



Primary school students' perceived social support in relation to study engagement

Pihla Rautanen¹  · Tiina Soini¹  · Janne Pietarinen²  · Kirsi Pyhälä³ 

Received: 21 April 2020 / Revised: 3 July 2020 / Accepted: 13 July 2020

Published online: 18 August 2020

© The Author(s) 2020

Abstract

The aim of this research was to study the dynamics of fourth graders' perceived social support for schoolwork and to examine how this support contributes to their study engagement. Social support was hypothesised to be positively associated with higher levels of study engagement. Moreover, social support from teachers and guardians was hypothesised to be associated with social support for schoolwork among peers. Differences between genders were studied in relation to perceived social support and study engagement. Structural equation modelling was used to test the hypotheses with cross-sectional survey data from 2400 fourth grade students from Finland. They were 10 years of age on average. The results indicate that social support from teachers and among peers has stronger effects on study engagement compared to support from guardians. Moreover, it was found that social support from teachers and guardians is associated with the social support that students share among their peers. Girls were found to be more engaged in studying and to experience more social support from teachers and among peers compared to boys. The perceived social support from teachers was found to be partly determined by the class group to which the student belongs. These results suggest that by providing emotional and informational support for their students, teachers might be able to promote students' study engagement, as well as such peer interaction that further enhances the students' study engagement.

Keywords Social support · Study engagement · SEM modelling · Gender differences

Introduction

Study engagement has been suggested to be a hallmark of an optimal school experience. Besides success at school, finding schoolwork meaningful and inspiring also promotes psychological and social well-being in other areas of life (e.g. Furrer and Skinner 2003;

✉ Pihla Rautanen
pihla.rautanen@tuni.fi

Gonida et al. 2009; Lewis et al. 2011; Li and Lerner 2011; Pietarinen et al. 2014; Reschly et al. 2008; Salmela-Aro and Upadyaya 2014; Tuominen-Soini and Salmela-Aro 2014; Wang and Fredricks 2013; You and Sharkey 2009). Prior research shows that up to 45% of Finnish sixth graders suffer from cynical attitudes towards schoolwork (Salmela-Aro et al. 2016). This implies that despite good learning outcomes, the study engagement of primary school students cannot be taken for granted, even in Finland. However, prior research has focused mainly on adolescents. Consequently, a better understanding of the determinants of study engagement at primary school is needed in order to create school environments that enhance such experiences at different stages of the school path.

A strong body of evidence shows that social support from teachers, peers, and guardians contributes to study engagement (Estell and Perdue 2013; Havik and Westergård 2019; Kiefer et al. 2015; Quin 2017; Roorda et al. 2011; Wang and Eccles 2012). However, our understanding of the Finnish primary school students' social support system, and how it contributes to study engagement, is insufficient.

This study aims to bridge the gap in the literature by exploring the dynamics of how social support for schoolwork contributes to Finnish primary school students' study engagement. In this research, we present three newly developed scales for assessing social support for schoolwork: social support from teachers, social support from guardians, and social support among peers. They are developed to assess the sources, forms, and dynamics of social support that have been found in previous literature to promote students' study engagement. In line with prior research, we presume that social support from different sources is associated with increased levels of study engagement (Kiefer et al. 2015; Wang and Eccles 2012). In addition, we presume that social support from teachers and guardians promotes students' tendency to share social support for schoolwork among peers (Farmer et al. 2011; Newton et al. 2014). In addition, potential differences between boys and girls in perceived social support and perceived study engagement will be examined.

Study engagement

Study engagement is characterised by positive and fulfilling study-related experiences (see the seminal work by Schaufeli et al. 2002), including energy, dedication, and absorption in studies (Salmela-Aro and Upadyaya 2012; Schaufeli et al. 2002). *Energy* refers to high levels of mental resilience and vigour while studying (e.g. Schaufeli et al. 2002; Salmela-Aro and Upadyaya 2012). *Dedication* refers to perceiving schoolwork as meaningful and to a sense of enthusiasm, pride, identification, and inspiration regarding studies (e.g. Salmela-Aro 2017; Tuominen-Soini and Salmela-Aro 2014). *Absorption* refers to feelings of competence and being fully concentrated on and happily engrossed in studying so that time passes quickly (e.g. Schaufeli and Bakker 2004; cf. the concept of flow in Csikszentmihalyi 1990).

In the literature, there is also a broader definition of school engagement that includes behavioural, cognitive, and emotional aspects (Appleton et al. 2006; Fredricks et al. 2004). The concept of study engagement, as assessed in this research, describes students' perceived emotions and attitudes towards studying in detail (i.e. emotional and cognitive school engagement), but it does not describe their observable behaviour at school (i.e. behavioural school engagement) (Salmela-Aro and Upadyaya 2012). However, it has been found that students experiencing study engagement stay resilient while facing challenges and tend to invest effort in studying (Tuominen-Soini and Salmela-Aro 2014; Wang and Eccles 2012), which further increases the odds of study success. This results in positive experiences related to studying (i.e.

energy and absorption) that promote dedication, which further promotes behavioural engagement in schoolwork (see Demerouti et al. 2001; Ouweneel et al. 2011; Pietarinen et al. 2014; Salmela-Aro and Upadyaya 2014; Skinner et al. 2008). Therefore, in this study, we assess perceived study engagement that describes the student's own perception of the positive experiences they have in terms of energy, dedication, and absorption in studies.

Gender differences have been detected between boys and girls in perceived study engagement (Lam et al. 2012; Salmela-Aro and Upadyaya 2012; Wang and Eccles 2012). Girls typically report higher levels of study engagement compared to boys (Lam et al. 2012; Salmela-Aro and Upadyaya 2012), particularly in terms of experiencing energy and dedication (Salmela-Aro and Upadyaya 2012), although there is individual variation in this regard (Li and Lerner 2011). Boys are more prone to experience rapid decreases in engagement and to report unstable engagement trajectories (Li and Lerner 2011). On the other hand, girls tend to report higher levels of social support, school identification, and the subjective valuing of learning, which contribute to study engagement (Lam et al. 2012; Wang and Eccles 2012). In sum, girls tend to be better at adjusting to the study environment compared to boys (Lam et al. 2012; Liu et al. 2016).

Study engagement is determined by multiple individual and contextual factors (Salmela-Aro and Upadyaya 2014; Upadyaya and Salmela-Aro 2013). In particular, social interactions within the school community are shown to play a central role in the development and maintenance of students' study engagement (Havik and Westergård 2019; Pietarinen et al. 2014; Roorda et al. 2011; Wang and Eccles 2012). In fact, there is tentative evidence suggesting that study engagement can become epidemic and spread across the school community (Tuominen-Soini and Salmela-Aro 2014; see also Kindermann 2007; Kiuru et al. 2009), potentially resulting in differences between classes and schools in terms of perceived study engagement.

Social support for schoolwork as a resource for study engagement

Social support is suggested to be one of the primary determinants of study engagement (Upadyaya and Salmela-Aro 2013). It refers to the social resources perceived to be available and used (see the seminal work of Cohen et al. 2000) by the students. The social support system provided by the school consists of official and unofficial relationships within the school community, including peers, teachers, and other professionals (e.g. House 1981; Malecki and Demaray 2002; Tardy 1985).

At school, teachers and peers provide the primary sources of support for schoolwork (Kiefer et al. 2015; Liu et al. 2016). The sources of support for studies are not limited to the members of the school community; they are complemented by family and friends. For primary school students, teachers, peers, and guardians typically provide the primary sources of support for studying (Chen 2005; Estell and Perdue 2013; Malecki and Demaray 2002; Wang and Eccles 2012; You and Sharkey 2009). Guardians are understood in this study as any adult at the student's home, including their parents. The different sources of social support are likely to play slightly different but complementary functions in the development and maintenance of students' study engagement (Estell and Perdue 2013; Vollet 2017; Wang and Eccles 2012).

In order to engage in their studies successfully, students need different kinds of support (see Camara et al. 2017; Demerouti et al. 2001; Väisänen et al. 2017). Three distinctive but complementary forms of social support have been identified: informational, emotional, and instrumental support (Pyhältö 2018; Väisänen et al. 2017; see also the seminal work of House

1981). Informational support is characterised by information such as advice, feedback, affirmation, and problem-solving that enables a student to cope with study-related challenges, while emotional support entails caring, trust, encouragement, acknowledgement, and a sense of belonging to the school community (e.g. Malecki and Demaray 2003; Liu et al. 2016; Wentzel et al. 2016). Instrumental support, on the other hand, refers to concrete forms of support such as providing books, computers, school transportation, or other devices/resources needed for studies (e.g. House 1981; Tardy 1985). Unlike in many other countries, in Finland, instrumental support does not play such a major role in access to high-quality education (Vettenranta et al. 2016), since there is no private school system and compulsory basic education is publicly funded (Aho et al. 2006; Basic Education Act of 1998, 628 n.d.).

There is a body of evidence showing that social support from teachers contributes to students' study engagement (Hughes et al. 2008; Kiefer et al. 2015; Košir and Tement 2014; Skinner et al. 2008). For instance, a teacher–student relationship characterised by warmth and acceptance, or in other words, emotional support, is related to increased levels of study engagement, including the joy of learning and further academic success (Quin 2017; Roorda et al. 2011; Ulmanen et al. 2014, 2016b; Wu et al. 2010). In addition, explicit information from teachers about the educational expectations and ways of effectively achieving these outcomes (i.e. informational support such as constructive feedback) is related to elevated levels of study engagement (Havik and Westergård 2019; Jang et al. 2010).

Social support from guardians also contributes to study engagement and further school achievement (Estell and Perdue 2013; Hopson et al. 2014; Wang and Eccles 2012; Wentzel et al. 2016; You and Sharkey 2009). For example, guardians' positive attitudes and interest regarding schoolwork are shown to enhance the value that students place on school achievement (Cheung and Pomerantz 2015; Lukin 2013; Gonida et al. 2007, 2009).

The results on the effects of peer support on perceived study engagement are less consistent (e.g. Kiefer et al. 2015; Kindermann 2007; Skinner et al. 2008; Wang and Eccles 2012). While numerous studies have reported a positive association between emotional support from peers and study engagement (Estell and Perdue 2013; Kiefer et al. 2015; Urdan and Schoenfelder 2006; Wentzel et al. 2017), other studies have found a negative relation between peer support and study engagement (Liu et al. 2016; Ulmanen et al. 2014, 2016b). The peer group's attitudes towards schoolwork have been suggested to mediate the relation between peer support and study engagement (Wang and Eccles 2012).

Moreover, the support dynamics (i.e. whether the support is received, given, or reciprocal) and the roles of the receiver and the giver are important determinants of the support experience, as well as the related outcomes (Cohen and Syme 1985; Feeney and Collins 2015; Pyhältö 2018). Students typically receive social support from their teachers and guardians for schoolwork (Chen 2005; Estell and Perdue 2013; Malecki and Demaray 2003), but support dynamics among peers can be more diverse. Students can both receive and give peer support or engage in reciprocal support (Feeney and Collins 2015).

In addition to promoting study engagement directly, we presume that social support for schoolwork from teachers and guardians provides resources for the social support for schoolwork that students share with each other. Social support from guardians promotes students' positive attitudes towards schoolwork and, further, their willingness to share support for schoolwork with each other (Cheung and Pomerantz 2015; Gonida et al. 2007; Newton et al. 2014). Teachers, on the other hand, play a significant role in orchestrating peer interaction within the classroom by providing and regulating opportunities for peer support (Farmer et al. 2011; Luckner and Pianta 2011; Ryan et al. 2001; Soini et al. 2016; Urdan and

Schoenfelder 2006). Moreover, students who feel that they are cared for and valued by teachers are more willing to provide help and assistance to others (Buyse et al. 2009; Hopson et al. 2014; Hughes and Chen 2011; Ulmanen et al. 2016a; Wentzel et al. 2012, 2018).

Some gender differences in terms of sources of support have been detected. For instance, girls have been found to experience more social support from teachers (Demaray and Malecki 2002; Lam et al. 2012) and to share more social support in the peer group compared to boys (Camara et al. 2017; Rueger et al. 2010; Wentzel et al. 2017). At the same time, differences in experiences of social support from guardians appear to be small (Demaray and Malecki 2002).

Finnish primary school context

It has been found that already at primary school, 45% of Finnish sixth graders have cynical attitudes towards schoolwork (Salmela-Aro et al. 2016). Thus, it is essential to identify the factors that can promote students' study engagement in the Finnish primary school context. The previous literature on social support as a resource for primary school students' study engagement is insufficient. In Finland, children begin school at the age of seven. The nine years of compulsory comprehensive education consists of the primary (grades 1–6) and lower-secondary grades (grades 7–9), with the first six grades typically being taught by class teachers (master's degree graduates who majored in educational sciences/educational psychology) and the latter grades being taught by subject teachers (master's degree graduates who majored in one or two subjects). During primary school, students have a class teacher who teaches most of the subjects and stays with the same class group for several years. Hence, the class teacher has a strong influence on the students' social environment in primary school. There are no vocational or academic tracks. The National Curriculum is relatively abstract, providing only the general goals of education. Teachers are trusted to be able to choose the appropriate pedagogical methods to implement the curriculum. Schools and teachers are therefore relatively independent in their work. The differences between schools in terms of students' academic performance and well-being are relatively small in Finland (Vettenranta et al. 2016; Halme et al. 2018). However, differences between students from high and low socio-economic background have grown in recent years (OECD 2019; Vettenranta et al. 2016), emphasising the need for further research on factors affecting students' study engagement in Finland.

Aims and hypotheses

This study aims to improve understanding of Finnish primary school students' perceived study engagement and the interrelations between social support for studying from teachers and guardians, and among peers. We study the dynamics between teacher, guardian, and peer support, as well as the way in which they contribute to study engagement (see Fig. 1). Moreover, the differences between boys and girls in experiences of social support for schoolwork and study engagement are analysed. The following hypotheses were tested:

Hypothesis 1: Social support for studying from different sources, including teachers, guardians, and peers, is associated with increased levels of study engagement, with

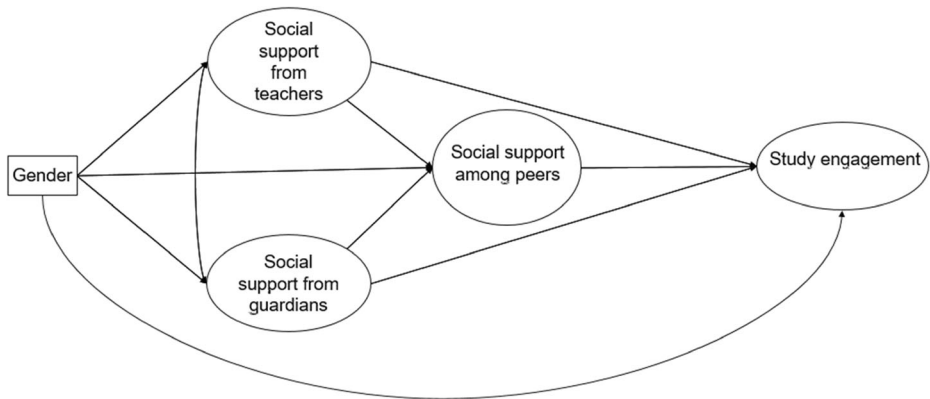


Fig. 1 Hypothesised model of interrelations between study engagement, gender, and social support for school-work from teachers and guardians, and among peers

each of them playing a distinctive role (Estell and Perdue 2013; Kiefer et al. 2015; Salmela-Aro and Upadyaya 2014; Wang and Eccles 2012).

Hypothesis 2: Social support from teachers and guardians is associated with social support for studying among peers, which further enhances students' study engagement (Cheung and Pomerantz 2015; Luckner and Pianta 2011; Newton et al. 2014; Wentzel et al. 2018).

Hypothesis 3: There are gender differences in perceived social support for studying and study engagement: girls perceive the support more positively compared to boys, and comparatively they experience more study engagement (Demaray and Malecki 2002; Lam et al. 2012; Liu et al. 2016; Rueger et al. 2010; Salmela-Aro and Upadyaya 2012; Wang and Eccles 2012).

Method

Participants and data collection

The data for this study were collected as a part of a larger national research project (2013–2019) by means of clustered hierarchical sampling (Snijders and Bosker 2012). Altogether, 2401 fourth graders (49.1% girls) from 149 class groups at 63 comprehensive schools around Finland participated in the study. In Finland, fourth graders are 10 years of age on average. The total response rate was 89.52%. The schools varied in terms of both neighbourhood SES (presenting both high and low SES areas) and size, ranging from 50 students to over 1000 students. There were schools from rural areas as well as from urban areas. The class group size varied from 5 students to 33 students. In addition, students with and without learning difficulties, as well as students with and without an immigrant background, participated in the study.

The data were collected in the autumn of 2017 during field work. The members of the research group introduced the students to the study, instructed them on how to fill the

questionnaire, and personally collected the written questionnaires from the students. Before conducting the study, guardians gave informed consent for their children to participate in the study. The students were informed that participating in the research was voluntary, that it was not a school assignment, and that their teachers or parents would not see an individual student's answers.

Instruments

Social support for schoolwork was assessed using three scales newly developed by the research group: *social support from teachers* (11 items), *social support among peers* (10 items), and *social support from guardians* (7 items) (Appendix, Table 3). The scales draw on the social support model (see the seminal work on social support by House 1981 and Pyhältö 2018; Tardy 1985). They are developed to assess the sources, forms, and dynamics of social support that have been found in previous literature to promote students' study engagement. The scales *support from teachers* and *support among peers* were constructed based on the research group's previous research (Ulmanen et al. 2014, 2016a, b; Väisänen et al. 2017; see also Pietarinen et al. 2014), and the scale *support from guardians* is based on Lukin (2013). Perceived social support from the three sources is assessed separately, considering the differing roles the sources have in relation to students' study engagement.

From teachers, the scale assesses perceived general emotional support (i.e. respect, empathy, and care), as well as problem-focused informational support that helps in achieving learning goals. *Among peers*, the scale assesses giving as well as receiving social support that is aimed at supporting schoolwork and learning, not general social support (see House 1981; Wentzel et al. 2018). *From guardians*, the scale assesses the student's perception of their guardian's involvement in and expressed valuing of the student's schoolwork. Guardians are understood in this study as any adult at the student's home, including their parents. Teacher and peer support were measured using a 7-point Likert scale ($1 = I$ totally disagree, $7 = I$ totally agree), and the guardian's support was measured using a 5-point scale assessing frequency ($1 =$ never, $2 =$ rarely, $3 =$ sometimes, $4 =$ quite often, $5 =$ very often).

The scales were tested and further developed based on a two-phase pilot study. First, six students from grades 4 to 8 were asked to answer the survey and freely comment on the items. Some changes were made to the items based on discussions with the students. Second, the scales were statistically studied for a sample of 93 fourth graders. The three scales of social support for schoolwork were identified with principal axis factoring (PFA) and exploratory factor analysis (EFA) using multiple different rotation options. Cronbach's alpha reliabilities were also studied. One item was removed from the scales based on the second phase of the pilot.

In this study, the measurement models of the three social support scales were examined with confirmatory factor analysis (CFA). Confirmatory factor analysis supported the hypothesised factor structure in which each of the scales consists of one latent factor, providing support for H1. The measurement model of *social support from teachers* fits the data well after one residual covariance was added to the model. The model fit is as follows: $\chi^2(43, N = 2334) = 292.415$, $p = 0.0000$, RMSEA = 0.050 (90% CI 0.045–0.055), CFI = 0.974, TLI = 0.967, SRMR = 0.022, NFI = 0.970. The statistically significant p value of the chi-square test is due to the large sample size in this study. The measurement model of *social support among peers* fit the data well after two residual covariances were added to the model. The model fit is as follows: $\chi^2(33, N = 2365) = 329.156$, $p = 0.0000$, RMSEA = 0.062 (90% CI 0.056–0.068), CFI = 0.954, TLI = 0.937, SRMR = 0.035, NFI = 0.949. The measurement model of *social*

support from guardians fits the data well: $\chi^2(14, N = 2344) = 87.484, p = 0.0000$, RMSEA = 0.047 (90% CI 0.038–0.057), CFI = 0.973, TLI = 0.959, SRMR = 0.025, NFI = 0.968. The standardised item loadings ranged from 0.85 to 0.66 on the scale of social support from teachers, from 0.84 to 0.62 on the scale of social support among peers, and from 0.69 to 0.56 on the scale of social support from guardians. Cronbach's alpha reliabilities were sufficient (0.827–0.940) within each scale (see Appendix, Table 3).

Study engagement was measured using the Study Engagement Scale (total 9 items), measuring three complementary aspects of perceived study engagement: energy, dedication, and absorption in studying (Salmela-Aro and Upadyaya 2012; Schaufeli et al. 2002). Consistent with previous studies of younger students, our CFA analyses supported the use of the one general factor structure instead of the three-factor structure (see also Salmela-Aro and Upadyaya 2012; cf. Kulikowski 2017). The model fit is as follows: $\chi^2(27, N = 2318) = 167.392, p = 0.0000$, RMSEA = 0.047 (90% CI 0.041–0.054), CFI = 0.982, TLI = 0.976, SRMR = 0.020, NFI = 0.979. Study engagement was measured using a 7-point Likert scale (1 = I totally disagree, 7 = I totally agree).

Data analyses

Due to the three-level nested data—individuals, individuals within classes, and classes within schools—the intra-class correlation coefficient (ICC) and design effect (Deff) were examined using classes and schools as clustering variables in order to see if there was a clustering effect in the data. ICC describes the proportion of variance on the between level, and the design effect approximates the effect of the clustered design by weighting the variance proportions with the average cluster size (see e.g. Snijders and Bosker 2012). Previous research indicates that ICCs over 0.05 indicate a clustering effect in the data (Muthén and Satorra 1995; Peugh 2010).

Students' experiences of social support and study engagement varied across class groups. The ICCs (see Table 1) varied between 0.017 and 0.065 at the school level and between 0.032 and 0.100 at the class level ($p < 0.05$). The highest ICC at the class level was in social support from teachers. The class-level design effects varied between 1.37 and 2.47. In Deff, values over 2 indicate a clustering effect in the data. The ICCs and Deff implied that there is a clustering effect in the data, which was accounted for using complex analyses.

First, the measurement models of the social support scales, as well as the study engagement scale, were tested using CFA. Then structural equation modelling (SEM) was used to test the hypothesised path model and the indirect effects (Fig. 1) with the latent variables of social support from teachers, from guardians, and among peers, and study engagement. Gender was included as an observed dichotomous variable. Bootstrapping was used to estimate the confidence intervals for the indirect effects. Analyses were conducted using Mplus 8.0 software (Muthén and Muthén 1998–2017). The amount of missing data in the observed variables typically varied between 3% and 6%, except for 11–17% for two items, and it was assumed to be missing at random (MAR). Little's test of Missing Completely at Random (MCAR) was significant, $\chi^2 14947.118, DF = 12678, p = 0.00$, indicating that the data was not missing completely at random. Missing data was accounted for using full information maximum likelihood (FIML). Maximum likelihood estimation with robust standard errors and chi-square statistics was used to analyse the data that had slight deviations from (multivariate) normality (MLR estimator; Muthén and Muthén 1998–2017). The descriptive statistics and alphas of the scales were analysed using SPSS.

The measurement models' and SEM model's (see Fig. 1) model fit was evaluated using the following criteria for the goodness-of-fit indices: the root mean square error of approximation (RMSEA) below 0.06, the Comparative Fit Index (CFI) and the Tucker-Lewis Index (TLI) over 0.90, the standardised root mean squared residual (SRMR) below 0.05, and the normed fit index (NFI) over 0.90 (Byrne 2012; Hooper et al. 2008; Hu and Bentler 1999). The chi-square test (χ^2) is known for its sensitivity to large sample sizes, and therefore the current study evaluated model fit based on the other fit indices.

Results

The descriptive statistics of the scales are presented in Table 1. The differing range of the guardian support scale needs to be considered when evaluating the level of the mean score. In general, the fourth graders reported quite high levels of support from teachers ($M = 5.37$, scale range 1–7), among peers ($M = 5.60$, scale range 1–7), and from guardians ($M = 4.02$, scale range 1–5). However, the students' level of perceived study engagement was not as high ($M = 4.51$, scale range 1–7). The correlations between the scales were positive as expected and statistically significant. The correlation between social support from teachers and among peers ($r = 0.67$) was stronger than both the correlation between support from teachers and support from guardians ($r = 0.41$, $p = 0.001$, z -score = 15.65) and the correlation between support among peers and from guardians ($r = 0.44$, $p = 0.001$, z -score = 13.69) (Lee and Preacher 2013). In addition, study engagement correlated more strongly with social support from teachers ($r = 0.59$, $p = 0.001$, z -score = -13.36) and among peers ($r = 0.61$, $p = 0.001$, z -score = -14.53) than with social support from guardians ($r = 0.39$).

The ICC values (see Table 1) indicate that the data had a clustering effect in social support from teachers: 10% of the variance in social support from teachers was determined by the class group to which the student belonged (ICC = 0.10). However, in social support among peers (ICC = 0.050) and study engagement (ICC = 0.047), the class-level indicators explain only 5% of the variation. Hence, the individual-level indicators explain 95% of the variation in peer support and study engagement. In social support from guardians (ICC = 0.032), the data did not have a clustering effect. On the school level, the data had small clustering effect (ICC = 0.065), and the data did not have a clustering effect in the other variables.

Table 1 Descriptive statistics of the scales

	Intercorrelations				M	SD	Range	ICC class group	ICC school	Cohen's d (gender differences)
	(1)	(2)	(3)	(4)						
(1) Study engagement	–				4.51	1.41	1.00–7.00	0.047	0.039	0.332 ^a
(2) Social support among peers	0.61**	–			5.60	1.12	1.00–7.00	0.050	0.031	0.425 ^a
(3) Social support from teachers	0.59**	0.67**	–		5.37	1.22	1.00–7.00	0.100	0.065	0.279 ^a
(4) Social support from guardians	0.39**	0.44**	0.41**	–	4.02	0.77	1.00–5.00	0.032	0.017	0.168 ^a

** $p < 0.01$

^a t test, significant gender difference ($p < 0.001$)

Further analyses showed statistically significant gender differences in social support and study engagement (see Table 1), confirming H3. Due to the large sample size, the effect sizes of the gender differences were studied using Cohen’s *d* in addition to the *t* test *p* values, to further examine the significance of the results (see Table 1). The Cohen’s *d* results suggested that girls experience more study engagement compared to boys. In addition, girls experienced more school-related social support with their peers and perceived more social support from teachers. However, the gender effect in social support from guardians was quite small.

In addition to the measurement models, the path model of the interrelations between the latent variables was tested in the SEM model. The tested theoretical SEM model fit the data well after two residual covariances were added to the model. The model fit is as follows: $\chi^2(655, N = 2345) = 2546.027, p = 0.0000, RMSEA = 0.035$ (90% CI 0.034–0.037), CFI = 0.945, TLI = 0.941, SRMR = 0.038, NFI = 0.927 (see Fig. 2). The statistically significant *p* value of the chi-square test is due to the large sample size of this study. All the other indicators present a good or acceptable model fit (Hooper et al. 2008).

The tested model supported H1 by showing that social support for studying from teachers (0.30) and guardians (0.10) and among peers (0.40) is associated with study engagement, and the effects differ depending on the source of the support. Social support from teachers and among peers seems to have a stronger effect on study engagement compared to social support from guardians. Moreover, social support for schoolwork significantly explained students’ perceived study engagement ($R^2 = 0.50$).

The model also supported H2: social support from teachers (0.61) and guardians (0.20) was associated with social support among peers. Especially social support from teachers appeared to have an effect on the students’ peer support for studying. Furthermore, the teachers’ and guardians’ support explained the perceived peer support significantly ($R^2 = 0.57$).

Besides having a direct effect on study engagement, social support from teachers also had a statistically significant indirect effect (estimate ($E =$) 0.24, $p < 0.001$) that was mediated by

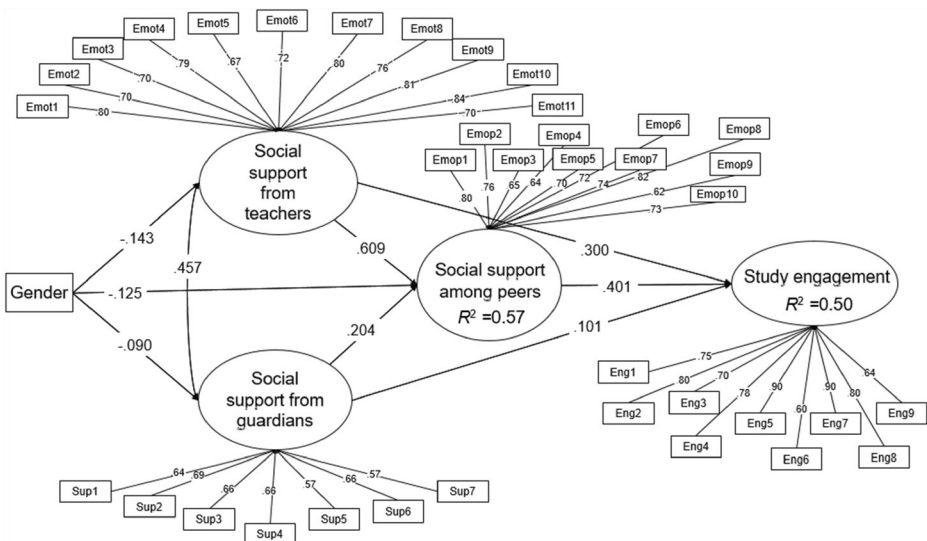


Fig. 2 Structural equation model of the relations between the latent variables of social support from teachers, social support from guardians, social support among peers, and study engagement. (Note: standardised model, all parameters are statistically significant at $p < 0.001$)

Table 2 Standardised indirect estimates, confidence intervals, standard errors, and *p* values

	Effect	Lower 2.5%	Upper 2.5%	SE	<i>p</i>
Effects of social support from teachers on study engagement					
Total	0.54	0.49	0.59	0.03	0.00
Direct	0.30	0.23	0.37	0.04	0.00
Indirect (through support among peers)	0.24	0.19	0.28	0.02	0.00
Effects of social support from guardians on study engagement					
Total	0.18	0.13	0.23	0.03	0.00
Direct	0.10	0.06	0.16	0.03	0.00
Indirect (through support among peers)	0.08	0.06	0.10	0.01	0.00
Effects of gender on study engagement					
Total	-0.18	-0.22	-0.13	0.02	0.00
Direct	-0.04	-0.07	0.00	0.02	0.07
Total indirect	-0.14	-0.17	-0.10	0.02	0.00
Indirect (through support from teachers)	-0.04	-0.06	-0.03	0.01	0.00
Indirect (through support among peers)	-0.05	-0.06	-0.03	0.01	0.00
Indirect (through support from guardians)	-0.01	-0.02	0.00	0.00	0.01
Indirect (through support from teachers and among peers)	-0.03	-0.05	-0.02	0.01	0.00
Indirect (through support from guardians and among peers)	-0.01	-0.01	0.00	0.01	0.00

social support among peers (see Table 2). Hence, the total effect of social support from teachers on study engagement was 0.54. Similarly, social support from guardians had a statistically significant indirect effect (0.08, $p < 0.001$) on study engagement, which is mediated by social support among peers. Hence, the total effect of social support from guardians on study engagement was 0.18.

Gender was also included in the SEM analyses as a dichotomous variable. The results showed that girls experienced higher levels of social support from teachers and shared more peer support. However, the differences were quite small in perceived social support from guardians. In this model, the direct effect of gender on study engagement was not statistically significant. However, gender had multiple indirect effects on study engagement (see Table 2), which were mediated by social support from teachers, from guardians, and among peers. The total indirect effect ($E = -0.14$, $p < 0.001$) shows that girls also experience higher levels of study engagement compared to boys. Accordingly, H3 was confirmed.

Discussion

Consistent with previous studies, our results show that social support from teachers, from guardians, and among peers forms an important resource for fourth graders' study engagement (Chen 2005; Estell and Perdue 2013; Kiefer et al. 2015; Upadyaya and Salmela-Aro 2013). Further, the social support that is perceived to be available and utilised in the classroom (i.e. teacher support and peer support) appears to be essential for promoting study engagement (see Havik and Westergård 2019; Hughes et al. 2008; Roorda et al. 2011; Ryan and Patrick 2001). Study engagement is primarily realised and constructed in the classroom (see Cook et al. 2002; Cohen et al. 2000). Accordingly, experiencing support in the class community has a strong effect on the emotions and attitudes students have regarding studying. Thus, the quality of the interaction in the class community is likely to play a dominant role in experiences of engagement.

Social support from guardians also played a role in students' engaging study experiences, though the support from teachers and peers had a stronger effect. Interestingly, both teacher and guardian support were positively associated with students' peer support. Again, support from the teacher had a stronger effect on peer support compared to guardian support. We assessed social support from guardians in the form of involvement. This might partly explain the weaker effect on study engagement. It should be further studied whether those students who are already highly engaged in studying need their guardians to intervene to the same extent as students who have more difficulty with studying. Guardians might respond to their children's needs, and thus they might be more involved if a student has difficulty with studying.

Previously contradictory results have been reported on the effect of peer support on study engagement (Kiefer et al. 2015; Liu et al. 2016; Ulmanen et al. 2014). In this study, a strong positive interrelation was found between peer support and study engagement. The result might be partly explained by the nature of the peer support detected (see House 1981; Wentzel et al. 2018). The peer support entailed the student's willingness and ability to give and find social support for schoolwork in a peer group, communicating a positive attitude towards schoolwork. Moreover, the interrelation is likely to be reciprocal: engaged students might be more eager to provide and ask for help in schoolwork, which in turn promotes their study engagement (see Bakker 2011; Ouweneel et al. 2011). The reciprocal relation between social support for schoolwork among peers and study engagement should be further studied with longitudinal data.

Social support from teachers not only directly enhanced study engagement but was also positively associated with peer support for schoolwork. In this study, the measure of teacher support was perceived general emotional and informational support for studying, such as respect, relatedness, and care, combined with problem-focused guidance that aids in achieving learning goals. This kind of emotional and informational social support from teachers has been shown to facilitate students' ability and willingness to share support among peers in the class community (Buyse et al. 2009; Farmer et al. 2011; Hughes and Chen 2011; Luckner and Pianta 2011; Ryan et al. 2001; Ryan and Patrick 2001; Ulmanen et al. 2016a; Wentzel et al. 2012, 2018). It should be studied further whether the relation between teacher support and peer support is mediated by a positive and learning-oriented atmosphere and norms in the classroom (Hopson et al. 2014; Luckner and Pianta 2011; Ryan et al. 2001; Ryan and Patrick 2001), which allows the students to express positive attitudes and emotions towards schoolwork (Farmer et al. 2011; Kindermann 2007; Ryan et al. 2001). Moreover, our results indicate that the classes differed in perceived support from the teacher.

However, the factors affecting teachers' abilities to provide emotional support to students were not examined. It is possible that due to the reciprocal nature of social support, the students' characteristics also influence teachers' tendency to provide emotional support for them (Hughes and Chen 2011). Moreover, the teachers' working conditions—for example, social support from colleagues and general workload—and a teacher's work experience or social competence might have an impact on the social support that teachers provide to their students. These factors should be studied further.

Finally, in line with previous studies, girls were found to share more social support in the peer group and to experience more social support from teachers compared to boys (see Camara et al. 2017; Demaray and Malecki 2002; Rueger et al. 2010; Wentzel et al. 2017). Boys also experience lower levels of study engagement (see Lam et al. 2012; Salmela-Aro and Upadyaya 2012). This implies that girls are better adjusted to the school environment and/or that the learning environment suits them better. Even though Finnish schools are relatively equal in other domains, gender differences have been found to be quite large (Leino et al. 2019; Rautopuro and Juuti 2018; Salmela-Aro and Upadyaya 2012; Vettenranta et al. 2016; cf. Halme et al. 2018).

Methodological limitations

This cross-sectional study aimed to explore the relationship between study engagement and social support for schoolwork from teachers, from guardians, and among peers. These relations need to be studied further with a longitudinal design in order to study the causal relations, which cannot be interpreted based on cross-sectional data. The study also introduced new scales for measuring social support for schoolwork from teachers and guardians, and among peers. The validity and reliability of the scales were good, and the sample size was large. However, further construct validation of the social support for schoolwork scale needs to be done in different environments and with different age groups. This study was based solely on the students' self-reports, which might be influenced by the respondents' abilities to identify and utilise the available social support for schoolwork. However, prior research has shown that it is essential for the student to perceive the support in order for it to have an effect on their experienced study engagement (Estell and Perdue 2013; Havik and Westergård 2019; Kiefer et al. 2015; Skinner et al. 2008; see also seminal work of House 1981).

Conclusion

This study provides new evidence on the dynamics of the social support perceived by primary school students, and how the support is related to study engagement. Support for schoolwork from teachers and among peers, in particular, contributed to the students' study engagement. Moreover, emotional and instrumental support from teachers enhanced the students' peer support for schoolwork and thus further enhanced study engagement. Hence, emotional and instrumental support from teachers plays a central role in constructing a socially supportive learning environment that promotes study engagement in primary schools. Furthermore, social support from guardians plays a role in the students' engaging study experience, although support from teachers and peers would appear to have a stronger effect. The factors that affect primary school teachers' abilities to provide emotional support for their students should be studied further, and teachers should be supported in their work accordingly.

Acknowledgements This work was supported by the Academy of Finland under Grant 295022 and Finnish Ministry of Education and Culture under Grant 6600567. Open access funding provided by Tampere University.

Funding information This work was supported by the Academy of Finland under Grant (295022) and Finnish Ministry of Education and Culture under Grant (6600567). Open access funding provided by Tampere University.

Data availability The data is not available in a public repository at the moment. The data will be deposited to the Finnish Social Science Data Archive where possible.

Compliance with ethical standards

Conflicts of interest The authors declare that there are no conflicts of interests.

Consent to participate The participants and their guardians gave their informed consent to participate in this study.

Code availability The data that support the findings of this study are available from the corresponding author upon reasonable request.

Appendix

Table 3 Reliability analyses and scale items (translated from Finnish)

Scale	α	Items	Range
Social support among peers	0.916	I want to help others in their studies. My classmates' encouragement inspires me in my studies. I want my friends to do well in school. I have the courage to ask others for help with my studies. I have the courage to offer my friends help with their studies. I feel it is easy for others to ask me for help. I am sure that my classmates think of me as helpful. I support my friends in their studies. I know when my friends need help with their studies.	1.00–7.00 1 = I totally disagree 7 = I totally agree
Social support from teachers	0.940	My teachers give me encouragement and support. Problems are addressed in a constructive manner at my school. I am treated with respect. I often receive constructive feedback from teachers. I am treated equally. I can openly discuss problems related to my studies with teachers. I feel that my teachers appreciate the work I have done for my studies. The teachers are interested in my opinions. I feel that my teachers care about me. I often receive encouraging feedback from my teachers. The teachers listen to the students at my school.	1.00–7.00
Social support from guardians	0.827	How often has an adult at home... wanted to see what kind of homework you have? How often has an adult at home... asked what you have been recently taught? How often has an adult at home... asked how you are doing in your studies? How often has an adult at home... asked if you need help with your homework or in preparing for an exam? How often has an adult at home... told you that school is important? How often has an adult at home... asked you if you are satisfied with your studying? How often has an adult at home... praised you for doing well in your studies?	1.00–5.00 1 = never 2 = rarely 3 = sometimes 4 = quite often 5 = very often
Study engagement	0.927	When I study, I feel like I am bursting with energy. I find my studies to be full of meaning and purpose. Time flies when I'm studying. When studying, I feel strong and vigorous. I am enthusiastic about my studies. When I am studying, I forget everything else around me. My studies inspire me. When I get up in the morning, I feel like going to class. I can get carried away by my studies.	1.00–7.00

Open Access This article is licensed under a Creative Commons Attribution 4.0 International License, which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence, and indicate if changes were made. The images or other third party material in this article are included in the article's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the article's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this licence, visit <http://creativecommons.org/licenses/by/4.0/>.

References

- Aho, E., Pitkanen, K., & Sahlberg, P. (2006). Policy development and reform principles of basic and secondary education in Finland since 1968. Education working paper series. Number 2. Human Development Network Education Sector. Washington, DC: The World Bank. <http://documents.worldbank.org/curated/en/124381468038093074/pdf/368710FIOEducales0May0200601PUBLIC1.pdf> Accessed 24 June 2020.
- Appleton, J. J., Christenson, S. L., Kim, D., & Reschly, A. L. (2006). Measuring cognitive and psychological engagement: validation of the student engagement instrument. *Journal of School Psychology, 44*(5), 427–445.
- Bakker, A. B. (2011). An evidence-based model of work engagement. *Current Directions in Psychological Science, 20*(4), 265–269.
- Basic Education Act of 1998, 628. (n.d.).
- Buyse, E., Verschueren, K., Verachtert, P., & Damme, J. (2009). Predicting school adjustment in early elementary school: impact of teachers-child relationship quality and relational classroom climate. *The Elementary School Journal, 110*(2), 119–141.
- Byrne, B. M. (2012). Structural equation modeling with Mplus basic concepts, applications, and programming. Routledge. Taylor & Francis Group.
- Camara, M., Bacigalupe, G., & Padilla, P. (2017). The role of social support in adolescents: are you helping me or stressing me out? *International Journal of Adolescence and Youth, 22*(2), 123–136.
- Chen, J. (2005). Relation of academic support from parents, teachers, and peers to Hong Kong adolescents' academic achievement: the mediating role of academic engagement. *Genetic, Social, and General Psychology Monographs, 131*(2), 77–127.
- Cheung, C., & Pomerantz, E. (2015). Value development underlies the benefits of parents' involvement in children's learning: a longitudinal investigation in the United States and China. *Journal of Educational Psychology, 107*, 309–320.
- Cohen, S., & Syme, S. L. (1985). Issues in the study and application of social support. In S. Cohen & S. L. Syme (Eds.), *Social support and health* (pp. 3–21). San Francisco: Academic Press.
- Cohen, S., Underwood, L. G., & Gottlieb, B. H. (Eds.). (2000). *Social support measurement and intervention: a guide for health and social scientists*. New York: Oxford University Press.
- Cook, T. D., Herman, M. R., Phillips, M., & Settersten Jr., R. A. (2002). Some ways in which neighborhoods, nuclear families, friendship groups, and schools jointly affect changes in early adolescent development. *Child Development, 73*(4), 1283–1309.
- Csikszentmihalyi, M. (1990). *Flow: the psychology of optimal experience*. New York: Harper and Row.
- Demaray, M. K., Malecki, C. K. (2002). Critical levels of perceived social support associated with student adjustment. *School Psychology Quarterly, 17*(3), 213–241.
- Demerouti, E., Bakker, A. B., Nachreiner, F., & Schaufeli, W. B. (2001). The job demands-resources model of burnout. *Journal of Applied Psychology, 86*(3), 499–512.
- Estell, D. B., & Perdue, N. H. (2013). Social support and behavioral and affective school engagement: the effects of peers, parents, and teachers. *Psychology in the Schools, 50*(4), 325–339.
- Farmer, T., Lines, M., & Hamm, J. (2011). Revealing the invisible hand: the role of teachers in children's peer experiences. *Journal of Applied Developmental Psychology, 32*(5), 247–256.
- Feeney, B. C., & Collins, N. L. (2015). A new look at social support: a theoretical perspective on thriving through relationships. *Personality and Social Psychology Review, 19*(2), 113–147.
- Fredricks, J. A., Blumenfeld, P. C., & Paris, A. H. (2004). School engagement: Potential of the concept, state of the evidence. *Review of Educational Research, 74*(1), 59–109.
- Furrer, C., & Skinner, E. (2003). Sense of relatedness as a factor in children's academic engagement and performance. *Journal of Educational Psychology, 95*(1), 148–162.

- Gonida, E. N., Kiosseoglou, G., & Voulala, K. (2007). Perceptions of parent goals and their contribution to student achievement goal orientation and engagement in the classroom: grade-level differences across adolescence. *European Journal of Psychology of Education*, 22(1), 23–39.
- Gonida, E. N., Voulala, K., & Kiosseoglou, G. (2009). Students' achievement goal orientations and their behavioral and emotional engagement: co-examining the role of perceived school goal structures and parent goals during adolescence. *Learning and Individual Differences*, 19(1), 53–60.
- Halme, N., Hedman, L., Ikonen, R., & Rajala, R. (2018). Lasten ja nuorten hyvinvointi 2017: Kouluterveyskyselyn tuloksia. Työpäpaperi 15/2018. Helsinki: Terveysten ja hyvinvoinnin laitos. <http://urn.fi/URN:ISBN:978-952-343-115-7>. Accessed 24 June 2020.
- Havik, T., & Westergård, E. (2019). Do teachers matter? Students' perceptions of classroom interactions and student engagement. *Scandinavian Journal of Educational Research*. <https://doi.org/10.1080/00313831.2019.1577754>.
- Hooper, D., Coughlan, J., & Mullen, M. (2008). Structural equation modelling: Guidelines for determining model fit. *Electronic Journal of Business Research Methods*, 6, 53–60.
- Hopson, L. M., Schiller, K. S., & Lawson, H. A. (2014). Exploring linkages between school climate, behavioral norms, social supports, and academic success. *Social Work Research*, 38(4), 197–209.
- House, J. S. (1981). *Work stress and social support*. Reading: Addison-Wesley.
- Hu, L.-Z., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: conventional criteria versus new alternatives. *Structural Equation Modeling*, 6, 1–55.
- Hughes, J., & Chen, Q. (2011). Reciprocal effects of student-teacher and student-peer relatedness: effects on academic self-efficacy. *Journal of Applied Developmental Psychology*, 32, 278–287.
- Hughes, J. N., Luo, W., Kwok, O., & Loyd, L. K. (2008). Teacher-student support, effortful engagement, and achievement: a 3-year longitudinal study. *Journal of Educational Psychology*, 100(1), 1–14.
- Jang, H., Reeve, J., & Deci, E. (2010). Engaging students in learning activities: it is not autonomy support or structure but autonomy support and structure. *Journal of Educational Psychology*, 102(3), 588–600.
- Kiefer, S. M., Alley, K. M., & Ellerbrock, C. R. (2015). Teacher and peer support for young adolescents' motivation, engagement, and school belonging. *RMLE Online*, 38(8), 1–18.
- Kindermann, T. A. (2007). Effects of naturally-existing peer groups on changes in academic engagement in a cohort of sixth graders. *Child Development*, 78, 1186–1203.
- Kiuru, N., Nurmi, J.-E., Aunola, K., & Salmela-Aro, K. (2009). Peer group homogeneity in adolescents' school adjustment varies according to peer group type and gender. *International Journal of Behavioral Development*, 33, 65–76.
- Košir, K., & Tement, S. (2014). Teacher-student relationship and academic achievement: a cross-lagged longitudinal study on three different age groups. *European Journal of Psychology of Education*, 29(3), 409–428.
- Kulikowski, K. (2017). Do we all agree on how to measure work engagement? Factorial validity of Utrecht Work Engagement Scale as a standard measurement tool - a literature review. *International Journal of Occupational Medicine and Environmental Health*, 30(2), 161–175.
- Lam, S., Jimerson, S., Kikas, E., Cefai, C., Veiga, F., Nelson, B., Hatzichristou, C., Polychroni, F., Basnett, J., Duck, R., Farrell, P., Liu, Y., Negovan, V., Shin, H., Stanculescu, E., Wong, B., Yang, H., & Zollneritsch, J. (2012). Do girls and boys perceive themselves as equally engaged in school? The results of an international study from 12 countries. *Journal of School Psychology*, 50, 77–94.
- Lee, I. A., & Preacher, K. J. (2013). Calculation for the test of the difference between two dependent correlations with one variable in common. Computer software. <http://quantpsy.org>. Accessed 24 June 2020.
- Leino, K., Ahonen, A. K., Hienonen, N., Hiltunen, J., Lintuvuori, M., Lähteinen, S., Lämsä, J., Nissinen, K., Nissinen, V., Puhakka, E., Pulkkinen, J., Rautopuro, J., Sirén, M., Vainikainen, M.-P., & Vettenranta, J. (2019). PISA 18 ensituloksia. Opetus- ja kulttuuriministeriön julkaisuja 2019:40. <http://julkaisut.valtioneuvosto.fi/bitstream/handle/10024/161922/Pisa18-ensituloksia.pdf>. Accessed 24 June 2020.
- Lewis, A. D., Huebner, E. S., Malone, P. S., & Valois, R. F. (2011). Life satisfaction and student engagement in adolescents. *Journal of Youth and Adolescence*, 40, 249–262.
- Li, Y., & Lerner, R. M. (2011). Trajectories of school engagement during adolescence: implications for grades, depression, delinquency, and substance use. *Developmental Psychology*, 47(1), 233–247.
- Liu, W., Mei, J., Tian, L., & Huebner, E. S. (2016). Age and gender differences in the relation between school-related social support and subjective well-being in school among students. *Social Indicators Research*, 125(3), 1065–1083.
- Luckner, A. E., & Pianta, R. C. (2011). Teacher-student interactions in fifth grade classrooms: relations with children's peer behavior. *Journal of Applied Developmental Psychology*, 32(5), 257–266.
- Lukin, T. (2013). Motivation in studying mathematics – a longitudinal study on motivational factors and the relations between them during lower secondary school. University of Eastern Finland. Dissertations in Education, Humanities, and Theology No 47.

- Malecki, C. K., & Demaray, M. K. (2002). Measuring perceived social support: development of the Child and Adolescent Social Support Scale. *Psychology in the Schools, 39*, 1–18.
- Malecki, C. K., & Demaray, M. K. (2003). What type of support do they need? Investigating student adjustment as related to emotional, informational, appraisal, and instrumental support. *School Psychology Quarterly, 18*(3), 231–252.
- Muthén, L. K., & Muthén, B. O. (1998–2017). *Mplus User's Guide* (Eighth ed.). Los Angeles: Muthén and Muthén.
- Muthén, B., & Satorra, A. (1995). Complex sample data in structural equation modeling. In P. Marsden (Ed.), *Sociological methodology 1995* (pp. 267–316). Washington, DC: American Sociological Association.
- Newton, E. K., Laible, D., Carlo, G., Steele, J. S., & McGinley, M. (2014). Do sensitive parents foster kind children, or vice versa? Bidirectional influences between children's prosocial behavior and parental sensitivity. *Developmental Psychology, 50*(6), 1808–1816.
- OECD. (2019). *PISA 2018 results (volume II): where all students can succeed, PISA*. Paris: OECD Publishing. <https://doi.org/10.1787/b5fd1b8f-en>.
- Ouweneel, E., Le Blanc, P. M., & Schaufeli, W. (2011). Flourishing students: a longitudinal study on positive emotions, personal resources, and study engagement. *The Journal of Positive Psychology, 6*(2), 142–153.
- Peugh, J. L. (2010). A practical guide to multilevel modeling. *Journal of School Psychology, 48*(1), 85–112.
- Pietarinen, J., Soini, T., & Pyhältö, K. (2014). Students' emotional and cognitive engagement as the determinants of well-being and achievement in school. *International Journal of Educational Research, 67*, 40–51.
- Pyhältö, K. (2018). Function of supervisory and researcher community support in PhD and post- PhD trajectories. In E. Bizer, L. Frick, M. Fourie-Malherbe, & K. Pyhältö (Eds.), *Spaces, journeys and new horizons for postgraduate supervision* (pp. 205–222). (Studies into Higher Education; No. 5). Stellenbosch: African Sun Media.
- Quin, D. (2017). Longitudinal and contextual associations between teacher–student relationships and student engagement: a systematic review. *Review of Educational Research, 87*(2), 345–387.
- Rautopuro, J., & Juuti, K. (2018). *PISA pintaa syvemmältä: PISA 2015 suomen pääraportti*. Turku: Suomen kasvatustieteellinen seura.
- Reschly, A. L., Huebner, E. S., Appleton, J. J., & Antaramian, S. (2008). Engagement as flourishing: the contribution of positive emotions and coping to adolescents' engagement at school and with learning. *Psychology in the Schools, 45*, 419–431.
- Roorda, D. L., Koomen, H. M. Y., Spilt, J. L., & Oort, F. J. (2011). The influence of affective teacher–student relationships on students' school engagement and achievement: a meta-analytic approach. *Review of Educational Research, 81*(4), 493–529.
- Rueger, S. Y., Malecki, C. K., & Demaray, M. K. (2010). Relationship Between Multiple Sources of Perceived Social Support and Psychological and Academic Adjustment in Early Adolescence: Comparisons Across Gender. *Journal of Youth and Adolescence, 39*(1), 47–61.
- Ryan, A. M., & Patrick, H. (2001). The classroom social environment and changes in adolescents' motivation and engagement during middle school. *American Educational Research Journal, 38*(2), 437–460.
- Ryan, A. M., Pintrich, P. R., & Midgley, C. (2001). Avoiding seeking help in the classroom: who and why? *Educational Psychology Review, 13*(2), 93–114.
- Salmela-Aro, K. (2017). Dark and bright sides of thriving – school burnout and engagement in the Finnish context. *European Journal of Developmental Psychology, 14*(3), 337–349.
- Salmela-Aro, K., & Upadyaya, K. (2012). The schoolwork engagement inventory: energy, dedication, and absorption (EDA). *European Journal of Psychological Assessment, 28*(1), 60–67.
- Salmela-Aro, K., & Upadyaya, K. (2014). School burnout and engagement in the context of demands–resources model. *British Journal of Educational Psychology, 84*(1), 137–151.
- Salmela-Aro, K., Muotka, J., Alho, K., Hakkarainen, K., & Lonka, K. (2016). School burnout and engagement profiles among digital natives in Finland: a person-oriented approach. *European Journal of Developmental Psychology, 13*(6), 704–718.
- Schaufeli, W. B., & Bakker, A. B. (2004). Job demands, job resources, and their relationship with burnout and engagement: a multi-sample study. *Journal of Organizational Behavior, 25*(3), 293–315.
- Schaufeli, W. B., Martínez, I. M., Pinto, A. M., Salanova, M., & Bakker, A. B. (2002). Burnout and engagement in university students: a cross-national study. *Journal of Cross-Cultural Psychology, 33*(5), 464–481.
- Skinner, E., Furrer, C., Marchand, G., & Kindermann, T. (2008). Engagement and disaffection in the classroom: part of a larger motivational dynamic? *Journal of Educational Psychology, 100*(4), 765–781.
- Snijders, T. A. B., & Bosker, R. J. (2012). *Multilevel analysis. An introduction to basic and advanced multilevel modeling* (2nd ed.). Thousand Oaks: Sage Publications.
- Soini, T., Pietarinen, J., & Pyhältö, K. (2016). What if teachers learn in the classroom? *Teacher Development, 20*(3), 380–397.
- Tardy, C. H. (1985). Social support measurement. *American Journal of Community Psychology, 13*(2), 187–202.

- Tuominen-Soini, H., & Salmela-Aro, K. (2014). Schoolwork engagement and burnout among Finnish high school students and young adults: profiles, progressions, and educational outcomes. *Developmental Psychology*, *50*(3), 649–662.
- Ulmanen, S., Soini, T., Pyhältö, K., & Pietarinen, J. (2014). Strategies for academic engagement perceived by Finnish sixth and eighth graders. *Cambridge Journal of Education*, *44*(3), 425–443.
- Ulmanen, S., Soini, T., Pietarinen, J., & Pyhältö, K. (2016a). Students experiences of the development of emotional engagement. *International Journal of Educational Research*, *79*, 86–96.
- Ulmanen, S., Soini, T., Pietarinen, J., & Pyhältö, K. (2016b). The anatomy of adolescents' emotional engagement in schoolwork. *Social Psychology of Education*, *19*(3), 587–606.
- Upadyaya, K., & Salmela-Aro, K. (2013). Development of school engagement in association with academic success and well-being in varying social contexts: a review of empirical research. *European Psychologist*, *18*(2), 136–147.
- Urda, T., & Schoenfelder, E. (2006). Classroom effects on student motivation: goal structures, social relationships, and competence beliefs. *Journal of School Psychology*, *44*(5), 331–349.
- Väisänen, S., Pietarinen, J., Pyhältö, K., Toom, A., & Soini, T. (2017). Social support as a contributor to student teachers' experienced well-being. *Research Papers in Education*, *32*(1), 41–55. <https://doi.org/10.1080/02671522.2015.1129643>.
- Vettenranta, J., Välijärvi, J., Ahonen, A., Hautamäki, J., Hiltunen, J., Leino, K., Lähteinen, S., Nissinen, K., Nissinen, V., Puhakka, E., Rautopuro, J. & Vainikainen, M.-P. (2016). PISA 2015 Ensituloksia. Huipulla pudotuksesta huolimatta. Opetus- ja kulttuuriministeriön julkaisuja 2016:41. <http://um.fi/URN:ISBN:978-952-263-436-8>. Accessed 26 June 2020.
- Vollet, J. W. (2017). Capturing peers', teachers', and parents' joint contributions to students' engagement: an exploration of models. Dissertations and Theses. Paper 3774. https://pdxscholar.library.pdx.edu/open_access_etds/3774 Accessed 24 June 2020.
- Wang, M., & 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.
- Wang, M., & Fredricks, J. (2013). The reciprocal links between school engagement, youth problem behaviors, and school dropout during adolescence. *Child Development*, *85*(2), 722–737.
- Wentzel, K. R., Baker, S. A., & Russell, S. L. (2012). Young adolescents' perceptions of teachers' and peers' goals as predictors of social and academic goal pursuit. *Applied Psychology*, *61*(4), 605–633.
- Wentzel, K. R., Russell, S., & Baker, S. (2016). Emotional support and expectations from parents, teachers, and peers predict adolescent competence at school. *Journal of Educational Psychology*, *108*(2), 242–255.
- Wentzel, K. R., Muenks, K., McNeish, D., & Russell, S. (2017). Peer and teacher supports in relation to motivation and effort: a multi-level study. *Contemporary Educational Psychology*, *49*, 32–45.
- Wentzel, K., Muenks, K., McNeish, D., & Russell, S. (2018). Emotional support, social goals, and classroom behavior: a multilevel, multisite study. *Journal of Educational Psychology*, *110*(5), 611–627.
- Wu, J., Hughes, J., & Kwok, O.-M. (2010). Teacher-student relationship quality type in elementary grades: effects on trajectories for achievement and engagement. *Journal of School Psychology*, *48*, 357–387.
- You, S., & Sharkey, J. (2009). Testing a developmental-ecological model of student engagement: a multilevel latent growth curve analysis. *Educational Psychology*, *29*(6), 659–684.

Publisher's Note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

Pihla Rautanen. Faculty of Education and Culture, Tampere University, P.O. Box 700, FI-33014, Tampere, Finland. E-mail: pihla.rautanen@tuni.fi

Current themes of research:

Pupils' study engagement and social support for studying in primary school.

Most relevant publications in the field of Psychology of Education:

No previous publications

Tiina Soini. Faculty of Education and Culture, Tampere University, P.O. Box 700, FI-33014, Tampere, Finland.
E-mail: tiina.soini-ikonen@tuni.fi. Web site: www.learninginschool.fi

Current themes of research:

Educational reforms. School development. Teachers' and pupils' professional agency and well-being.

Most relevant publications in the field of Psychology of Education:

- Soini, T., Pietarinen, J., Pyhältö, K., Haverinen, K., Jindal-Snape, D. & Kontu, E. (2019). Special education teachers' experienced burnout and perceived fit with the professional community: a 5-year follow-up study. *British Educational Research Journal*. <https://doi.org/10.1002/berj.3516>.
- Soini, T., Pietarinen, J. & Pyhältö, K. (2016). What if teachers learn in the classroom? *Teacher Development*, 20(3), 380–397. <https://doi.org/10.1080/13664530.2016.1149511>.
- Soini, T., Pyhältö, K. & Pietarinen, J. (2010). Pedagogical well-being: Reflecting learning and well-being in teachers' work. *Teaching and teachers: theory and practice*, 16, 735–751.
- Janne Pietarinen.** School of Applied Educational Science and Teacher Education, Philosophical Faculty, University of Eastern Finland, P.O. Box 111, Yliopistokatu 2, 80101, Joensuu, Finland. E-mail: janne.pietarinen@uef.fi. Web site: www.learninginschool.fi

Current themes of research:

Interrelated nature of teachers' regulation strategies, agency, and well-being. Pupils' learning agency and well-being.

Most relevant publications in the field of Psychology of Education:

- Pietarinen, J. Pyhältö, K. & Soini, T. (2016). Teacher's professional agency – a relational approach to teacher learning. *Learning: Research and Practice*. <https://doi.org/10.1080/23735082.2016.1181196>
- Pietarinen, J., Pyhältö, K. & Soini, T. (2014). Student's emotional and cognitive engagement as the determinants of well-being and achievement in school. *International Journal of Educational Research*, 67, 40–51. <https://doi.org/10.1016/j.ijer.2014.05.001>.
- Pietarinen, J., Pyhältö, K., Soini, T., & Salmela-Aro, K. (2013). Reducing teacher burnout: a sociocontextual approach. *Teaching and Teacher Education*, 35, 62–72. <https://doi.org/10.1016/j.tate.2013.05.003>.
- Kirsi Pyhältö.** Centre for University Teaching and Learning, Faculty of Educational Sciences, University of Helsinki, P.O. Box 9, Siltavuorenpenger 1B, 00014, Helsinki, Finland. E-mail: kirsi.pyhalto@helsinki.fi. Web site: www.learninginschool.fi

Current themes of research:

School development. Teachers' professional agency, school development, and teacher well-being.

Most relevant publications in the field of Psychology of Education:

- Pyhältö, K. Pietarinen, J., Haverinen, K., Tikkanen, L. & Soini, T. (2020). Teacher burnout profiles and proactive strategies. *European Journal of Psychology of Education*. <https://doi.org/10.1007/s10212-020-00465-6>
- Pyhältö, K. Pietarinen, K. & Soini, T. (2015). Teachers' professional agency and learning – from adaption to active modification in the teacher community. *Teachers and teaching: Theory and Practice*, 21(7), 811–830. <https://doi.org/10.1080/13540602.2014.995483>.
- Pyhältö, K., Soini, T., & Pietarinen, J. (2010). Pupils' pedagogical well-being in comprehensive school – significant positive and negative school experiences of Finnish nine graders'. *European Journal of Psychology of Education*, 24, 447–463.

Affiliations

Pihla Rautanen¹ · Tiina Soini¹ · Janne Pietarinen² · Kirsi Pyhälö³

Tiina Soini
tiina.soini-ikonen@tuni.fi

Janne Pietarinen
janne.pietarinen@uef.fi

Kirsi Pyhälö
kirsi.pyhalto@helsinki.fi

¹ Faculty of Education and Culture, Tampere University, P.O. Box 700, FI-33014 Tampere, Finland

² School of Applied Educational Science and Teacher Education, Philosophical Faculty, University of Eastern Finland, P.O. Box 111, 80101 Joensuu, Finland

³ Centre for University Teaching and Learning, Faculty of Educational Sciences, University of Helsinki, P.O. Box 9, Siltavuorenpenger 1B, 00014 Helsinki, Finland