact that high school students have day-to-day interactions with their subject teachers, as well as with the homeroom teacher. Therefore, it is possible for a student to experience low levels of support from subject teachers, but to belong to a class that is characterized by a high level of support from the homeroom teacher. For this reason, it is important to differentiate the effects of these two types of teacher's support on student's perceptions of school connectedness.

### *Students' perceptions of school connectedness*

The student's relationship with the school can be conceptualized and measured in different ways. Thus, in the current literature various constructs with similar meanings have been used, such as: school connectedness (e.g. Lohmeier & Lee, 2011), school bonding (e.g. Roviš & Bezinović, 2011), and related concepts of attachment to school (Hallinan, 2008), a sense of belonging to school (e.g. St-Amand, Girard & Smith, 2017), then school climate (e.g. Đorđić & Damjanović, 2016), school engagement (eg. Li, 2011), and school membership (e.g. You, Ritchey, Furlong, Shochet & Boman, 2011).

The concept of school connectedness is broadly defined as "a student's relationship to school" (Libbey, 2004: 274). According to Barber & Schluterman, (2008), school connectedness consists of three broad dimensions - relationships to people at school, relationship to school, and attitudes towards school importance. Marraccini & Brier (2017) argued that school connectedness includes the components of social affiliations, belonging to school, attitudes towards the importance of school, and supportive learning environments. A strong connection to the school is based on positive experiences, such as the perception of high academic expectations, positive interactions between teachers and students, and a sense of a safe environment (Marraccini & Brier, 2017).

Students' relationship with school is a construct that has often been related to important student outcomes. Recent meta-analysis has linked school belonging with academic achievement (Korpershoek *et al.*, 2020). Furthermore, this relationship was similar across different grade levels and the socioeconomic status of students. In addition, school connectedness seems to be a protective factor against suicidal thoughts and behaviors (Marraccini & Brier, 2017). Therefore, previous research clearly indicates the significant effects of students' perceptions of school connectedness.

Although a sense of school connectedness is important for all students, Allen *et al.* (2018) argue that it is especially important for adolescents. Adolescents have specific social and emotional needs and adolescence is characterized by the formation of identity, the expansion of social relations, and preparation for entering the world of adults. Nevertheless, during the transition from primary to secondary school, motivation for school learning decreases (Wang & Eccles, 2012). This may be due to impersonal interactions of students with teachers and the decline in teachers' social support. Conversely, if adolescents feel supported by their teachers, they tend to be interested in school, will enjoy school more and will have a sense of belonging to the school. Thus, teachers by their behavior in the classroom "can convey a sense of caring, respect and appreciation for their students" (Wang & Eccles, 2012: 879).

### *The significance of teacher social support*

Krnjajić (2002) argued that the student-teacher relationship has two main characteristics: inter-personality (affection, respect, care) and impersonality (rights and duties). Social support belongs to the domain of interpersonal teachers' behavior and may be available to varying degrees to students (Tomás, Gutiérrez, Pastor & Sancho, 2020). Teachers' support can be defined as the "extent to which teachers are supportive, responsive, and committed to students' well-being" (Wang, 2009: 242). The construct of teachers' social support should not be completely equated with a supportive student-teacher relationship (Tennant, Demaray, Malecki, Terry, Clary & Elzinga, 2014). Positive student-teacher relationships primarily include warmth and acceptance. Such behaviors are characteristic of a teacher's emotional support, which is only one type of social support. However, in addition to emotional support, teachers provide informational, appraisal, and instrumental support (Tennant *et al.*, 2014).

The positive effects of teachers' social support have been documented in numerous studies. Teachers' social support is positively associated with students' academic achievement (Tennant *et al.*, 2014), school satisfaction, self-esteem (Aldrup, Klusmann, Lüdtke, Göllner & Trautwein, 2018), and attachment to school (Hallinan, 2008). Students tend to have positive perceptions of schools in which teachers show care, respect, and provide emotional support (Battistich, Solomon,

Watson & Schaps, 1997). By providing appropriate support, teachers can create a sense of acceptance, importance, and connection among students. In such conditions, students show better academic achievement, more initiative, greater acceptance of peers, they are more motivated, and behave pro-socially and responsibly (Bear, Yang, Mantz, Pasipandya, Hearn & Boyer 2014).

The positive effects of teachers' social support could be explained by the self-determination theory (Deci & Ryan, 2000). According to this theoretical framework, the three basic needs of people are to feel autonomous, competent, and related. Fulfillment of those basic needs is crucial for good psychological health and development (Kaplan & Madjar, 2017). Thus, students have an inner need to participate in positive interactions with their teachers and peers. Students are more likely to have a strong connection to schools in which they can meet the need to be related. Furthermore, Korpershoek *et al.* (2020) argued that students tend to internalize values and norms from environments in which they have a sense of belonging. Deci and Ryan (1985, 1991, 2012) recognize meeting the need for relatedness, along with the need for autonomy and competence, as a way to achieve self-determination.

Furthermore, Connell and Wellborn (1991) linked these three needs with the school context and thus created a school-based Self System Process model that describes how the school, as a social environment, satisfies individual needs. The authors state that the following three characteristics of the school environment affect the satisfaction of the need for competence, autonomy, and belonging.

1. *Structure*. It refers to the clarity and quality of expectations of certain behavior and the consequences that come after violating certain rules, as well as to the trust in the strength of students. The structure satisfies the need for competence.
2. *Autonomy support*. It refers to the amount of choices students have and helping students relate their own behavior to personal values and goals.
3. *Involvement*. It refers to the commitment of teachers and other staff to students, in terms of devoting attention, time, resources, or through showing interest and support (Connell & Wellborn, 1991; Wang, Liu, Kee & Chian, 2019; Waters, Cross & Runions, 2009).

The effects of teachers' social support have been mainly examined at the individual (student) level. Studies dealing with the relations of collective perceptions of teachers' support and students' outcomes are quite rare. Kilday and Ryan (2019) found that teachers' support at the group level has positive effects on students' classroom engagement. Moreover, the effects of the collective experience of teachers' support were stronger on the emotional than on the behavioral engagement of students in mathematics/science. Using multilevel structural equation modeling, Aldrup *et al.* (2018) showed that teachers' social support at the class level does not contribute to

students' school satisfaction. Lenzi, Sharkey, Furlong, Mayworm, Hunnicutt & Vieno (2017) found that a teacher's support at the individual level significantly predicts students' perceptions of school safety. On the other hand, a teacher's support at the school level did not have a significant predicting effect. The presented research results together indicate that the effects of teachers' support at different levels are not necessarily the same.

### *The role of homeroom teachers in the Serbian educational context*

The role of the homeroom teacher is recognized in education systems around the world. However, this concept is not established in the same way in different educational contexts. In Israel, for example, homeroom teachers deal with the social and emotional needs of students (Kashy-Rosenbaum, Kaplan & Israel-Cohen, 2018). In the US, advisory programs have been implemented as a way of improving relationships between teachers and students (McClure, Yonezawa & Jones, 2010). In Switzerland, homeroom teachers have not only pedagogical but also organizational responsibility (Baeriswyl, Bratoljic & Krause, 2021).

The Serbian school system consists of four different school types: primary school (grades 1–4; ages 7–10), lower secondary school (grades 5–8; ages 11–14), vocational high school (grades 9–12; ages 15–19), and gymnasium (grades 9–12; ages 15–19). Starting from fifth grade, each class has its own homeroom teacher. Unlike subject teachers who are responsible only for teaching their subjects, homeroom teachers are responsible for the overall functioning of one class of students (Baeriswyl, Bratoljic & Krause, 2021). In Serbia, the activities of the homeroom teacher include cooperation with parents and coordination of work with other teachers who teach students in the same class. Homeroom teachers are expected to meet with their students every week (usually for 45 minutes) outside the regular classes (Lukić & Obradović, 2007). The primary goal of these meetings is to provide support to students' academic, social, and emotional needs. The above indicates that it is important to investigate how the support of homeroom teachers is related to the students' perceptions of school connectedness.

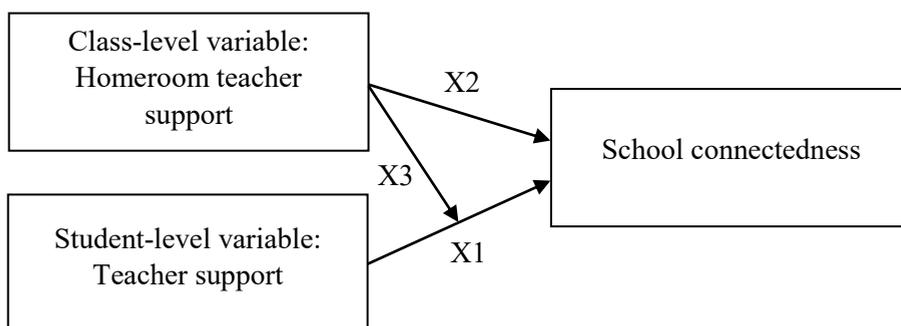
## ■ METHOD

### *Research problem*

Studies in which the relationships between students' school connectedness and teachers' support have been examined at different levels are rare. Scholars (Aldrup *et al.*, 2018; Kilday & Ryan, 2019) indicate that the multilevel nature of students' perceptions of teachers' behavior is often overlooked. Bearing in mind that students are clustered into classes, the nested nature of the data should be taken into account. This means that it is reasonable to expect that students who belong to the same class have similar perceptions of teachers' interpersonal behavior. Since homeroom teachers lead one class (usually for several years), students' individual ratings can be averaged so that a shared measure of the homeroom teacher's support is obtained for each class. In that case, the support of the homeroom teacher is a characteristic of the class. On the other hand, students from the same class may have different individual interpretations of the same teacher's behavior. (Lenzi *et al.*, 2017) argue that students may have different concepts of supportive teacher's behavior, based on their personal frames of reference. Therefore, this paper focuses on the following research questions:

1. Is there a relationship between teachers' support and students' connectedness to school at the individual level?
2. Is there a relationship between the homeroom teachers' support and students' school connectedness at the class level?
3. Is the relationship between teachers' support and students' school connectedness moderated by the magnitude of a homeroom teacher's support?

Based on a review of the literature, we set out three hypotheses: (H1) Teachers' support (student-level variable) is positively associated with students' school connectedness; (H2) The homeroom teacher's support (class-level variable) is a positive predictor of students' perceptions of school connectedness; (H3) The relationship between teachers' support and students' connectedness to school is moderated by the support of the homeroom teacher (Figure 1).



**Figure 1:** Hypothesized multilevel model of relationships between variables

### *Sample and procedure*

The convenient sample comprised 325 high school students (57.5% girls and 42.5% boys) from 29 classes. The average age of the respondents was 16.55 ( $SD = 1.10$ ). There were 18.2% of first grade students, 16.3% of second grade students, 43.4% of third grade students and 22.2% of fourth, final grade students in the sample. The majority of students attended gymnasium (55.4%), while 44.6% of students attended a vocational high school. In Serbia, regardless of the type of high school, each class has its own homeroom teacher. The average number of students in the 29 classes included in the sample was 11. The academic achievement of the students included in the sample ranged from 1.00 to 5.00 ( $M = 4.12$ ,  $SD = .67$ ).

After obtaining permission from the school management, one of the authors of the paper forwarded a link to the online questionnaire to the students through a contact person. Data collection was completely anonymous and we did not collect any personal information. All students participated in the research voluntarily. Students were informed that they could withdraw from the study at any time. It took approximately 15 minutes to complete the survey.

### *Instruments*

*Teachers' support.* This construct was measured with two items adapted from Jelas, Azman, Zulnaldi & Ahmad (2016). These are the following items: "There is a teacher in my school who takes care of me" and "There is a teacher in my school who is ready to listen to me when I have something to say". The students gave their answers using a four-point Likert scale (1 = strongly disagree, 4 = strongly agree). The Cronbach's internal consistency coefficient of this scale was .70. Given the sensitivity of the alpha

coefficient to the number of items (Bandalos, 2018), the estimated internal consistency can be interpreted as acceptable.

*Homeroom teacher's support.* The support of the homeroom teacher was examined with the instrument used in previous studies (Aldrup *et al.*, 2018). This instrument includes eight items related to students' collective perception of different types of support from the homeroom teacher. An example of an item is: "Our homeroom teacher encourages us to ask if there is something we do not understand". The students gave their answers using a four-point Likert scale (1 = strongly disagree, 4 = strongly agree). The Cronbach's alpha coefficient of internal consistency of this scale was excellent ( $\alpha = .93$ ).

*School connectedness.* This construct was measured by the School Connectedness Scale (SCS). We used the five-item version of the scale that has been most often used (Furlong, O'Brennan & You, 2011). This instrument emerged from the National Longitudinal Study of Adolescent Health (Resnick *et al.*, 1997). Items of this instrument relate to different school experiences such as closeness, happiness, belonging, fair treatment, and safety. An example of an item is "I feel like I am part of this school". In previous validation studies (Furlong, O'Brennan & You, 2011) it was found that the SCS is a one-dimensional measure that has good psychometric properties. Furlong, O'Brennan & You (2011) reported internal consistency coefficients ranging from .82 to .88 in their study across 18 sociocultural groups. In the present study the Cronbach's alpha of this scale was .81.

*Control variables.* At the student-level we controlled the effect of the gender of students (0 – males and 1 – females) and at the class-level effect of the type of school (0 – gymnasium and 1 – vocational high school). These variables were selected as control based on the results of previous research (Allen *et al.*, 2018; Houtte & Maele, 2012).

### *Data analysis*

Since the students were nested within classes (and therefore within homeroom teachers), it was justifiable to apply multilevel modeling. In accordance with the recommendations in the contemporary literature (Hox, Moerbeek & van de Schoot, 2018), we successively fitted five models. The intercept-only (null) model, which does not include predictors, was tested first. This model allows the estimation of the between-class and the within-class variance of the outcome variable. The second model included first-level predictor variables, teachers' support and a student's gender. In the third model, the homeroom teacher's support and school type were introduced as predictors of the second level. In the fourth model, we allowed the slope for variable teachers' support to vary across classes. Finally, in the fifth model, we examined whether there is a moderating effect of the support of the homeroom teacher in the relationship between teachers' support and students' perceptions of

school connectedness. The restricted maximum likelihood (REML) method was used to fit all models. REML provides better estimations of variance components when it comes to small and medium samples (McNeish, 2017). Multilevel modeling was performed in the R environment, using the “lme4” package (Bates, Mächler, Bolker & Walker, 2015). Testing the significance of random effects was performed with the “lmerTest” package (Kuznetsova, Brockhoff & Christensen, 2017). To calculate the marginal and conditional  $R^2$ , the “performance” package in R was used (Lüdtke, Ben-Shachar, Patil, Waggoner & Makowski, 2021). The marginal  $R^2$  indicates the percentage of explained variance only by fixed effects, while the conditional  $R^2$  indicates the percentage of explained variance with fixed and random effects.

To facilitate interpretation of the results, continuous explanatory variables were centered. Teachers' support was group-mean centered. This way of centering has been proposed in the literature in situations where the focus is on examining the relationship between two or more variables at level-one and when the focus is on examining cross-level interaction (Enders & Tofghi, 2007). This way of centering implies that the mean value of the group is subtracted from the individual raw scores on the predictor variable. On the other hand, the variable support of the homeroom teacher was grand-mean centered. We used a Q-Q plot to check for normality of residuals. The Q-Q plot indicated that level-one residuals were approximately normally distributed, which is an important assumption for multilevel models.

## ■ RESULTS

Table 1 shows the results of descriptive statistical analysis. Means and standard deviations at level one are shown. As can be seen, students perceive the support of the homeroom teacher as more present in relation to the support of other teachers in the school. Furthermore, the students indicated that they have a strong sense of school connectedness.

**Table 1:** Descriptive statistics of the scales

	Number of items	<i>M</i> ( <i>SD</i> )	Min	Max
Teacher support	2	3.12 (.75)	1	4
Homeroom teacher support	8	3.36 (.71)	1	4
School connectedness	5	3.62 (.86)	1	5

*Note:* Summative scores are divided by the number of items on the scales.

Table 2 shows the results of multilevel modeling. The intercept-only model was tested first, and then various parameters were gradually added.

**Table 2:** Predicting students’ connectedness to school by teachers’ support at individual and class level: Multilevel models

Model	Intercept only	Level-1 predictors	Level-2 predictors	Random slope	Cross-level interaction
Fixed effects					
Intercept ( $\gamma_{00}$ )	18.19 (.32) <sup>***</sup>	18.52 (.42) <sup>***</sup>	18.41 (.47) <sup>***</sup>	18.32 (.46) <sup>***</sup>	18.32 (.46) <sup>***</sup>
Teacher support ( $\gamma_{10}$ )		1.60 (.14) <sup>***</sup>	1.60 (.14) <sup>***</sup>	1.59 (.17) <sup>***</sup>	1.60 (.17) <sup>***</sup>
Gender ( $\gamma_{20}$ )		-.53 (.46)	-.60 (.46)	-.54 (.46)	-.53 (.46)
Homeroom teacher support ( $\gamma_{01}$ )			.27 (.10) <sup>*</sup>	.28 (.10) <sup>*</sup>	.27 (.10) <sup>*</sup>
School type ( $\gamma_{02}$ )			.19 (.64)	.32 (.64)	.30 (.64)
Cross-level interaction ( $\gamma_{11}$ )					.02 (.05)
Random effects					
$\sigma^2_e$	17.30	11.93	11.88	11.45	11.47
$\sigma^2_{i0}$	1.29	2.00	1.59	1.65	1.65
$\sigma^2_{i1}$				.21	.22
$\sigma_{i01}$				-.24	-.22
Marginal $R^2$		.261	.295	.296	.294
Conditional $R^2$	.069	.367	.378	.387	.402

Note: Standard errors are given in parentheses

\*  $p < .05$

\*\*\*  $p < .001$

### *The intercept-only model*

The null (the intercept-only) model does not include any predictor variables. However, this model allowed us to estimate the variance of the dependent variable at each level (within-class and between-class). The interclass correlation coefficient (ICC) was  $.069 = \text{between-class variance} / \text{between-class variance} + \text{within-class variance} = 1.29 / (1.29 + 17.30)$ . In other words, a 7% variance in school connectedness exists between classes. In addition, the design effect was 1.70. According to Lai & Kwok (2015), when examining second-level predictor effects and when the design effect is greater than 1.10, techniques should be used that take into account the nested nature of the data. As can be seen in Table 2, the intercept ( $\gamma_{00}$ ) of the outcome variable is 18.19. This value can be interpreted as the mean of school connectedness at the level of the whole sample.

### *Random intercept and level one predictor variables fixed effects*

Within this model, the variables teacher's support ( $\gamma_{10}$ ) and student's gender ( $\gamma_{20}$ ) were introduced as first-level predictors. Gender of students was a control variable at this level. As can be seen in Table 2, the perceived support from teachers had a significant ( $\gamma_{10} = 1.60, p < .001$ ) positive effect on students' perceptions of school connectedness. This result confirmed the first hypothesis that the perception of teachers' support positively contributes to the student's school connectedness at the individual level. On the other hand, the gender of students ( $\gamma_{20} = -.53, p > .05$ ) was not statistically significantly associated with the dependent variable. It should be borne in mind that restricted maximum likelihood allows comparison of models that have identical fixed effects (McNeish, 2017). For this reason, the comparison of this model with the previous one, due to different fixed effects, was not possible under REML.

### *Class-level predictor variables fixed effects*

In this model, the class-level of perceived the homeroom teacher's support was examined as a predictor variable. In this model, the control variable was the type of school (grammar or vocational high school). The obtained results showed that the support of the homeroom teacher was significantly positively associated with school connectedness ( $\gamma_{01} = .27, p < .05$ ). This result indicates that in those classes in which students see the support of the homeroom teacher as more frequent, the average school connectedness is higher. The variable school type did not have a statistically significant effect ( $\gamma_{02} = .19, p > .05$ ).

### *Random coefficient model*

In this model, we allowed the slope for the variable teachers' support to vary across classes. To examine whether the relationship between teachers' support and school connectedness significantly vary across classes, the deviance value of this model with a random intercept and random slope was compared with the previous model. Since these are nested models, they can be compared using the likelihood ratio test (Hox, Moerbeek & van de Schoot, 2018). However, the obtained results showed that allowing the slope of teachers' support to vary did not significantly improve the fit of the model. The result of the log-likelihood ratio test was  $\chi^2_{(2)} = 2.929, p > .05$ . Based on this result, it can be concluded that the variation of the regression coefficient of this predictor is not statistically significant.

### *Cross-level interaction*

The contemporary literature (Bliese, Maltarich & Hendricks, 2018) states that the likelihood test of random effects is too conservative. For this reason, regardless of the results of the random coefficient model test, it is useful to examine the existence of cross-level interaction. Taking these recommendations into account, in the final model, we examined whether the association between teachers' support and school connectedness was moderated by class-level support of the homeroom teacher. The obtained results showed that the interaction of these variables was not statistically significant ( $\gamma_{11} = .02, p > .05$ ).

## ■ DISCUSSION

Research on the effects of teachers' support on students' perceptions of school environment has been done mainly at the individual level. The aim of this study was to examine the effects of teachers' support on students' connectedness to school. We operationalized teacher's support at two levels, individual and class-level. To our knowledge, the effects of the homeroom teacher's support on students' perceptions of school connectedness have not been examined so far.

The interclass correlation coefficient showed that 7% of the variance in school connectedness can be attributed to the effect of students belonging to different classes. This value can be interpreted as relatively low, since in social research the values of this coefficient range from .05 to .20 (Peugh, 2010). Previous studies of school belongingness (D'hondt, Van Houtte & Stevens, 2015) and school engagement (Kilday & Ryan, 2019) have also shown that a significantly greater portion of the variance of these variables is placed at the individual level.

In the current research, it was found that students' individual perceptions of teachers' support predict school connectedness. The nature of the interaction with teachers determines how students will perceive the school environment. If students consistently participate in positive interactions with their teachers, this can contribute to the formation of positive beliefs about the school. This finding is fully consistent with previous studies (Allen *et al.*, 2018) that have shown that teachers who support their students through care, fairness, and respect increase students' school connectedness (Hallinan, 2008). Viewed from a motivational perspective, this result can be explained by the self-determination theory (Deci & Ryan, 2000b), according to which supporting students' need for relatedness contributes to a stronger connection of students with the school.

We found that the support of the homeroom teacher, operationalized as a class characteristic, was positively associated with students' connectedness to school. This means that the collective experience of the homeroom teacher's support significantly explained between-class variations in school connectedness. This finding is consistent with the results obtained by Kilday & Ryan (2019) which showed that a teacher's support at the class level is positively related to the behavioral and emotional engagement of students in the classroom. However, our results suggest that the measure of teachers' support at the individual level has greater predictive power compared to the class-level measure. These findings are consistent with previous studies. For example, Aldrup *et al.* (2018) found that a teacher's social support is associated with students' school adjustment at the individual level. However, the classroom-average measure of teacher social support was not significantly related to classroom-level students' outcomes. Similarly, Lenzi *et al.* (2017) did not find a significant effect of teacher's support aggregated at school level on students' perceptions of school safety.

Contrary to our expectation, there was no significant slope variation for teachers' support across classes. This means that the relationship between teachers' support and students' school connectedness was similar across all classes. Moreover, the examination of the moderating role of the homeroom teacher's support in the relationship between teachers' support and the students' perceptions of school connectedness did not yield significant results. This finding is comparable to the results obtained by Kilday and Ryan (2019) in their study. These researchers found that the relationships between teacher-student relatedness and two dimensions of student engagement do not vary across classes.

The final part of the results of this study refers to the role of the examined control variables. No significant gender differences in the level of students' school connectedness were found in our study. This result is in line with previous research (D'hondt, Van Houtte & Stevens, 2015; Sánchez, Colón & Esparza, 2005). However, it should be borne in mind that there are studies in which small gender differences in school connectedness have been found (Allen *et al.*, 2018). We tend to interpret

our findings from a development perspective. In our sample, most students were attending the third grade of high school. It is possible that at this stage of adolescence, boys and girls have similar perceptions of the school environment.

The type of school was not a significant predictor of students' school connectedness. A small number of studies have considered the relationship between the type of school and the students' connectedness to school. Houtte & Maele (2012) found that students attending technical / vocational schools tend to have a significantly lower sense of belonging compared to peers from academic schools. However, in the mentioned research, the central dependent variable, sense of belonging to school, was differently operationalized in comparison with the construct of school connectedness. Our results can be interpreted in the context of the national education system of Serbia. It is possible that in Serbia the differences between vocational and grammar schools are not as drastic as in other countries.

This study has several limitations that should be mentioned. The sample included students from 29 classes. A larger sample at the student and the class level would enable improvement of the external validity of the obtained results. Since this study is cross-sectional and correlational, it is not feasible to exclude the possibility that there is a reciprocal relation between students' connectedness to school and teachers' support. That means that it is possible that those students who are better connected with the school tend to see their teachers as more supportive. Longitudinal research would allow studying the trajectory of changes in students' school connectedness in the function of a teacher's support. One of the limitations is related to the measurement of the examined variables. Since all variables were treated as manifest, it is reasonable to assume the presence of an error in measuring the constructs of teachers' social support and the students' connectedness to school. It would be beneficial in future research to apply multilevel modeling techniques with latent variables. Finally, the teacher's social support can be defined as a multidimensional construct (Tennant *et al.*, 2014), which would allow examining the relationship of different types of teacher's support with students' school connectedness.

## ■ CONCLUSION

This paper demonstrated that teachers' social support is a relevant predictor for students' connectedness to school. The findings of this study have implications for the initial training and professional development of teachers. Raising teachers' awareness of the importance of their support can have positive consequences for students' attitudes towards school. Based on our results, it can be concluded that it is important for teachers to be a constantly available source of social support to their students.

## References

-  Aldrup, K., Klusmann, U., Lüdtke, O., Göllner, R. & Trautwein, U. (2018). Social support and classroom management are related to secondary students' General School Adjustment: A multilevel structural equation model using student and teacher ratings. *Journal of Educational Psychology*, *110*(8), 1066–1083. <https://doi.org/10.1037/edu0000256>
-  Allen, K., Kern, M. L., Vella-Brodick, D., Hattie, J. & Waters, L. (2018). What schools need to know about fostering school belonging: a Meta-analysis. *Educational Psychology Review*, *30*(1), 1–34. <https://doi.org/10.1007/s10648-016-9389-8>
-  Baeriswyl, S., Bratoljic, C. & Krause, A. (2021). How homeroom teachers cope with high demands: Effect of prolonging working hours on emotional exhaustion. *Journal of School Psychology*, *85*(March), 125–139. <https://doi.org/10.1016/j.jsp.2021.02.002>
-  Bandalos, D. (2018). *Measurement Theory and Applications for the Social Sciences*. Guilford Press.
-  Barber, B. K. & Schluterman, J. M. (2008). Connectedness in the lives of children and adolescents: A call for greater conceptual clarity. *Journal of Adolescent Health*, *43*(3), 209–216. <https://doi.org/10.1016/j.jadohealth.2008.01.012>
-  Bates, D., Mächler, M., Bolker, B. M. & Walker, S. C. (2015). Fitting linear mixed-effects models using lme4. *Journal of Statistical Software*, *67*(1), 1–48. <https://doi.org/10.18637/jss.v067.i01>
-  Battistich, V., Solomon, D., Watson, M. & Schaps, E. (1997). Caring School Communities. *Educational Psychologist*, *32*(3), 137–151. DOI: 10.1207/s15326985ep3203\_1
-  Bear, G., Yang, C., Mantz, L., Pasipandya, E., Hearn, S. & Boyer, D. (2014). *Technical Manual for Delaware School Survey : Scales of School Climate, Bullying Victimization, Student Engagement, and Positive, Punitive, and Social Emotional Learning Techniques*. Center for Disabilities at University of Delaware and Delaware Department of Education.
-  Bliese, P. D., Maltarich, M. A. & Hendricks, J. L. (2018). Back to basics with mixed-effects models: Nine take-away points. *Journal of Business and Psychology*, *33*(1), 1–23. <https://doi.org/10.1007/s10869-017-9491-z>
-  Connell, J. P. & Wellborn, J. G. (1991). Competence, autonomy and relatedness: a motivational analysis of self-system processes. In M. R. Gunnar & L. A. Sroufe (Eds.), *Self Processes and Development: The Minnesota Symposia on Child Development* (pp. 43–77). Lawrence Erlbaum.
-  D'hondt, F., Van Houtte, M. & Stevens, P. A. J. (2015). How does ethnic and non-ethnic victimization by peers and by teachers relate to the school belongingness of ethnic minority students in Flanders, Belgium? An explorative study. *Social Psychology of Education*, *18*(4), 685–701. <https://doi.org/10.1007/s11218-015-9304-z>
-  Deci, E. L. & Ryan, R. M. (1985). *Intrinsic Motivation and Self-Determination in Human Behavior*. Plenum Press.
-  Deci, E. L. & Ryan, R. M. (1991). A motivational approach to self: integration in personality. In: Dienstbier, In R. Dienstbier (Ed.), *Nebraska Symposium on Motivation* (pp. 237–288). University of Nebraska Press.
-  Deci, E. L. & Ryan, R. M. (2000). Self-Determination Theory and the Facilitation of Intrinsic Motivation, Social Development, and Well-Being. *American Psychologist*, *55*(1), 68–78. <https://doi.org/10.1002/jfsa.2740050407>
-  Deci, E. L. & Ryan, R. M. (2012). Motivation, Personality, and Development Within Embedded Social Contexts: An Overview of Self-Determination Theory. In R. M. Ryan (Ed.), *The Oxford Handbook of Human Motivation*. Oxford University Press. <https://doi.org/10.1093/oxfordhb/9780195399820.013.0006>

- Đorđić, D. & Damjanović, R. (2016). Školska klima, njen značaj za ponašanje učenika i mogućnosti merenja [School climate, its importance for students' behavior and possibilities of measurement]. *Temе*, 40(1), 301–317.
- Enders, C. K. & Tofighi, D. (2007). Centering Predictor Variables in Cross-Sectional Multilevel Models: A New Look at an Old Issue. *Psychological Methods*, 12(2), 121–138. DOI: 10.1037/1082-989X.12.2.121
- Furlong, M. J., O'Brennan, L. & You, S. (2011). Psychometric properties of the ADD Health school connectedness scale for 18 sociocultural groups. *Psychology in the Schools*, 48(10), 986–997. <https://doi.org/10.1002/pits>
- Hallinan, M. T. (2008). Teacher influences on students' attachment to school. *Sociology of Education*, 81(3), 271–283. DOI: 10.1093/oso/9780190120801.003.0005
- Houtte, M. Van & Maele, D. Van. (2012). Students' sense of belonging in technical/vocational schools versus academic schools: The mediating role of faculty trust in students. *Teachers College Record*, 114(7), 1–36. DOI: 10.1177/016146811211400706
- Hox, J. J., Moerbeek, M. & van de Schoot, R. (2018). *Multilevel analysis: Techniques and applications*. Routledge.
- Jelas, Z. M., Azman, N., Zulnaidi, H. & Ahmad, N. A. (2016). Learning support and academic achievement among Malaysian adolescents: the mediating role of student engagement. *Learning Environments Research*, 19(2), 221–240. <https://doi.org/10.1007/s10984-015-9202-5>
- Kaplan, H. & Madjar, N. (2017). The Motivational Outcomes of Psychological Need Support among Pre-Service Teachers: Multicultural and Self-determination Theory Perspectives. *Frontiers in Education*, 2(August), 1–14. <https://doi.org/10.3389/educ.2017.00042>
- Kashy-Rosenbaum, G., Kaplan, O. & Israel-Cohen, Y. (2018). Predicting academic achievement by class-level emotions and perceived homeroom teachers' emotional support. *Psychology in the Schools*, 55(7), 770–782. <https://doi.org/10.1002/pits.22140>
- Kilday, J. E. & Ryan, A. M. (2019). Personal and collective perceptions of social support: Implications for classroom engagement in early adolescence. *Contemporary Educational Psychology*, 58(March), 163–174. <https://doi.org/10.1016/j.cedpsych.2019.03.006>
- Korpershoek, H., Canrinus, E. T., Fokkens-Bruinsma, M. & de Boer, H. (2020). The relationships between school belonging and students' motivational, social-emotional, behavioural, and academic outcomes in secondary education: a meta-analytic review. *Research Papers in Education*, 35(6), 641–680. <https://doi.org/10.1080/02671522.2019.1615116>
- Krnjajić, S. (2002). *Socijalni odnosi i obrazovanje* [Social relations and education]. Beograd: Institut za pedagoška istraživanja.
- Kuznetsova, A., Brockhoff, P. B. & Christensen, R. H. B. (2017). lmerTest Package: Tests in linear mixed effects models. *Journal of Statistical Software*, 82(13), 1–26. <https://doi.org/10.18637/jss.v082.i13>
- Lai, M. H. C. & Kwok, O. M. (2015). Examining the rule of thumb of not using multilevel modeling: The "design effect smaller than two" rule. *Journal of Experimental Education*, 83(3), 423–438. <https://doi.org/10.1080/00220973.2014.907229>
- Lenzi, M., Sharkey, J., Furlong, M. J., Mayworm, A., Hunnicutt, K. & Vieno, A. (2017). School sense of community, teacher support, and students' school safety perceptions. *American Journal of Community Psychology*, 60(3–4), 527–537. <https://doi.org/10.1002/ajcp.12174>
- Li, Y. (2011). School engagement. What it is and why it is important for positive youth development. In *Advances in Child Development and Behavior* (1st ed., Vol. 41, Issue January). Elsevier Inc. <https://doi.org/10.1016/B978-0-12-386492-5.00006-3>

- Libbey, H. P. (2004). Measuring student relationships to school: attachment, bonding, connectedness, and engagement. *The Journal of School Health, 74*(7), 274–283. <https://doi.org/10.1111/j.1746-1561.2004.tb08284.x>
- Lohmeier, J. H. & Lee, S. W. (2011). A school connectedness scale for use with adolescents. *Educational Research and Evaluation, 17*(2), 85–95. <https://doi.org/10.1080/13803611.2011.597108>
- Lüdecke, D. Ben-Shachar, M., Patil, I., Waggoner, P. & Makowski, D. (2021). Performance: An R Package for Assessment, Comparison and Testing of Statistical Models. *Journal of Open Source Software, 6*(60), 3139. <https://doi.org/10.21105/joss.03139>
- Lukić, I. & Obradović, R. (2007). *Odeljenski starešina* [Homeroom teacher]. Kreativni centar.
- Maddox, S. J. & Prinz, R. J. (2003). School Bonding in Children and Adolescents: Conceptualization, Assessment, and Associated Variables. *Clinical Child and Family Psychology Review, 6*(1), 31–49. <https://doi.org/10.1023/A:1022214022478>
- Marraccini, M. E. & Brier, Z. M. F. (2017). School connectedness and suicidal thoughts and behaviors: A systematic meta-analysis. *School Psychology Quarterly, 32*(1), 5–21. <https://doi.org/10.1037/spq0000192>
- McClure, L., Yonezawa, S. & Jones, M. (2010). Can school structures improve teacher-student relationships? The relationship between advisory programs, personalization and students' academic achievement. *Education Policy Analysis Archives, 18*(7), 1–21. <https://doi.org/10.5673/sip.49.2.4>
- McNeish, D. (2017). Small Sample Methods for Multilevel Modeling: A Colloquial Elucidation of REML and the Kenward-Roger Correction. *Multivariate Behavioral Research, 52*(5), 661–670. <https://doi.org/10.1080/00273171.2017.1344538>
- Peugh, J. L. (2010). A practical guide to multilevel modeling. *Journal of School Psychology, 48*(1), 85–112. <https://doi.org/10.1016/j.jsp.2009.09.002>
- Resnick, M. D., Bearman, P. S., Blum, R. W., Bauman, K. E., Harris, K. M., Jones, J., ... Udry, J. R. (1997). Protecting adolescents from harm: Findings from the national longitudinal study on adolescent health. *Journal of the American Medical Association, 278*(10), 823–832. <https://doi.org/10.1001/jama.278.10.823>
- Roviš, D. & Bezinović, P. (2011). Vežanost za školu – analiza privrženosti školi i predanosti školskim obvezama kod srednjoškolaca [School bonding – an analysis of attachment to school and commitment to schooling in high school students]. *Sociologija i Prostor, 190*(2), 185–208. <https://doi.org/10.5673/sip.49.2.4>
- Sánchez, B., Colón, Y. & Esparza, P. (2005). The role of sense of school belonging and gender in the academic adjustment of Latino adolescents. *Journal of Youth and Adolescence, 34*(6), 619–628. <https://doi.org/10.1007/s10964-005-8950-4>
- St-Amand, J., Girard, S. & Smith, J. (2017). Sense of Belonging at School: Defining Attributes, Determinants, and Sustaining Strategies. *IAFOR Journal of Education, 5*(2), 105–119. <https://doi.org/10.22492/ije.5.2.05>
- Tennant, J. E., Demaray, M. K., Malecki, C. K., Terry, M. N., Clary, M. & Elzinga, N. (2014). Students' ratings of teacher support and academic and social-emotional well-being. *School Psychology Quarterly, 30*(4), 494–512. <https://doi.org/10.1037/spq0000106>
- Tomás, J. M., Gutiérrez, M., Pastor, A. M. & Sancho, P. (2020). Perceived Social Support, School Adaptation and Adolescents' Subjective Well-Being. *Child Indicators Research, 13*(5), 1597–1617. <https://doi.org/10.1007/s12187-020-09717-9>

- Wang, C., Liu, W. C., Kee, Y. H. & Chian, L. K. (2019). Competence, autonomy, and relatedness in the classroom: understanding students' motivational processes using the self-determination theory. *Heliyon*, 5(7), 1–6. <https://doi.org/10.1016/j.heliyon.2019.e01983>
- Wang, M.-T. (2009). School climate support for behavioral and psychological adjustment: Testing the mediating effect of social competence. *School Psychology Quarterly*, 24(4), 240–251. <https://doi.org/10.1037/a0017999>
- Wang, M. Te & Eccles, J. S. (2012). Social Support Matters: Longitudinal Effects of Social Support on Three Dimensions of School Engagement From Middle to High School. *Child Development*, 83(3), 877–895. <https://doi.org/10.1111/j.1467-8624.2012.01745.x>
- Waters, S., Cross, D. & Shaw, T. (2010). Does the nature of schools matter? An exploration of selected school ecology factors on adolescent perceptions of school connectedness. *British Journal of Educational Psychology*, 80(3), 381–402. <https://doi.org/10.1348/000709909X484479>
- Waters, S. K., Cross, D. S. & Runions, K. (2009). Social and Ecological Structures Supporting Adolescent Connectedness to School: A Theoretical Model. *Journal of School Health*, 79(11), 516–524. <https://doi.org/10.1111/j.1746-1561.2009.00443.x>
- You, S., Ritchey, K. M., Furlong, M. J., Shochet, I. & Boman, P. (2011). Examination of the latent structure of the psychological sense of school membership scale. *Journal of Psychoeducational Assessment*, 29(3), 225–237. <https://doi.org/10.1177/0734282910379968>

Received 23.02.2022; Accepted for publishing 06.06.2022.