



The role of teacher–student relationships and student–student relationships for secondary school students' well-being in Switzerland

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ABSTRACT

Student well-being has gained prominence on both the scientific and political agendas, as it is recognized as a crucial skill in addressing the economic, ecological, and social challenges of the 21st century. Relationships that students form with teachers and peers in the classroom are important for their academic, social, and emotional development. Building and maintaining positive relationships contributes to psychological growth and well-being. This article strives for a deeper understanding of the association between student well-being and classroom relationships from the students' perspective. Mediation regression analysis was conducted between student well-being, teacher–student relationships, and student–student relationships to overcome limitations of prior studies using a unidimensional approach on student well-being and considering relationships in separate models. This study shows that both relationships are related to student well-being, however associations differ regarding different dimensions of student well-being and students' individual factors such as gender, migration background, and socio-economic status. Providing a multi-dimensional approach on student well-being as well as taking both relationships into account adds to a profound understanding of processes in classrooms. Insights on these relations can help educators, schools and researchers develop strategies to foster relationships in the classroom and, in succession, enhance well-being in school.

Introduction

Adolescents are growing up in a rapidly changing world characterized by uncertainty, information overload, and competition. This increasing complexity and challenges may lead to anxiety disorders, mental health conditions, depressive symptoms, and a range of psychological and emotional disturbances (Green et al., 2012). Therefore, student well-being (StudWB) has advanced to the scientific and political agenda and is considered as an important skill that is crucial in facing the mentioned 21st century economical, ecological, and social challenges (OECD, 2018). Although recognizing the need to not only focus on students' academic outcomes but also taking their well-being into account, research on StudWB is still diversified and a wide variety of definitions are applied in academic and policy circles (Diener et al., 2009; Dolan et al., 2008; Land et al., 2007; OECD, 2017; Seligman, 2011; UNESCO, 2016). To comprehensively address StudWB a multidimensional approach is needed considering both student's subjective positive and negative experiences in school environment, including emotional, cognitive, and physical elements (Hascher, 2007).

Building and maintaining positive relationships fulfills a basic human need (Baumeister & Leary, 1995; Ryan & Deci, 2000) and contributes to psychological growth and well-being (Gunnell et al., 2013). Considering the substantial amount of adolescents' time spent at school, it becomes apparent that teachers and peers assume a pivotal function in the attainment of social relatedness. Therefore, in the recent two decades increasing emphasis has been placed on teacher–student relationships (TSR) and student–student relationships (SSR) in understanding the complexity of interpersonal processes in the classroom and their multiple outcomes (Endedijk et al., 2021). In line with attachment theory, teachers are important attachment figures for young people (Beam et al., 2002), especially in adolescence when critical attitudes toward school and teaching increase (De Fraine et al., 2005; Eccles et al., 1991). By establishing close and low conflictual relationships with their students, teachers provide an environment for successful learning and StudWB (Hall-Lande et al., 2007; Hascher, 2003; Koomen & Jellesma, 2015; Roffey, 2015). Moreover, teachers can be referred to as the invisible hand (Farmer et al., 2011) determining the quality of SSR. The intricate dynamics of peer relationships within classroom

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environments are shaped not only by the interpersonal behaviors exhibited by students themselves but also by contextual factors set by the teachers and by the nuanced interactions with a specific student. Close peer relationships in a secure and fair school environment are consistently associated with StudWB (Hall-Lande et al., 2007; Hascher, 2003; Roffey, 2015). Despite the ongoing research on TSR and SSR, studies mainly disregard the simultaneous coexistence of both types of relationships within the classroom as well as individual student factors, such as gender, migration background, and socio-economic status (SES).

Therefore, our study aims to contribute to the research by providing a mediation regression model which investigates TSR and SSR at the same time and their relation to a multidimensional construct of StudWB all from the students' perspective. Examining both types of relationships in the classroom and considering well-being in school as a multidimensional construct not only contributes to a deeper understanding of classroom and school experiences but also supports the development of intervention programs aiming at fostering well-being in schools.

Literature overview

Student well-being

The inquiry into the constituents of a fulfilling life and the determinants of individual well-being is one that does not lend itself to a straightforward resolution. Researchers in the domain of psychology, exemplified by Diener (1984), Ryff (1989), and Seligman (2011), have endeavored to address this question through the utilization of constructs such as happiness, joy, life satisfaction, and a simultaneous absence of negative emotions and complaints. However, this pursuit has resulted in a further proliferation of diverse perspectives and interpretations, thereby complicating the attainment of an answer. The complexity of the question and conceptual ambiguity seems even more pronounced when the concept of well-being is applied to the school context. Overall well-being and well-being in school might not be identical as evident by differences in students' answers (Hascher, 2004a). Nevertheless, general, psychological terms are still applied to the school context and no generally accepted definition of StudWB has yet emerged.

In recognition of the complexity and the multidimensional nature of StudWB, Hascher (2003) introduced a multi-component model, emphasizing that the complexity of the psychological construct of well-being must also be considered for the school context. Well-being in school was conceptualized as the dominance of positive emotions and cognitions over negative ones toward school life and the whole school community (Hascher, 2003). The multidimensional model of well-being in school consists of three positive dimensions (i.e., positive attitudes toward school, enjoyment in school, positive academic self-concept) and three negative dimensions (i.e., worries in school, physical complaints in school, and social problems in school) as indicators of StudWB. It seems reasonable to assume that positive and negative dimensions coexist simultaneously, because students at the same time may experience joy from interactions with teachers, but also worries related to their grades. Going beyond a single-dimensional approach to StudWB and avoiding treating StudWB merely as the absence of students' negative experiences in school would enhance understanding of the construct's complex nature.

Based on Bronfenbrenner's ecological systems theory (1977), a variety of factors contribute to the development of StudWB, which can be classified into the student, classroom, and school/societal level. The micro-level comprises individual factors such as student's gender, migration background, and SES (Livingstone & Srivastava, 2012; Trautwein & Lüdtke, 2009). For example, students with certain demographic (male, migration background) and socio-economic factors (low SES) have been identified as being at-risk for encountering academic and socioemotional difficulties (Hamre & Pianta, 2005; Henricsson & Rydell, 2004) which might impede their StudWB. Male and minority students seem to perceive school climate (i.e., the quality of the

school environment experienced by its' members, which influences their behaviors in school) less favorably, which may further influence their StudWB (Hoy & Sabo, 1998; Ruus et al., 2007). Boys tend to show lower enjoyment in school, while girls express more concerns about school. However, systematic analyses of gender-specific differences in StudWB are scarce and findings are heterogeneous as some studies showed no difference between female and male students regarding their StudWB (e.g., Hascher 2004b, Hascher & Hagenauer 2011). Students with a migration background are significantly more likely to report loneliness at school and report more exclusionary experiences (Aldridge et al., 2016; Zimmer & Stein, 2022). Additionally, empirical evidence suggests that higher socioeconomic status contributes to greater well-being in school (Martin, 2005; OECD, 2019). Being in a school environment that does not fit students' individual needs can lead to negative behavioral and motivational outcomes (Eccles et al., 1991). Especially in secondary school environments, students' motivation, engagement, and StudWB is likely to decrease (Drexler, 2010; Gunnell et al., 2013; Pietarinen et al., 2014). Relationships in the classroom seem to be of particular interest in the period of adolescence when StudWB decreases, as they can serve as a resource in dealing with increased cognitive and emotional demands in secondary education and with stress (Eccles & Roeser, 2011; Goldstein et al., 2005; Roorda et al., 2011). In contrast, empirical evidence suggests that students may have lower levels of performance, engagement, and self-efficacy when lacking positive TSR (Roorda et al., 2011; Wentzel, 2004) or positive SSR (Bush, 2005; Fenzel, 2000). A lack of TSR and SSR may also exacerbate behavior problems (Gazelle & Druhen, 2009; Hamre & Pianta, 2001) and ultimately decrease StudWB (Hascher, 2010).

Teacher–student relationships

The TSR has been identified as a crucial and yet complex determinant of successful educational processes (Cornelius-White, 2007). Supportive and appreciative relationships seem to play a pivotal role in fostering positive attitudes toward school and the development of self-esteem (Aldridge & McChesney, 2018; Halle-Lande et al., 2007).

Along with self-determination theory (SDT) postulating the need for relatedness as one of the three basic psychological needs essential for facilitating an optimal motivational state for personal development (Baumeister & Leary, 1995; Knierim et al., 2017; Ryan & Deci, 2017), the attachment theory has been found to be the strongest theoretical and empirical support regarding the development of TSR. Attachment refers to a specific emotional bond that develops between a caregiver and a child during the first years of life (Bowlby, 1969). Experiencing early social interactions can not only have an immediate influence on child's behavior, but also appears to have an indirect and enduring impact on the development of relationships, as they contribute to the building of internal working models applied to a wider array of interaction partners, including teachers and friends (Bowlby, 1973; Cassidy & Shaver, 2018; Pianta et al., 2003). Although the bonds established between children and teachers typically do not conform to the characteristics of attachment bonds—as they are not described by enduring and intense affective connections across time and space—teachers may provide a safe haven particularly for children at-risk (e.g., with migration background and low SES) (McGrath & van Bergen, 2015; Verschueren & Koomen, 2012; Verschueren, 2015). Developmental systems theory (Bronfenbrenner & Morris, 1998; Lerner, 1998) later laid the foundation for studying TSR within a multi-level framework, considering both individual characteristics and external influences. At the micro-level, individual factors such as students' gender, migration background, and SES are considered to influence how a teacher perceives a particular child, e.g., teachers' perceptions about less favorable behavior and poorer academic performance of students may influence their internal working models of relationships with certain groups of students (McGrath & van Bergen, 2015). The quality of TSR as a dyadic phenomenon can be assessed using two distinct dimensions: Closeness and conflict (Birch & Ladd, 1997;

Hamre & Pianta, 2001; Koomen & Jellesma, 2015; Pianta et al., 2003). Closeness thereby refers to the warmth and security experienced in a relationship with a teacher and the degree of comfort to reach for support from teachers. Conflict describes the level of negativity, resistance, and lack of rapport in the TSR. A high-quality TSR is characterized as being high in closeness and simultaneously low in conflict (Koomen & Jellesma, 2015; Sabol & Pianta, 2012; Verschueren & Koomen, 2012). TSR can be assessed using self-report either from teachers' or students' perspective (Roza et al., 2021). The student perspective may provide a more comprehensive understanding of the dynamics within classroom relationship processes, when considering not only TSR but also the influence of peer relationships (Endedijk et al., 2021; Roza et al., 2021).

Establishing a close TSR simultaneously low in conflict, seems to play an important role for student learning and achievement (Appiah et al., 2023; Ruzek et al., 2016) as well as motivational (Maulana et al., 2014; Ryan & Patrick, 2001) and emotional outcomes (Ahmed et al., 2010; Lewis et al., 2009). Closeness and conflict in a relationship with teachers have been linked to student development and well-being (Frijda & Mesquita, 1994; Mainhard et al., 2018; Sabol & Pianta, 2012; Wubbels et al., 2014). Recent meta-analyses moreover provided compelling evidence supporting the positive correlation between close, warm, and low conflictual TSR and various outcomes, including StudWB, learning engagement, and academic performance (Quin, 2017; Roorda et al., 2011, 2017). Although the structure of secondary school possesses a challenge on the development of close TSR due to an increasing number of different teachers and a corresponding decrease in the amount of time a student spends with a teacher (Eccles & Roeser, 2009), close relationships with teachers appear to correlate even more strongly with students' learning behavior and motivation than in primary school (Jagenow et al., 2015; Roorda et al., 2011).

Student–student relationships

While TSR are of compulsory nature, SSR are seen as more voluntary and essentially horizontal (Bukowski et al., 2018; Laursen & Bukowski, 1997; Rubin et al., 2006). Neither party possesses the authority to enforce the establishment of a relationship upon the other. Particularly during the period of adolescence, when students strive for greater autonomy from their parents, their relationships with peers assume heightened significance (Lynch & Cicchetti, 1997).

Peer relationships can be characterized by the reported cohesion in the classroom of the students (Santos et al., 2014). According to Schiefer and van der Noll (2017), social cohesion, as a multidimensional construct, pertains to the quality of collective togetherness within a group, with social relations serving as the predominant aspect. Therefore, cohesion in the classroom refers to the degree of connectedness, unity, and positive social interaction among students. It reflects the overall sense of belonging, cooperation, and supportive relationships among classmates (Osterman, 2000; Schiefer & van der Noll, 2017). SSR are imbedded in multiple levels of social complexity, such as the individual, the dyad, and the group level (Hinde & Stevenson-Hinde, 2014; Rubin et al., 2015). The first level encompasses factors such as gender, migration background, and SES, which are deemed pertinent in the formation and sustenance of high-quality relationships (Bakchich et al., 2023; Bradley & Corwyn, 2002; Wanders et al., 2019). While adopting a multilevel approach seems crucial for understanding relationships in the classroom, concentrating solely on the individual level can offer an opportunity to explore the impact of relationships on diverse students, particularly those referred to be at-risk for encountering challenges in the academic setting (Hamre & Pianta, 2005; Henricsson & Rydell, 2004). In terms of gender, findings are somewhat inconsistent. Empirical evidence suggests that girls tend to place greater emphasis on dyadic friendships, exhibit higher levels of empathy, and demonstrate a greater willingness to invest time and effort in nurturing social relationships compared to boys (Bokhorst et al., 2010; Rose & Rudolph, 2006). However, some findings indicate that boys have slightly higher quality

relationships with their classmates compared to girls (e.g., Tobia et al., 2019). Previous research on student migration background reported lower levels of friendship quality for students with a migrant biography (Chai, 2019; Kronig et al., 2000). Already in primary school, students with a migrant background exhibit higher levels of social rejection and lower levels of social acceptance (Krull et al., 2018). However, Chen et al. (2019) have shown that students with both parents having a migration background may engage more in peer interactions to foster a sense of belonging and security. Concerning lower SES, empirical evidence suggests a negative association with peer interactions in school (Veland et al., 2015). Students with lower SES may face challenges in establishing and maintaining peer relationships, particularly with those from higher SES. This may be due to weaker social skills or behavioral issues (Veland et al., 2009).

Drawing from an ecologically oriented model, children's development is influenced by a combination of their individual characteristics (individual level) and the relationships (microsystem) they form within specific contexts (Bronfenbrenner & Morris, 1998). In the school context, both teachers and peers contribute to students' social relationships and well-being.

The interplay of teacher–student relationships and student–student relationships

The complexity of classroom processes requires research on TSR and SSR to reexamine the associations between social relationships in the classroom for different students, including them into one model (Bukowski et al., 2018).

The attachment theory (Bowlby, 1969) suggests that internal working models of relationships with teachers shape students' perceptions of peer relationships, their ability to trust, and their overall social competence within the peer group. Similar, social learning theory (Bandura, 1971) posits that students acquire knowledge and skills related to social interaction through observing and imitating their teacher's behavior. In this way, teachers provide a primary source of social learning for students, shaping their understanding of interpersonal dynamics and influencing their behaviors within SSR. However, if the quality of TSR is low, students' reliance on teachers as role models might be reduced. As a result, they are less likely to observe and learn social behaviors, communication strategies, and relationship-building techniques from their teachers (Bandura, 1971). Furthermore, according to social referencing theory (Feinman, 1992; Gibson & Walk, 1960), peers acquire the ability to evaluate and form impressions of students through their observations of interactions between those students and their teacher. Peers use teachers' responses and behaviors as a reference point to understand and judge the social competence of their classmates (Hughes et al., 2001). High-quality TSR appear to play a significant role in fostering a positive emotional climate in which positive peer relationships can evolve. Teachers who demonstrate sensitivity by being responsive to students' needs, offering help and considering their perspectives provide successful learning environments and opportunities for students' engagement and interaction with each other (Pianta et al., 2004). Despite the potential influence of various teacher characteristics on the development of TSR, Hughes et al. (2006) were able to demonstrate that children who had positive relationship with their teachers exhibited greater peer acceptance, even when controlling for the influence of individual levels of teacher support.

In addition to the theoretical perspectives, empirical evidence supports the possessed relation between TSR and SSR. Teachers can be referred to as the invisible hand (Farmer et al., 2011) that promotes students' self-directed, autonomous, and developmentally productive peer relationships. In this regard TSR can be perceived as a pedagogical instrument to intervene in peer relationships, thereby generally influencing the quality of interpersonal dynamics among students (Bierman, 2011). Teachers may influence SSR in numerous ways—both indirectly via classroom practices and teaching and directly via network-related

teaching (Gest & Rodkin, 2011). By setting classroom rules, fostering collaborative opportunities, or providing support for students at-risk, teachers contribute to the broader classroom social context (Bierman, 2011; Juvonen, 2018). Further, through interacting and establishing relationships with a particular student, teachers communicate social norms (Bouchard & Smith, 2017; Farmer et al., 2011; Hymel et al., 2015). Students who have lower-quality relationships with their teachers are likely to receive less support from their classmates and are generally evaluated more negatively by their peers (Fredricks et al., 2018; Hernández et al., 2016; León & Liew, 2017). The limited number of longitudinal studies conducted in this field also provide evidence supporting the prediction that SSR are influenced by TSR (De Laet et al., 2014; Hughes & Chen, 2011; Kiuru et al., 2015). Moreover, an increasing body of empirical research indicates that the correlation between TSR and SSR may be contingent upon the presence of positive or negative aspects within TSR. Conflict in relationships with teachers appears to be more strongly associated with peer relationships compared to closeness (De Laet et al. 2014; Hendrickx et al., 2017; Huber et al., 2018; Ladd et al., 1999; McAuliffe et al., 2009; White & Jones, 2000). However, the evidence regarding this relation has been inconsistent thus far, as the correlation was also found to be stronger for closeness in TSR compared to conflict (e.g., Hughes et al. 2001). This inconsistency in findings highlights the complex nature of the connection between relationships in the classroom and the need for further investigation.

Despite the theoretical and empirical approaches supporting the influence of TSR on SSR, it is worth noting that the relationship between TSR and SSR could also be examined from the opposite direction. Building upon the expectation that peer acceptance has an impact on students' engagement (Zimmer-Gembeck et al., 2006) and academic self-efficacy (Buhs, 2005), it could be hypothesized that both in turn influence TSR (Birch & Ladd, 1997; Hughes et al., 2008; Mercer & DeRosier, 2008). Furthermore, empirical research provides evidence supporting the existence of reciprocal associations between the dimensions TSR and SSR. Hughes and Chen (2011) were able to show reciprocal effects between TSR and peer liking in a longitudinal study with participants from grades 1 to 5. However, peer liking was measured in individual interviews where children had to rate their liking in regard to every other child in the class, thus measuring the quality of the SSR. In a recent meta-analysis conducted by Endedijk et al. (2021), it was found that TSR seem to exert a stronger effect on peer relationships compared to the reverse influence of peer relationships on TSR.

While acknowledging the importance of longitudinal studies investigating reciprocal effects between TSR and SSR we are convinced that our study can contribute to the field by linking TSR along with SSR and a multidimensional construct of StudWB. Therefore, our study provides insight into the relation between the dimensions of TSR and SSR, while also examining potential associations of student at-risk factors (gender, migration background, SES).

The present study

In this study, we strive to understand classroom relationships more deeply and to elucidate their importance for StudWB. Little domain-specific research has been performed to analyze the construct of StudWB in the context of secondary school, considering both positive and negative aspects of school life. Although relationships within the classroom seem to play a pivotal role for StudWB, especially at the secondary school level when StudWB tends to decline (Gunnell et al., 2013), limited research has been conducted so far taking both types of relationships—with teachers and students—into account. It seems crucial to analyze the impact of TSR and SSR on multiple dimensions of StudWB to shed light on the specific factors that contribute to StudWB and to identify potential interventions to support and enhance the well-being of students who are considered at-risk for low StudWB and low relationship quality.

Therefore, we propose a mediation regression model (in Fig. 1), based on existing literature on the associations between StudWB, TSR, and SSR. Consequently, the following research questions are investigated in this study:

- (1) How are TSR and SSR correlated with the different dimensions of StudWB?

We expect closeness and SSR to have a positive correlation with the positive dimensions of StudWB (Hypothesis 1.1) and a negative correlation with the negative dimensions of StudWB (Hypothesis 1.2). We further expect conflict to have a negative correlation with the positive dimensions of StudWB (Hypothesis 1.3) and a positive correlation with the negative dimensions of StudWB (Hypothesis 1.4).

- (2) How does SSR mediate the correlation between TSR and the dimensions of StudWB?

We expect SSR to mediate the correlation between TSR and the dimensions of StudWB (Hypothesis 2.1). Moreover, we expect a positive correlation between closeness and SSR (Hypothesis 2.2) and a negative correlation between conflict and SSR (Hypothesis 2.3).

- (3) How are students' gender, migration background, and SES related to SSR and the different dimensions of StudWB?

We hypothesize that girls would have more positive relationships with peers and more positive feelings toward school than boys (Hypothesis 3.1). Migration background is expected to have a negative correlation with SSR, a negative correlation with the positive dimensions of StudWB, and a positive correlation with the negative dimensions of StudWB (Hypothesis 3.2). Finally, we hypothesize that high SES would have a positive correlation with SSR and have a positive correlation with the positive dimensions of StudWB and a negative correlation with the negative dimensions of StudWB (Hypothesis 3.3).

Method

Participants

In the present study, we analyzed the first wave data from the project "XXX" (2021–2025). Forty-four classes in 17 schools from three German-speaking cantons in Switzerland were recruited through school principals; interested teachers were invited to participate in the study. The sample for this study consists of $N = 709$ students (51 % male) from the lower secondary school in grade 7. Participants filled out an online self-reported survey during regular school hours, with one member from our research team being present in the classroom. Among other constructs, the survey included StudWB, TSR, and SSR from a student perspective.

Measures

Student well-being

StudWB was measured using the Student Well-being Questionnaire (Hascher, 2007), which contains six dimensions of StudWB such as (1) positive attitudes toward school (e.g., "I like to go to school."), (2) enjoyment in school (e.g., "Have you experienced joy because of teachers' friendliness in the past few weeks?"), (3) positive academic self-concept (e.g., "I do not have problems mastering school tasks."), (4) worries in school (e.g., "Have you been worried about your school grades in the past few weeks?"), (5) physical complaints in school (e.g., "Have you had a severe headache in school in the past few weeks?"), and (6) social problems in school (e.g., "Have you had problems with your classmates in the past few weeks?"). Each dimension consisted of 3–4 items. Students responded to the items on a 6-point Likert-scale from 1

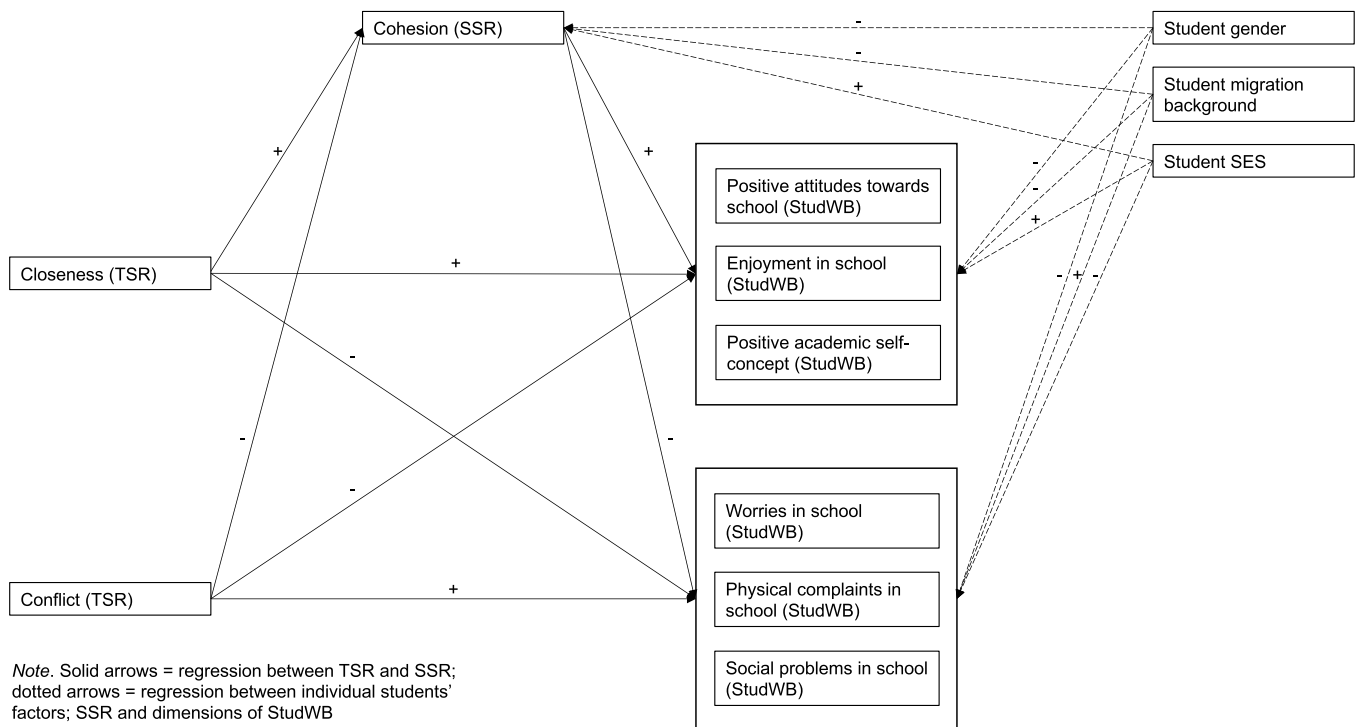


Fig. 1. Hypothesized theoretical mediation regression model.

Note. Solid arrows = regression between TSR and SSR; dotted arrows = regression between individual students' factors; SSR and dimensions of StudWB.

(never/disagree) to 6 (very often/agree). Internal consistency reliability (McDonald's Omega (ω)) of the different StudWB dimensions ranged from 0.71 to 0.83.

Teacher-student relationships

TSR was measured with 18 items drawn from the Teacher-Student Relationship Scale (Koomen & Jellesma, 2015), including both dimensions of closeness (8 items) and conflict (10 items). The scale measures students' views on their closeness and conflict in the relationship with their teacher. Students were instructed to refer to their classroom teacher or the teacher with whom they had attended the most lessons. Closeness in TSR included items such as "When I feel uncomfortable, I go to my teacher for help and comfort"; "I feel relaxed with my teacher"; and "I think I have a good relationship with my teacher." Conflict in TSR included items such as "My teacher treats me unfairly"; "I feel my teacher does not trust me"; and "I can be very angry with my teacher". Ratings ranged from 1 (no, that is not true) to 5 (yes, that is true). Internal consistency reliability (McDonald's Omega (ω)) of the Teacher-Student Relationship Scale was 0.90 for closeness and 0.94 for conflict.

Student-student relationships

The Student-Student Relationship Scale based on the Hessian Reference Framework for School Quality [Hessischer Referenzrahmen Schulqualität] (HRS, 2012) was used to assess SSR. This scale measured the cohesion of SSR in class with 6 items, including "In my class, most of the students get along very well with each other"; "In my class we make sure that nobody is left alone with their problems"; and "In my class I have several good friends". Student responded on a 4-point Likert-scale, ranging from 1 (not at all true) to 4 (very true). The reliability (McDonald's Omega (ω)) of the Student-Student Relationship Scale was 0.83.

Student individual factors

Student individual factors included gender (1 = female, 2 = male) and migration background (1 = Switzerland, 2 = other countries), which was determined by students' place of birth. In addition, students'

SES was calculated by using the PISA index of economic, social, and cultural status (ESCS). The index was created by using student reports on parents' education, parents' occupations, and an index summarizing a number of home possessions that can be taken as proxies for material wealth or cultural capital, such as possession of a car, the number of books, and other educational resources available at the home (Avisati, 2020; Erreygers et al., 2012).

Data analysis

In summary our data contained 6.34 % missing values. We removed individuals ($n = 48$) who lacked information on the variables of interest. There were no outliers ($\pm 3SD$) identified. As a result, our final sample size for analysis was $N = 709$. Prior to running mediation regression analyses, we estimated the intraclass correlation coefficients (ICCs) of the variables (a method used for multi-level analysis, computed in Mplus version 8.3 using the twolevel basic option) to evaluate the cluster structure in the data as well as the degree of dependence of observations (Geiser, 2013).

To explore the relationship between StudWB, TSR, and SSR we conducted two separate regression analyses for closeness and conflict of TSR as an independent variable and for each of the six dimensions of StudWB as dependent variables, using cohesion in SSR as a mediating variable. Gender, migration background, and SES were included as covariates in the models. Analyses were conducted with SPSS v.28.0 using the PROCESS macro developed by Hayes (2015) to conduct mediation analysis.

Results

Preliminary analysis

The ICCs for StudWB dimensions, closeness, conflict, and cohesion ranged from 0.04 to 0.16, indicating that there were no substantial differences between the school classes (Shrout & Fleiss, 1979).

Descriptive statistics and the correlation matrix of variables are

Table 1
Descriptive statistics and inter-correlation between study variables.

Variable	M	SD	1	2	3	4	5	6	7	8	9	10	11	12
1. Closeness	3.28	0.90	–											
2. Conflict	1.95	0.94	–0.06	–										
3. Cohesion	3.06	0.56	.39**	–0.15**	–									
4. Positive attitudes toward school	4.28	1.04	.38**	–0.26**	.31**	–								
5. Enjoyment in school	4.33	1.01	.42**	–0.20**	.27**	.61**	–							
6. Positive academic self-concept	4.31	1.02	.18**	–0.13**	.22**	.34**	.25**	–						
7. Worries in school	3.29	1.42	–0.12**	.20**	–0.16**	–0.14**	–0.09*	–0.33**	–					
8. Physical complaints in school	2.15	1.25	–0.15**	.26*	–0.21*	–0.15**	–0.09**	–0.26**	.53*	–				
9. Social problems in school	1.67	0.97	–0.14**	.19**	–0.40**	–0.21**	–0.13**	–0.14**	.27**	.38**	–			
10. gender	–	–	.08*	.26**	–0.31	–0.16*	–0.04	–0.01	–0.10**	–0.17**	.02	–		
11. migration background	–	–	.02	.11**	–0.12**	–0.03	.01	–0.05	.12**	.13**	.07	–0.00	–	
12. SES	0.00	0.76	.01	–0.06	.13**	.01	.01	.16**	–0.15**	–0.16**	–0.04	.02	–0.06	–

Note. N = 709. M = Mean; SD = Standard deviation. Answer options: TSR: 1 = no, that is not true, 2 = that is usually not true, 3 = sometimes, 4 = that is usually true, 5 = yes, that is true; SSR: 1 = not at all true, 2 = not rather true, 3 = rather true, 4 = true; StudWB: 1 = never/disagree – 6 = very often/agree.
* p < .05,
** p < .01.

demonstrated in Table 1. Closeness was not significantly associated with conflict, which confirms the independence of the two main dimensions of TSR. Cohesion in SSR was significantly positively related to closeness and negatively to conflict, which indicates the assumed association between TSR and SSR. The positive dimensions of StudWB were significantly positively associated with closeness and significantly negatively with conflict, whereas the negative dimensions of StudWB showed significant negative associations with closeness and significant positive relations with conflict. SSR was found to be significantly positively correlated with the positive dimensions and significantly negatively associated with the negative dimensions of StudWB. Regarding the six variables of StudWB, the inter-correlations analysis showed that the negative and positive variables are significantly positively related to the variables of the same dimension and significantly negatively associated with the variables of the opposite dimension.

Mediation regression models

TSR and SSR

The direct associations between the dimensions of TSR on SSR are presented in Table 2. The separate regression analyses showed a positive correlation for closeness in TSR with SSR (b = 0.25, 95 % CI [.21, 0.29], p < .001, F(4, 701) = 0.43, p < .001) and a negative correlation for conflict with the relationships between students (b = –0.08, 95 % CI [–0.13, –0.04], p < .001, F(4, 701) = 0.22, p < .001). Gender had no significant association with SSR in both models, whereas students’ migration background was significantly negatively associated with SSR. SES showed a significant positive correlation with SSR regardless of being included in the model with closeness or conflict.

Table 2
Mediation models to predict SSR from closeness or conflict in TSR.

Outcome	Predictors	R ²	F	Estimate	SE	95 % CI
SSR	CLOS	.19	40.40***	0.25	0.02	[0.21, 0.29]
	gender			–0.06	0.03	[–0.13, 0.00]
	migration			–0.21	0.06	[–0.33, –0.09]
	SES			0.09	0.03	[0.04, 0.14]
SSR	CONF	.05	8.75***	–0.08	0.02	[–0.13, –0.04]
	gender			0.00	0.04	[–0.07, 0.08]
	migration			–0.16	0.06	[–0.29, –0.04]
	SES			0.09	0.03	[0.03, 0.14]

Note. N = 709. All estimate values were unstandardized betas. CLOS = closeness in teacher–student relationship; CONF = conflict in teacher–student relationship; SSR = student–student relationship; SES = students’ socio-economic status. Bolded confidence intervals do not include a zero, indicating a significant effect.
*** p < .001.

Closeness in TSR, SSR, and StudWB

Table 3 shows that all direct relations between closeness and the positive dimensions of StudWB were significant and positive, with the strongest correlation for enjoyment in school (b = 0.42, 95 % CI [.34, 0.50], p < .001, F(5, 702) = 0.44, p < .001). However, regarding the negative dimensions of StudWB, closeness was negatively associated only with physical complaints in school (b = –0.12, 95 % CI [–0.23, –0.01], p < .05, F(5, 700) = 0.32, p < .001). Moreover, SSR was significantly positively associated with the positive dimensions of StudWB and significantly negatively related to the negative dimensions of StudWB.

Being a girl was negatively associated with positive attitudes toward school (b = –0.29, 95 % CI [–0.41, –0.16], p < .001, F(5, 700) = 0.45, p < .001) and had a significant negative correlation with the negative dimensions of StudWB, except for social problems in school. Students’ migration background was not significantly associated with the positive dimensions of StudWB, but was significantly positively related to worries in school and physical complaints in school. SES had a positive relation with the academic self-concept of students (b = 0.17, 95 % CI [.06, 0.26], p < .001, F(5, 700) = 0.27, p < .001). Regarding the negative dimensions of StudWB, all relations were found to be significantly negative, except from SES not having a significant direct association with social problems in school.

Conflict in TSR, SSR, and StudWB

Table 4 contains the associations between conflict, the dimensions of StudWB, and SSR. All direct relations from conflict on the positive dimensions of StudWB were significantly negatively related to the positive dimensions of StudWB, with the strongest correlation for positive

Table 3
Mediation models to predict the dimensions of StudWB from closeness and SSR.

Outcome	Predictors	R ²	F	Estimate	SE	95 % CI
PAS	CLOS	.20	34.63***	0.37	0.04	[0.29, 0.46]
	SSR			0.34	0.07	[0.20, 0.47]
	gender migration			-0.29	0.06	[-0.41, -0.16]
	SES			-0.02	0.11	[-0.24, 0.20]
EIS	CLOS	.19	33.80***	0.42	0.04	[0.34, 0.50]
	SSR			0.23	0.07	[0.09, 0.36]
	gender migration			-0.11	0.06	[-0.23, 0.02]
	SES			0.03	0.11	[-0.18, 0.24]
PASC	CLOS	.07	11.24***	-0.01	0.05	[-0.09, 0.08]
	SSR			0.14	0.05	[0.05, 0.23]
	gender migration			0.28	0.07	[0.13, 0.42]
	SES			-0.01	0.07	[-0.14, 0.13]
WIS	CLOS	.06	9.58***	-0.11	0.12	[-0.34, 0.12]
	SSR			0.16	0.05	[0.06, 0.26]
	gender migration			-0.12	0.06	[-0.24, 0.01]
	SES			-0.26	0.10	[-0.46, -0.06]
PCS	CLOS	.11	16.52***	-0.23	0.10	[-0.42, -0.04]
	SSR			0.45	0.16	[0.13, 0.77]
	gender migration			-0.25	0.07	[-0.38, -0.11]
	SES			-0.12	0.06	[-0.23, -0.01]
SPS	CLOS	.16	26.85***	-0.35	0.09	[-0.53, -0.18]
	SSR			-0.35	0.08	[-0.52, -0.19]
	gender migration			0.37	0.14	[0.09, 0.65]
	SES			-0.23	0.06	[-0.35, -0.11]
Indirect Effects						
	P1: CLOS → SSR → PAS			0.08	0.02	[0.04, 0.13]
	P3: CLOS → SSR → EIS			0.06	0.02	[0.02, 0.09]
	P5: CLOS → SSR → PASC			0.07	0.02	[0.03, 0.11]
	P7: CLOS → SSR → WIS			-0.06	0.03	[-0.12, -0.01]
	P9: CLOS → SSR → PCS			-0.09	0.03	[-0.14, -0.04]
	P11: CLOS → SSR → SPS			-0.17	0.03	[-0.23, -0.12]

Note. $N = 709$. All McDonald's Omega ω ranged from 0.71 (EIS) to 0.90 (CLOS). All estimate values were unstandardized betas. PAS = positive attitudes toward school; EIS = enjoyment in school; PASC = positive academic self-concept; WIS = worries in school; PCS = physical complaints in school; SPS = social problems in school; CLOS = closeness in teacher-student relationship; SSR = student-student relationship; SES = students' socio-economic status. Bolded confidence intervals do not include a zero, indicating a significant effect. P1-P11 = indirect effect in the mediation model.

*** $p < .001$.

attitudes toward school ($b = -0.22$, 95 % CI $[-0.30, -0.14]$, $p < .001$, $F(5, 700) = 0.39$, $p < .001$), and significantly positively related to the negative dimensions of StudWB. All relations between SSR and the positive dimensions of StudWB were found to be significantly positive. Additionally, the associations between SSR and the negative dimensions of StudWB were significant and negative.

No significant relations, neither regarding gender nor migration background, could be found for the model including conflict and the positive dimensions of StudWB. However, gender showed a significant negative association with worries in school and physical complaints in school. Students' migration background was only found to be positively associated with worries in school ($b = 0.35$, 95 % CI $[.03, 0.66]$, $p < .001$, $F(5, 700) = 0.31$, $p < .001$). SES showed a positive association with the academic self-concept ($b = 0.15$, 95 % CI $[.05, 0.23]$, $p < .001$, $F(5, 700) = 0.27$, $p < .001$). Regarding the negative dimensions of StudWB all correlations were significant and negative, except for the nonsignificant correlation between SES and social problems in school.

Discussion

The present study emphasizes the importance of relationships in the classroom for the well-being of students with different individual factors. A classroom environment that does fit students' need for relatedness is essential for numerous motivational, behavioral, and emotional student outcomes (Eccles et al., 1991). Despite the great amount of

literature confirming positive relations of high-quality relationships with StudWB, studies taking both TSR and SSR as well as a multidimensional approach on StudWB into account are still scarce. The strength of our study is to consider a multifaceted perspective allowing us to investigate the associations between the constructs in a more nuanced way. Furthermore, we considered students' gender, migration background, and SES, to contribute to a deeper understanding of the varying role of relationships in the classroom for children at-risk. Examining children who are considered at-risk for academic and emotional outcomes is of utmost importance to identify and elucidate potential protective factors that may effectively facilitate their attainment of successful academic trajectories.

In line with prior research, our findings indicate that establishing a warm and secure environment by teachers can be associated with a higher quality of peer relationships within the classroom setting. It is important to note that the correlation between conflict and SSR was not as strong as the association between closeness and SSR. In other words, while conflict had a negative relation with SSR, the relation was not as pronounced as the positive association between closeness and SSR. This suggests that fostering a sense of closeness and reducing conflict within TSR may be particularly vital for cultivating strong and positive SSR. Our findings were consistent with Hughes et al. (2001), as they found teacher support to be a greater negative predictor for peer dislike when compared to teacher conflict. This finding may be ascribed to the halo effect, as initially described by Thorndike (1920). Students who have a

Table 4
Mediation models to predict the dimensions of StudWB from conflict and SSR.

Outcome	Predictors	R ²	F	Estimate	SE	95 % CI
PAS	CONF	.15	24.67***	-0.22	0.04	[-0.30, -0.14]
	SSR			0.53	0.07	[0.40, 0.66]
	gender			-0.13	0.07	[-0.27, 0.00]
	migration			0.11	0.11	[-0.11, 0.34]
	SES			-0.05	0.05	[-0.14, 0.05]
EIS	CONF	.10	16.34***	-0.19	0.04	[-0.26, -0.11]
	SSR			0.46	0.07	[0.33, 0.59]
	gender			0.04	0.07	[-0.09, 0.17]
	migration			0.17	0.11	[-0.05, 0.39]
	SES			-0.03	0.05	[-0.12, 0.06]
PASC	CONF	.07	10.69***	-0.11	0.04	[-0.19, -0.03]
	SSR			0.34	0.07	[0.21, 0.48]
	gender			0.06	0.07	[-0.08, 0.20]
	migration			-0.05	0.12	[-0.28, 0.18]
	SES			0.15	0.05	[0.05, 0.25]
WIS	CONF	.10	15.05***	0.31	0.06	[0.20, 0.42]
	SSR			-0.27	0.09	[-0.45, -0.08]
	gender			-0.38	0.10	[-0.57, -0.19]
	migration			0.35	0.16	[0.03, 0.66]
	SES			-0.23	0.07	[-0.36, -0.09]
PCS	CONF	.17	28.79***	0.38	0.05	[0.28, 0.47]
	SSR			-0.35	0.08	[-0.50, -0.19]
	gender			-0.54	0.08	[-0.70, -0.38]
	migration			0.25	0.14	[-0.02, 0.52]
	SES			-0.21	0.06	[-0.32, -0.10]
SPS	CONF	.18	30.38***	0.14	0.04	[0.07, 0.22]
	SSR			-0.65	0.06	[-0.77, -0.53]
	gender			-0.07	0.06	[-0.19, 0.06]
	migration			0.04	0.10	[-0.17, 0.24]
	SES			-0.01	0.04	[-0.10, 0.07]
Indirect Effects						
P2: CONF → SSR → PAS				-0.04	0.02	[-0.08, -0.01]
P4: CONF → SSR → EIS				-0.04	0.01	[-0.07, -0.01]
P6: CONF → SSR → PASC				-0.03	0.01	[-0.05, -0.01]
P8: CONF → SSR → WIS				0.02	0.01	[0.00, 0.05]
P10: CONF → SSR → PCS				0.03	0.01	[0.01, 0.06]
P12: CONF → SSR → SPS				0.05	0.02	[0.02, 0.10]

Note. N = 709. All McDonald's Omega ω ranged from 0.71 (EIS) to 0.94 (CONF). All estimate values were unstandardized betas. PAS = positive attitudes toward school; EIS = enjoyment in school; PASC = positive academic self-concept; WIS = worries in school; PCS = physical complaints in school; SPS = social problems in school; CONF = conflict in teacher-student relationship; SSR = student-student relationship; SES = students' socio-economic status. Bolded confidence intervals do not include a zero, indicating a significant effect. P2-P12 = indirect effect in the mediation model.

*** p < .001.

positive relationship with their teachers, characterized by regular acknowledgment and support, tend to be associated with a wide range of positive qualities and attributes. Consequently, these students are likely to be perceived more favorably by their classmates. Although further experimental studies are required to establish causal relationships, our findings substantiate the proposition that teachers serve as crucial role models and as the invisible hand (Farmer et al., 2011) able to contribute to the development of high-quality peer relationships. Targeting positive comments and gestures of affection could be an effective method to increase acceptance and involvement of a particular student in the classroom.

Also, our study demonstrates the significance of a regression mediation model which includes both TSR and SSR in relation to the different dimensions of StudWB, suggesting taking both types of relationships into account when examining their association with StudWB. More specifically, conflict in TSR was significantly correlated with all dimensions of StudWB, whereas closeness was not significantly related to worries and social problems in school. This finding suggests that to further investigate and foster StudWB regarding these two dimensions, other predictors should be considered such as a pressure to perform, which may lead to worries in school and a comparison and competitive struggle between students. By clearly communicating the expectations, goals, and criteria for success, teachers could enhance transparency and provide students with a better understanding of what is required of them. This clarity could reduce ambiguity and alleviate potential stress

or worries related to academic performance (Hascher & Hagenauer, 2011). SSR as a mediator was significantly associated with all dimensions of StudWB, highlighting its crucial role in fulfilling the basic need for social relatedness (Ryan & Deci, 2000). By fostering positive and supportive SSR, educators and schools can contribute to the satisfaction of students' fundamental social needs, which in turn positively impacts their overall well-being. Furthermore, our findings also suggest that even if a relationship with the teacher is perceived as conflictual by a student, positive relationships with peers could serve as a protective factor and may help to prevent a decrease in StudWB.

When considering possible at-risk factors for students, it becomes evident that relations between StudWB, TSR, and SSR differ among students. In line with prior research, we also found the associations between gender and the dimensions of StudWB to be heterogenous (Hascher & Hagenauer, 2011; Markus et al., 2022). Girls showed more positive attitudes toward school, but also more worries and physical complaints in school even when having a close relationship with teachers. Two aspects should be considered regarding this finding. First, there might be a possibility that girls express negative emotional experiences more openly (Hascher, 2010). Secondly, positive relationships with teachers may result in internalizing higher performance expectations, which, in turn, may lead to increased worries and physical complaints in school. It is conceivable that girls try to establish positive TSR as a response to their worries and physical complaints in school (Bokhorst et al., 2010; Hamre & Pianta, 2001). Additionally, we found

no significant correlation between gender and SSR. This indicates that SSR seem not to be solely determined by gender, suggesting that various other factors, such as personal dispositions might play a more substantial role (Hughes et al., 2001; Tobia et al. 2019).

Regarding the dimensions of StudWB, students with a migration background showed more worries in school independent from the relationship with their teacher and were found to have more physical complaints albeit of being close with their teacher. Students with a high SES showed a higher academic self-concept when being close with their teachers. Hence, for students coming from a lower SES closeness in TSR was not significantly positively related to their worries and physical complaints in school. Associations were pointing in the same direction regarding having a conflictual relationship with a teacher. Students with a migration background, as well as those with lower SES exhibited lower levels of cohesion in SSR regardless of the quality of TSR, suggesting that these students may face additional barriers or challenges in forming strong and positive connections with their classmates (Leventhal & Brooks-Gunn, 2000). In summary, the findings of our study concerning at-risk students with migration background and low SES revealed that a close TSR alone might not be positively related to StudWB particularly in relation to the negative dimensions of worries in school and physical complaints in school.

The results of this study indicate that the relation of TSR and SSR may not only vary among students with different individual factors but might be further limited when considering different dimensions of StudWB. It suggests that TSR may not have a universal association with all aspects of StudWB and that the relations might not be the same for all students. Therefore, there is a need to consider individual student differences and the multifaceted nature of well-being in future studies for a more nuanced understanding of classroom relationships, thus contributing to a positive class and school environment as well as StudWB. This also applies to practical implications. Teachers can have a direct impact on students' classroom experience, including how they feel and how students with different individual factors perceive the environment. To promote closeness in TSR and cohesion in SSR, teachers could integrate certain exercises into their teaching practice such as paying each other a compliment (Tomba et al., 2010) or sharing positive experiences (Gabel et al., 2006). Overall insights on these relations can help educators and schools develop strategies to foster relationships in the classroom and, in succession, enhance well-being in school.

Limitations

There are several limitations associated with our findings. First, the complexity of classroom relationships and their relationship with StudWB may not be fully covered by the design of the current study. The direction of the correlation between study variables is complex and may also be reciprocal. Longitudinal designs could offer a deeper understanding of the relationship between StudWB, TSR, and SSR. Second, we tested a one-level model, thereby neglecting the protentional clustering of students within classrooms. However, our analysis revealed a small proportion of variance indicating that the expected associations between predictor and outcome variables remained rather consistent across classrooms. Multilevel modeling may be considered in future studies, especially with a larger number of classes per school. Third, it should be noted that our assessment of gender relied on a binary categorization, specifically classifying individuals as either female or male. To promote a more inclusive understanding of gender, future studies should entail recognizing gender on a spectrum rather than as a binary construct, thus allowing for a more comprehensive examination of how diverse gender identities intersect with StudWB and relationship dynamics in the classroom. Fourth, the measurement of students' migration background in our study utilized a dichotomous variable, classifying individuals based on whether they grew up in Switzerland or not. Although this approach can offer first impression on the association between migration, StudWB and relationships, migration is a complex construct that

encompasses a range of diverse experiences and backgrounds. To enhance the comprehensiveness of future investigations, researchers should consider employing a more nuanced and inclusive approach to measure students' migration background, considering factors such as country of origin, duration of residence, and cultural identity. By adopting this approach, we could better capture the complexity of students' migration experiences and their potential impact on the variables under investigation. Fifth, students were asked to answer questions about the relationship with the teacher in regard to their classroom teacher. However, it was not controlled if students really did so. Future studies should differentiate between relationships with different types of teachers or based on the number of hours a teacher teaches the class. Lastly, we only considered students' perspective on relationships in the classroom via self-report only. Results may be affected by a social-desirability bias and by the nature of the informant as students and teacher may observe and value different aspects of relationships. Considering multiple informants of relationships may provide a more comprehensive understanding of relationships while also serving to assess the strength and validity of our findings.

Conclusion

In the recent years, there has been a growing interest on researching StudWB driven by the recognition of its significance as a vital skill in addressing the 21st century challenges. Thus, investigating the interplay of StudWB and predictors such as TSR, SSR and individual student factors holds importance in understanding StudWB and classroom processes. To our knowledge this is the first study that has examined the association among the three constructs by using a multidimensional approach on StudWB as well as considering TSR, SSR and StudWB in one mediation regression model. In conclusion, findings illustrate the importance of social relationships in the classroom for multiple dimensions of StudWB. Specifically, the current study contributes to the field by highlighting, that relations between StudWB, TSR, and SSR differ regarding different dimensions. Associations also vary regarding students' gender, migration background and SES. Therefore, our study provides useful information for teachers and researchers to develop strategies and intervention to foster relationships in the classroom and enhancing student well-being.

CRedit authorship contribution statement

Katja Saxer: Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Project administration, Validation, Visualization, Writing – original draft, Writing – review & editing. **Jakob Schnell:** Data curation, Project administration, Validation, Writing – original draft, Writing – review & editing. **Julia Mori:** Conceptualization, Funding acquisition, Project administration, Resources, Supervision, Validation, Writing – original draft, Writing – review & editing. **Tina Hascher:** Conceptualization, Funding acquisition, Project administration, Software, Supervision, Writing – original draft, Writing – review & editing.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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