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The Role of Affective Teacher–Student Relationships in Bullying and Peer Victimization: A Multilevel Meta-Analysis

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ABSTRACT

This meta-analysis synthesizes evidence about the associations of affective teacher–student relationships with bullying perpetration and peer victimization. A systematic database search resulted in 65 primary studies (k) that met the inclusion criteria. The final sample included 185,881 students from preschool to high school. Separate multilevel analyses were conducted for bullying perpetration ($k=25$, $N=97,627$) and peer victimization ($k=57$, $N=151,653$). Results showed small to medium, negative overall correlations between teacher-student relationship quality and both bullying perpetration ($r = -.17$, 95% CI [−.21, −.14]) and peer victimization ($r = -.14$, 95% CI [−.17, −.11]). Teacher-student relationship quality was also related to less subsequent peer victimization ($b = -0.05$, 95% CI [−0.08, −0.02]). Associations between teacher-student relationship quality and bullying were stronger for ethnic minority students and when the same informant reported about both variables. Associations with peer victimization were stronger for negative (e.g., conflict) than for positive (e.g., closeness) relationship indicators and when the same informant was used for both variables. Generally, findings demonstrate that higher-quality teacher-student relationships are related to less bullying perpetration and less peer victimization. Hence, promoting positive and minimizing negative teacher-student relationships may help to tackle school-based bullying and peer victimization.

IMPACT STATEMENT

The current meta-analysis examined the link between affective teacher-student relationships and two persistent problems in schools: bullying perpetration and peer victimization. Results including 65 primary studies demonstrated that higher-quality teacher-student relationships were related to less bullying perpetration and less peer victimization. Thus, promoting positive and minimizing negative teacher–student relationships may be important targets in bullying prevention and intervention efforts in schools.

Bullying and peer victimization are persistent problems in schools. In a recent large-scale study, 10% of students aged 11–15 reported that they had been bullied at school in the past months and 7% indicated to have bullied others (Inchley et al., 2020). Bullying is most often defined as repeated and targeted aggression toward peers who experience difficulties to defend themselves (Olweus, 1993). Peer victimization can be conceptualized as being the target of an aggressive action by one or more peers (Vitoroulis & Vaillancourt, 2015). Although bullying and peer victimization can occur in various ways (e.g., physical, relational), research shows that victimized students may experience many negative consequences that can persist into adulthood, such as anxiety, depression, and academic difficulties (Arsenault, 2018; Schoeler et al., 2018). Current theoretical frameworks emphasize the influence of students' environment on bullying and peer victimization (Hong & Espelage, 2012; Thomas et al., 2018). Since

teachers interact with students on a daily basis and are responsible for the instructional and emotional classroom climate (Brendgen & Troop-Gordon, 2015), focusing on their interactions with students may provide important insights in bullying and peer victimization processes. Moreover, teachers are often charged with supervision in nonclassroom spaces (e.g., hallways, playgrounds), places where bullying also occurs regularly (Fekkes et al., 2005). Recently, teachers have been proposed as key adults in the prevention and reduction of peer victimization (Yoon et al., 2020).

In line with this idea, several studies have focused on the role of affective teacher-student relationships in bullying dynamics. Affective teacher-student relationships refer to the emotional bond between teachers and students (Pianta et al., 2003). High-quality teacher-student relationships may set the tone for a supportive classroom atmosphere (Hamre et al., 2013), make individual students

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more likely to regulate their emotions (Sabol & Pianta, 2012; Verschueren & Koomen, 2012), more prone to tell their teacher about peer problems, and the teacher more likely to intervene in bullying episodes (Reavis et al., 2010). Moreover, previous meta-analyses have shown associations between teacher-student relationships and students' externalizing behavior problems (Lei et al., 2016), executive functions (Vandenbroucke et al., 2018), academic emotions (Lei et al., 2017), engagement, and achievement (Roorda et al., 2017). However, a systematic overview of studies investigating the role of teacher-student relationships in bullying perpetration and peer victimization is still lacking.

Conducting a meta-analysis about this research topic would be valuable for several reasons. First, results of existing empirical studies on the association between teacher-student relationships and bullying or peer victimization are nonconclusive. More specifically, some studies found significant negative longitudinal links between the constructs (e.g., Behrhorst et al., 2020; Leadbeater et al., 2015), whereas others did not find evidence for such associations (e.g., Elledge et al., 2016; Košir et al., 2020). A meta-analysis allows for more robust conclusions about the cross-sectional and longitudinal link between teacher-student relationships and bullying and peer victimization. Second, a meta-analysis makes it possible to investigate whether characteristics of the sample (e.g., gender, ethnicity) and study methodology (e.g., informant, dyadic versus classroom-level teacher-student relationships) play a role in the strength of the overall associations. Third, examining the association between teacher-student relationships and two sides of the bullying phenomenon (i.e., perpetration and victimization) can potentially highlight two ways to reduce bullying in schools. Fourth, multitiered, school-wide frameworks such as the Positive Behavioral Interventions and Supports (PIBS) model aid to tackle bullying in schools and promote a positive school climate (Cornell & Bradshaw, 2015). Since teachers are key in implementing these frameworks, affective teacher-student relationships are an important variable which may either promote or decrease bullying and peer victimization. In sum, this meta-analysis tried to fill several gaps in the literature by providing a systematic overview of existing studies about the associations between teacher-student relationships, on the one hand, and bullying perpetration and peer victimization, on the other.

THEORETICAL FRAMEWORKS

Teacher-student relationships are usually measured at the dyadic level (i.e., relationships between teachers and individual students) or the classroom-level (i.e., relationships between teachers and the whole class group). Attachment theory offers an explanation for how dyadic teacher-student relationships may forecast student development (Bowlby, 1982). According to this theory, children seek proximity to and contact with available and responsive individuals, especially if their feelings of emotional security are threatened (Bowlby, 1982). Although the original focus of attachment theory was on parent-child relationships, it also highlights the potential importance of relationships with teachers. Teachers are not exclusive attachment figures and have to care for multiple students simultaneously, but they can still serve as temporary or ad hoc attachment figures (Verschueren & Koomen, 2012). More specifically, teachers may help to promote or undermine students' feelings of security and comfort in the classroom (Pianta, 1999; Verschueren & Koomen, 2012). Several effective interventions, aimed at improving a positive classroom atmosphere for students who do not respond to school-level instruction and intervention, can be grounded in attachment theory (Kincade et al., 2020).

When students feel more safe and secure in their relationship with their teacher, they are more likely to confidently explore their social environment, regulate their emotions, resolve conflicts, internalize a higher sense of self-worth, and thus form similar positive relationships with peers (e.g., Sabol & Pianta, 2012; Verschueren & Koomen, 2012). Moreover, these students may be more likely to confide in their teacher when they experience problems with peers (Reavis et al., 2010). Likewise, teachers may be more sensitive to the emotions and needs of students with whom they have warm relationships, detect peer victimization more quickly, and intervene sooner (Reavis et al., 2010). In turn, students with high-quality teacher-student relationships are less likely to be involved in bullying and peer victimization. Studies of teacher-student relationships inspired by attachment theory (Bowlby, 1982) usually measure positive dyadic teacher-student relationships with the indicator closeness. Closeness is the degree of open communication and warm interactions, in which children use their teacher as a safe haven and secure base (Pianta & Steinberg, 1992; Verschueren & Koomen, 2012).

In contrast, when students are emotionally dysregulated in the classroom due to more negative teacher-student relationships, this may elicit power-assertive and coercive behavior toward peers to compensate for feelings of insecurity and rejection (e.g., Weyns et al., 2019). Alternatively, students with low-quality teacher-student relationships may become more easily victimized by peers, as they are less likely to trust their teacher as person to confide in (Bjereld, 2018). Consequently, when victimized students remain silent, teachers will be less aware of their situation

and less likely to intervene in bullying situations (Reavis et al., 2010). Teacher-student conflict is often used as an indicator of negative relationship quality, and can be conceptualized as disharmony, insecurity, and negativity in the relationship (Pianta & Steinberg, 1992; Verschueren & Koomen, 2012).

Studies focusing on teacher-student relationships at group level can be understood from the Teaching Through Interactions framework (Hamre et al., 2013). This framework proposes that classroom-level teacher-student interactions are the most important indicators of the classroom climate. These interactions are considered as central drivers of students' learning and development, both in academic and social domains. The framework distinguishes between three domains of teacher-student interactions in the classroom: emotional support, classroom organization, and instructional support (Hamre et al., 2013). This meta-analysis focuses on emotional support (i.e., activities and efforts to promote students' social and emotional functioning), since this domain is linked with attachment literature and emphasizes the importance of affective relationships between teachers and the class group (Hamre et al., 2013). In the context of emotionally supportive teacher-student relationships, a safe classroom atmosphere is created in which students feel comfortable to develop and express themselves, and interact with peers in a positive and appropriate way (Hamre et al., 2013). Similarly, Farmer et al. (2011) theorized that teachers' positive relationship with students may create a supportive emotional classroom context, which may set behavioral expectations for the development of supportive interactions with peers as well. In turn, teachers' emotional support leaves less room and need for negative peer interactions, including bullying and peer victimization (Gest & Rodkin, 2011).

TEACHER-STUDENT RELATIONSHIPS LINKED WITH BULLYING AND PEER VICTIMIZATION

Based on the aforementioned theoretical frameworks (e.g., Bowlby, 1982; Hamre et al., 2013; Pianta & Steinberg, 1992), the current meta-analysis focuses on teacher-student relationships at dyadic and classroom level. With regard to measuring teacher-student relationships, researchers often distinguish between positive (e.g., closeness, care, emotional support) and negative (e.g., conflict, dissatisfaction, unfair treatment) indicators. Some studies have investigated solely positive indicators of teacher-student relationships in relation to bullying and peer victimization (e.g., Flaspohler et al., 2009; Hong et al., 2020), whereas others focused on negative indicators (e.g., Diaz-Aguado Jalon & Arias, 2013; He et al., 2019), or included both positive and negative indicators of teacher-student

relationships (e.g., Espelage et al., 2015; Runions & Shaw, 2013). The importance of both indicators for bullying and peer victimization might differ. That is, Vaish et al. (2008) argued that infants and children, like adults, have a negativity bias in their information processing. Specifically, they "attend more to, are more influenced by, and use to a greater degree negative rather than positive facets of their environment" (Vaish et al., 2008, p. 383). Accordingly, a meta-analysis demonstrated that negative teacher-student relationship indicators were more strongly linked to students' externalizing behavior problems than positive indicators (Lei et al., 2016). Therefore, the difference between positive and negative relationship indicators might also apply to bullying and peer victimization.

Several empirical studies across different age groups have investigated the association between positive teacher-student relationships and bullying and peer victimization. For instance, a cross-sectional study including students from fourth to eleventh grade demonstrated that more positive teacher-student relationships at classroom level were related to less bullying perpetration and victimization (Bae et al., 2019). Among adolescents, more teacher care (combining items from dyadic and classroom level) was linked to lower levels of bullying (Hong et al., 2020). Longitudinally, Runions and Shaw (2013) found that more dyadic teacher-child closeness in prekindergarten buffered against more severe peer victimization over time. Positive dyadic teacher-student relationships have also shown to predict less peer victimization over time in elementary school (Serdiouk et al., 2016). In contrast, other studies in elementary school found that high-quality dyadic teacher-student relationships did not protect against later peer victimization (Elledge et al., 2016; Troop-Gordon & Kopp, 2011). Thus, although several cross-sectional and longitudinal studies indicate that high-quality teacher-student relationships are related to less bullying perpetration and peer victimization, evidence is not conclusive.

Regarding the association between negative teacher-student relationships and bullying and peer victimization, cross-sectional studies in elementary and high school showed that negative dyadic teacher-student relationships were positively related to bullying (e.g., Espelage et al., 2015) and peer victimization (e.g., Marengo et al., 2019). However, Garner et al. (2014) demonstrated that dyadic teacher-child conflict was not significantly associated with physical and relational victimization. Furthermore, Runions and Shaw (2013) showed that dyadic teacher–child conflict in prekindergarten was predictive of the likelihood of concurrent and first grade victimization. All in all, these mixed findings raise the question of how robust the link between negative teacher-student relationships and bullying and peer victimization is. Therefore, a

meta-analytic approach is required to identify the cross-sectional and longitudinal association between teacher-student relationships and bullying and peer victimization with more certainty.

MODERATING VARIABLES

In addition, several variables may affect the strength of the associations and create difficulties to draw general conclusions about this research topic. Prior meta-analyses showed that teacher-student relationships are more important for specific groups of students, and that associations with student outcomes may depend on methodological factors. As for student characteristics, the variables gender, ethnicity, socio-economic status (SES), and educational level may make a difference (e.g., Roorda et al., 2011; Vandenbroucke et al., 2018). With regard to study methods, the indicator of teacher-student relationship (positive versus negative), measurement level of teacher-student relationship (dyadic versus classroom), informant, and study design are investigated as potential moderators of the overall associations (e.g., Lei et al., 2016; Roorda et al., 2011).

Gender

With respect to the question whether boys or girls benefit more from teacher-student relationships, different hypotheses exist (e.g., Ewing & Taylor, 2009; Roorda et al., 2011). According to the academic risk perspective (Hamre & Pianta, 2001), vulnerable children will be more influenced by experiences in their school context because they have more to gain or to lose than others. Therefore, it can be assumed that the association between teacher-student relationships and bullying and peer victimization will be stronger for boys than for girls, as they are at higher risk for academic and behavior problems (Hamre & Pianta, 2001). Alternatively, the gender role socialization perspective (Ewing & Taylor, 2009) assumes that girls are more oriented toward connection and intimacy in their social relationships than boys. Therefore, the impact of social relationships will most likely be stronger for girls' than for boys' school adjustment (Ewing & Taylor, 2009). Previous meta-analyses regarding different student outcomes suggest that both pathways are possible. For example, Lei et al. (2016) found that negative correlations between positive indicators of teacher-student relationships and students' externalizing problem behavior were stronger among girls than boys. In contrast, Roorda et al. (2011) showed that associations between teacher-student relationships and engagement were stronger in samples with more boys, but association between positive indicators of teacher-student relationships and achievement were stronger in samples with more girls. So far, research about the role of gender in the link between teacher-student relationships and bullying and peer victimization is limited and nonconclusive.

At-Risk Status

Furthermore, based on the academic risk perspective (cf. supra, Hamre & Pianta, 2001), teacher-student relationships might be more important for students at-risk for negative outcomes (i.e., students from a low SES or ethnic minority background). As mentioned above, at-risk students are argued to benefit more than others from a good teacher-student relationship and experience more problems from a negative teacher-student relationship in the pathway toward (mal)adjustment. Stronger associations between teacher-student relationships and engagement and achievement have been found in samples with more students with a low SES (Roorda et al., 2011). Within the context of bullying and peer victimization, scarce research indicates that students from a low SES background bully their peers more often and are victimized slightly more than students from high SES backgrounds (Strohmeier et al., 2011; Wolke et al., 2001). Moreover, Wolke et al. (2001) reported that ethnic minority students were more likely to become victimized. Thus, further examination of this moderator is warranted.

Educational Level

In addition, teacher-student relationships may be more strongly associated with bullying and peer victimization depending on students' educational level (i.e., elementary school or high school). First, students in high school are older than students in elementary school. Research has shown that, when students grow older, their relationships with peers and teachers become increasingly independent social contexts (e.g., Engels et al., 2016). Second, students in high school usually have different teachers for each subject. They see their teachers less often than students in elementary school and, hence, students might form fewer attachment relationships with their high school teachers (Bergin & Bergin, 2009). As a result, the impact of teacher-student relationships on high school students' social functioning will most likely be lower. Nevertheless, teachers may remain important for adolescents' development (e.g., Bergin & Bergin, 2009; Roorda et al., 2011). Therefore, it is relevant to investigate whether teacher-student relationships are more strongly associated with bullying and peer victimization in elementary as compared to high school.

Indicator and Measurement Level of Teacher-Student Relationship

Regarding the indicator(s) used to measure teacher-student relationships (i.e., positive versus negative), people may have a negativity bias in their information processing which makes them more susceptible to negative interactions than positive ones (cf. supra, Vaish et al., 2008). Therefore, and based on previous research (Lei et al., 2016), we expected associations between teacher-student relationships and bullying and peer victimization to be stronger when negative indicators of teacher-student relationships were investigated as compared to positive indicators. Moreover, the level on which teacher-student relationships are measured varies between studies (e.g., Hamre et al., 2013; Verschueren & Koomen, 2012). It is likely that variability exists in teachers' relationships with individual students within the same classroom. Indeed, teacher-student relationship quality at the classroom level has only been weakly associated with teacher-student relationship quality with individual students (e.g., Weyns et al., 2019). This implies that, although the overall teacher-student relationship quality in a class may be positive, relationships with individual students within this class may be negative. To date, evidence about the relative contribution of dyadic and classroom-level teacher-student relationships to students' development is limited and mixed (e.g., Vandenbroucke et al., 2018; Weyns et al., 2019), making it critical to investigate their moderating role in the association between teacher-student relationships and bullying and peer victimization.

Informant

Furthermore, links between teacher-student relationships and bullying and peer victimization may depend on whether the same informant has been used to measure both constructs as opposed to different informants. Namely, effect sizes between teacher-student relationships and engagement and achievement were found to be larger in studies that use the same informant as compared to different informants (e.g., Roorda et al., 2011), indicating a potential 'single-source bias'. Hence, we expected the link between teacher-student relationships and bullying and peer victimization to be stronger when the same informant reported about teacher-student relationships and bullying and peer victimization (e.g., twice self-report) than when different informants were used (e.g., once self- and once peer-report).

Study Design

Lastly, the design of the study may affect the strength of the association between teacher-student relationships and bullying and peer victimization. Specifically, some studies assessed this link cross-sectionally (e.g., Humphrey & Symes, 2010; Thornberg et al., 2018), whereas others used a longitudinal design in which teacher-student relationships preceded bullying or peer victimization in time (e.g., Elledge et al., 2016; Lam et al., 2018). Moreover, the amount of time between measures may impact the strength of this link. Roorda et al. (2011) found that effects of positive teacher-student relationships were stronger in studies with fewer months between measures of teacher-student relationships and engagement or achievement, whereas, unexpectedly, associations with negative teacher-student relationships were stronger in studies with more months between measures. Therefore, moderator effects of study design will be assessed in two ways. First, the amount of months in between measures will be added as continuous moderator variable among all effect sizes. Second, only longitudinal associations allow us to get some indication of the temporal sequence of variables. Thus, general associations and the moderating effect of time between measures of teacher-student relationships (at the first time point) and peer victimization (at the second time point) will be investigated in a subset of longitudinal effect sizes.

THE CURRENT STUDY

So far, evidence about the role of teacher-student relationships in bullying perpetration and peer victimization is mixed and no systematic overview of research on this topic is available. The current multilevel meta-analysis aims to fill this knowledge gap. In addition, explanations for differences between study findings can be revealed by assessing several moderating variables (e.g., gender, study design). Findings may provide new theoretical insights into the association between teacher-student relationships, bullying perpetration and peer victimization. Moreover, findings can help school practitioners, policymakers, and anti-bullying interventions to gain more insight into the importance of teachers for tackling these persistent peer problems and improve positive peer relationships.

Building on theoretical frameworks and existing literature, we expected high-quality teacher-student relationships to foster students' feelings of security, self-regulation, and set the tone for the development of positive peer relationships in the classroom (e.g., Hamre et al., 2013; Verschueren & Koomen, 2012). Hence, high-quality teacher-student relationships are likely to buffer against bullying perpetration and peer victimization. Conversely, we expected low-quality teacher-student relationships to undermine students' feelings of security in the classroom, and increase their likelihood of becoming targets of peer victimization (e.g., Reavis et al., 2010; Yablon, 2010).

Likewise, low-quality teacher-student relationships are expected to be related to more bullying perpetration (e.g., Espelage et al., 2015).

As for moderating variables, based on previous research, we expected the association between teacher-student relationships and bullying and peer victimization to be stronger for students from low SES and ethnic minority backgrounds (Hamre & Pianta, 2001; Wolke et al., 2001), and for students in elementary as compared to high school (Bergin & Bergin, 2009; Engels et al., 2016). Furthermore, we expected the link between teacher-student relationships and bullying and peer victimization to be stronger for negative as compared to positive relationship indicators (Lei et al., 2016), and in associations using the same informant to measure both constructs (Roorda et al., 2011). Finally, the moderating effects of gender (Ewing & Taylor, 2009; Hamre & Pianta, 2001), dyadic or classroom-level teacher-student relationships (Hamre et al., 2013; Verschueren & Koomen, 2012), and study design (i.e., cross-sectional or longitudinal) were tested in an exploratory manner.

METHOD

Literature Search

Following previous meta-analyses on teacher-student relationships (cf., Roorda et al., 2017, 2021; Vandenbroucke et al., 2018), a systematic literature search was performed using the electronic databases PsycINFO, Web of Science, and Educational Resources Information Center (ERIC). Keywords were selected based on previous meta-analyses on related topics (Pouwels et al., 2016; Roorda et al., 2017; Vandenbroucke et al., 2018). Regarding teacher-student relationships, the following keywords were used: *relation*, interaction*, closeness, support, warmth, acceptance, care, caring, relatedness, conflict, dependency, rejection,* and *neglect.* To limit results to the relationship between teacher(s) and student(s), the keywords *teacher** and *student*, child*, pupil*,* or *adolescent** were added. The following keywords represented bullying perpetration and peer victimization: *victim*, bully*, harass*,* and *mobb*.* The database search focused mainly on abstracts and included reports up to and including January 2020. Combined with additional reports sent by authors, the database search retrieved 3,213 unique reports. The meta-analysis was preregistered at the Open Science Framework, including keywords used for the literature search, main hypotheses, inclusion criteria, and planned analyses (https://bit.ly/3J-CYQW4). Contrary to the planned analyses, most studies did not provide information about teacher-level moderators (e.g., gender, ethnicity, teaching experience). Hence, we were not able to investigate the moderating role of these variables in the present study.

Inclusion and Exclusion Criteria

To determine whether reports could be included in the meta-analysis, multiple inclusion criteria were formulated: Reports (a) are published and peer-reviewed journal articles or book(chapter)s, following previous meta-analyses focusing on teacher-student relationships (e.g., Roorda et al., 2017), (b) are written in English, (c) are empirical and quantitative in nature by allowing for the calculation of quantitative statistics (e.g., Pearson correlation coefficients), as opposed to studies that do not provide quantifiable measures (e.g., theoretical or review studies, narrative studies), (d) include samples of students from preschool up to 12th grade, (e) measure affective teacher-student relationships, bullying perpetration, and/or peer victimization as separate concepts, (f) include a measure of teacher-student relationships at the same time or before bullying perpetration or peer victimization was measured, as teacher-student relationships were considered as independent variables, (g) and include sufficient statistical information to obtain a Pearson product-moment correlation coefficient (r). With regard to bullying perpetration and peer victimization, we were specifically interested in these phenomena among *peers*. Therefore, measures of bullying and victimization by other persons (e.g., parents, teachers) were excluded. Relatedly, measures of bullying and victimization were only included if they focused on bullying/victimization in school spaces (e.g., classroom, playground). Measures of bullying and victimization in nonschool spaces (e.g., sports club, at home) were excluded. Furthermore, this meta-analysis focused on affective teacher-student relationships. Hence, other dimensions of the teacher-student relationship (e.g., academic support, classroom organization) were not included. Lastly, the variables could be measured with different instruments (e.g., questionnaires, observations), according to different informants (e.g., teachers, students), and at different levels (i.e., dyadic or classroom-level).

Data Collection and Coding

Based on a standardized protocol using the inclusion criteria mentioned above, reports passed through several selection and coding rounds (Figure 1). The abstract and full-text screening were conducted by the first author and one out of two graduate-level psychology students from the faculty of Psychology and Educational Sciences of KU Leuven. Screening occurred independently and blinded with the online application Rayyan (Ouzzani et al., 2016). Agreement between raters was satisfactory (i.e., 92.5% for abstract selection and 83.9% for full-text selection). Disagreements were resolved by consensus between raters and (if necessary) in consultation with coauthors. Next,

Figure 1. PRISMA Flowchart of Reports
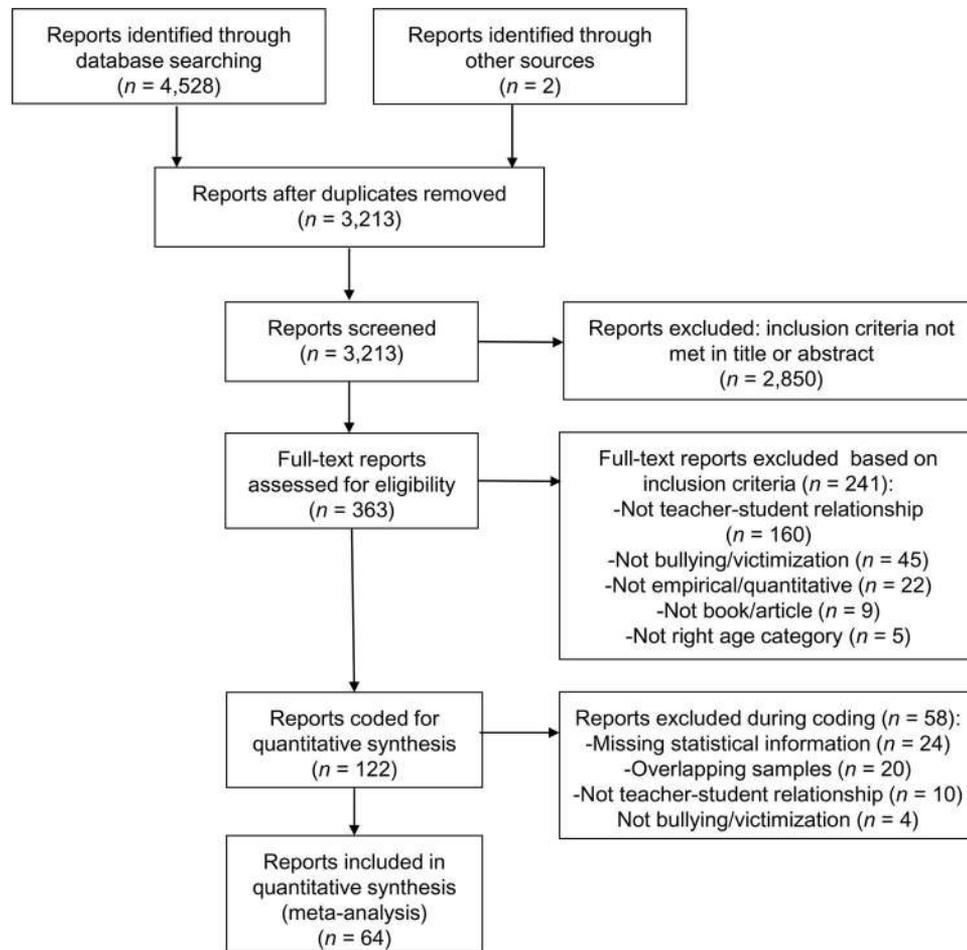
Note. *n.* = number of reports.

information was extracted from the 122 remaining reports using an extensive and piloted coding manual. The first 40 reports were double-coded by the first author and one of the students, with meetings in between to discuss uncertainties. Another 25 reports (20%) were independently and double-coded to calculate inter-rater agreement (*Mdn* = 80%; *SD* = 10.25; range = 63%–90%; see online supplementary materials). Following this training phase, remaining 57 reports were coded by the students. Afterwards, the first author checked all students' coding to ensure that the values were correct.

When reports did not include sufficient statistical information for the planned analyses, an email was sent to the corresponding author (*n* = 51). In case of nonresponse, we contacted a coauthor and checked whether different statistics in the report could be used to compute an effect size. Moreover, if it was unclear how one of the key variables was measured, this information was requested from study authors. Furthermore, in case of overlapping samples (*n* = 20), the report that provided the most relevant information and used the biggest sample was selected.

Eventually, 64 reports were included in the meta-analysis. Within these reports, only six associations contained the link between teacher-student dependency (i.e., age-inappropriate overreliance of students on their teacher; Pianta, 2001) and peer victimization. No reports included information about the link between dependency and bullying. This is not surprising, as the initial scale measuring dependency reported low reliability (Koomen et al., 2012) and, thus, has not been used often among researchers (Verschueren & Koomen, 2021). Therefore, in line with procedures of previous meta-analyses on teacher-student relationships (Lei et al., 2016; Roorda et al., 2011; 2017), dependency was not included in the final data set.

Data Set

The final data set contained 64 written reports, describing 212 effect sizes (*n*) within 65 studies (*k*) that were published between 1999 and 2020. Reports were 62 journal articles and two book chapters. A total of 185,881 students were included in the analyses (sample sizes ranged from

39 to 27,297 students). Moreover, 26 studies were conducted (mainly) in elementary school (i.e., preschool, kindergarten and elementary school) and 37 covered (mainly) high school (i.e., middle school, junior high, and high school). The link between teacher-student relationships and peer victimization was examined with 173 effect sizes and the link between teacher-student relationships and bullying with 39 effect sizes. Student and methodological characteristics of each individual effect size are available (see online supplementary materials). Tables 1 and 2 show descriptive statistics for moderator variables.

The 57 studies describing the 173 effect sizes that reflected the association between teacher-student relationships and peer victimization were conducted in Europe ($k = 25$), North America ($k = 18$), Asia ($k = 7$), Africa ($k = 2$), Australia ($k = 3$), and South America ($k = 2$). In total, 151,653 students with an average age of 10.96 years ($SD = 3.25$) participated. With regard to study design, 122 associations were cross-sectional and 51 longitudinal. Because only three associations contained teacher-student relationship measures about a combination of the dyadic and classroom level (e.g., Berkowitz & Benbenishty, 2012), this subcategory was dropped in the moderation analyses.

The association between teacher-student relationships and bullying was examined with 39 effect sizes within 25 studies. Participants were 97,627 students in total ($M_{age} = 13.00$, $SD_{age} = 2.69$). Studies were conducted in Europe ($k = 14$), North America ($k = 5$), Asia ($k = 1$), Africa ($k = 2$), Australia ($k = 1$) and South America ($k = 2$). Two

associations were longitudinal, the remaining 37 associations were cross-sectional. Therefore, we were not able to investigate the moderating role of time on the association between teacher-student relationships and bullying. Additionally, three associations contained teacher-student relationship measures with questions about relationship quality at both the dyadic and classroom level (e.g., Natvig et al., 2001). Consequently, this subcategory was removed from moderation analyses.

Coding of Moderators

Students' Gender was coded as the proportion of girls participating in the study. Students' Ethnicity was coded as the proportion of students from an ethnic minority background participating in the study. Students' Socio-Economic Status (SES) was coded as the proportion of students from a low SES background (e.g., students with free school meal eligibility, low parental income). Educational Level described whether studies reported (mainly) about elementary school students (0 = *preschool, kindergarten, elementary school*) or high school students (1 = *middle, (junior) high school*). Teacher-Student Relationship Indicator was coded as the indicator of teacher-student relationships within each association (1 = *positive,* 2 = *negative*). Teacher-Student Relationship Level was coded as the level on which teacher-student relationships were measured (1 = *dyadic,* 2 = *classroom*). Informant indicated whether teacher-student relationship and bullying or peer victimization were reported by the same informant (coded as 0; e.g., twice a self-report measure) or by different informants (coded as 1; e.g., teachers reporting about teacher-student relationships, students reporting about peer victimization). Lastly, Months Between Measures was coded as the number of months in between the measurement of teacher-student relationship and peer victimization.

Table 1. Descriptive Statistics for Continuous Moderator Variables

	Bullying Perpetration			Peer Victimization		
	Mean (SD)	Range	*n*	*Mean (SD)*	Range	*n*
Gender (% girls)	50.01 (3.41)	42–58	36	49.58 (6.42)	10–60	170
Ethnicity (% minority)	31.37 (2.02)	5–51	16	32.04 (24.01)	5–93	87
SES (% low SES)	35.43 (13.30)	24–50	8	34.37 (24.59)	6–88	52
Months Between Measures	–	–	–	3.95 (9.54)	0–72	172

Note. n = number of effect sizes; SES = socio-economic status.

Table 2. Descriptive Statistics for Categorical Moderator Variables

	Bullying Perpetration	Peer Victimization
	n	*n*
Educational Level		
Elementary school	14	86
High school	24	83
TSR Indicator		
Positive	33	138
Negative	5	34
TSR Level		
Dyadic	26	151
Classroom	9	18
Informant		
Different	7	52
Same	31	120

Note. n = number of effect sizes; TSR = teacher-student relationship.

Data Analyses

Overall Associations

Pearson's product-moment correlation coefficient (r) was reported in most studies and used as the effect size. Two studies only provided a Spearman's rho coefficient (r_s). For consistency reasons, these values were transformed into Pearson's r using the formula of Rupinski and Dunlap (1996). Moreover, correlations measuring associations with negative teacher-student relationship indicators were recoded, so all correlations reflected a positive teacher-student relationship. This enabled us to assess the moderating role of teacher-student relationship indicator (positive versus negative). Next, a Fisher's Z-transformation was applied to make the sampling distribution of Pearson's r

more normally distributed (Lipsey & Wilson, 2001). Effect sizes were weighted by the inverse variance. After the analyses, values were back-transformed to Pearson's *r* to facilitate the interpretation of overall effects. As extreme effect sizes could threaten the robustness and validity of results, the presence of outliers was detected by examining whether values differed >3 *SDs* from the mean. Analyses of the overall effect sizes were performed with and without these outliers (c.f., Maes et al., 2019). As outliers could highly impact results when few effect sizes are included, they were removed from moderator analyses.

Because many retrieved studies reported multiple effect sizes (e.g., using different informants or different teacher-student relationship indicators), three-level meta-analytic models were selected as the most appropriate way to analyze the data. This type of analysis does not make the strong assumption of independence of effect sizes, which traditional approaches do. Traditional approaches typically ignore dependence, average multiple effect sizes, or select only one effect size within primary studies (Cheung, 2014). With multilevel meta-analysis, researchers can use all relevant information (e.g., in order to assess moderator variables) and obtain maximum statistical power (Assink & Wibbelink, 2016; Cheung, 2014). Specifically, we conducted a three-level meta-analysis in which the total variance was decomposed into sampling variance of the extracted effect sizes (Level 1), variance between effect sizes from the same study (Level 2), and variance between studies (Level 3; Cheung, 2014). Because no single value exists for the sampling variance (the variance depends on the size of the study), the median sampling variance was used for this calculation. Data were analyzed using the metafor package (version 2.4-0; Viechtbauer, 2010) in software program R. In line with Assink and Wibbelink (2016), REstricted Maximum Likelihood (REML) was selected as the parameter estimation method. Analyses were performed for effect sizes between teacher-student relationships and bullying, and teacher-student relationships and peer victimization, separately. Both cross-sectional and longitudinal associations were included in the analyses, to get a comprehensive overview of all available research. Next, the moderating role of student characteristics (i.e., Gender, Ethnicity, SES, Educational Level) and methodological characteristics (i.e., Teacher-Student Relationship Indicator, Teacher-Student Relationship Level, Informant, Months Between Measures) on the overall associations was assessed. Specifically, since we used a data set combining cross-sectional and longitudinal associations, it was possible to test the moderating role of Months Between Measures on the association between teacher-student relationships and peer victimization.

Longitudinal Associations

The longitudinal association between teacher-student relationships and subsequent peer victimization was assessed in a subset of 51 associations within 10 studies. This was done by controlling for the cross-sectional (T1) association between teacher-student relationships and peer victimization, and for the stability of peer victimization (cf. Maes et al., 2019). Standardized regression coefficients were computed from the correlation coefficients between teacher-student relationships at T1 and peer victimization at T2, effect sizes were weighed by the inverse variance, and variance was decomposed at Level 1, Level 2, and Level 3. Sampling variance was calculated using the R code developed by Fernández-Castilla et al. (2020). Hence, the longitudinal link between the variables was examined in a strict way. Lastly, Months Between Measures was analyzed as a moderator of the longitudinal mean effect size. Analyses were performed in R with the metafor package (version 2.4-0; Viechtbauer, 2010), using the REML estimator (Assink & Wibbelink, 2016).

Publication Bias

The presence of publication bias was examined in two ways. First, funnel plots were created to test whether studies converged around the pooled effect size as sample size increased. When publication bias is absent, plots are expected to be shaped like a symmetric funnel. The funnel is expected to be asymmetrical in case of publication bias. Put differently, only small studies with a significant, large effect size would get published, whereas small studies without a significant, large effect size would not be considered for publication (Harrer et al., 2019). Second, as an extension of Egger's regression test, sample size was added as a moderator to the four models: the first model for the overall association between teacher-student relationships and peer victimization, the second model for the overall association between teacher-student relationships and bullying, the third model for the stability of peer victimization, and the fourth model for the longitudinal association between teacher-student relationships and subsequent peer victimization. By evaluating the significance of these coefficients, it was tested whether the mean observed effect sizes depended on sample size (Card, 2012).

RESULTS

Correlations of each individual effect size are available (see online supplementary materials). In line with Lipsey and Wilson (2001), correlations less than .10 were considered as small, between .10 and .25 as small to medium, around

.25 as medium, between .25 and .40 as medium to large, and correlations greater than .40 as large.

Associations Between Teacher-Student Relationships and Peer Victimization

Overall Associations

For the total data set, the 173 correlations between teacher-student relationship quality and peer victimization ranged from negative and large ($r = -.41$) to positive and small to medium ($r = .11$), except for a negative and large correlation ($r = -.64$) in one study (Shin & Kim, 2008). Because this value differed >3 SDs from the mean, representativeness of the value was questioned (cf. Maes et al., 2019). The overall association between teacher-student relationship quality and peer victimization without the outlier, using the estimated mean Fisher's Z, was $-.14$ ($SE = 0.01$, 95% CI [$-.17, -.11$], $t(171) = -10.35$, $p < .001$). When back-transformed into its correlational form, the mean estimated effect size was $r = -.14$, 95% CI [$-.17, -.11$]. This can be regarded as a small to medium association. This association was negative, demonstrating that higher-quality teacher-student relationships were related to less peer victimization. Analyses with the outlier resulted in a similar estimated mean Fisher's Z of $-.15$ ($SE = 0.02$, 95% CI [$-.18, -.12$]).

Moreover, it was examined how the total variance was decomposed into sampling variance, within-study variance, and between-study variance. The median sampling variance was 0.002 and represented 15.1% of the total variance. Significant variability between effect sizes within studies was also found (0.005, $\chi^2 (1) = 502.03$, $p < .001$),

representing 34.9% of the total variance. Therefore, it is required to account for the within-study variance by applying a three-level model instead of a two-level model. Lastly, significant variability between studies was found (0.007, $\chi^2 (1) = 35.42$, $p < .001$) and represented 50.0% of the total variance. In sum, the significant within- and between-study variance indicates more variability in effect sizes than may be expected based on sampling variance alone. Therefore, moderator analyses are useful to examine variables that possibly explain this variability.

Moderators

Table 3 displays results of the moderation analyses for the overall association between teacher-student relationships and peer victimization. The moderators Gender, Educational Level, Ethnicity, SES, Teacher-Student Relationship Level, and Months Between Measures were not significant. Only two variables significantly affected the strength of the association between teacher-student relationships and peer victimization. First, Teacher-Student Relationship Indicator (positive versus negative) had a significant moderating effect, $F(1, 170) = 17.74$, $p < .001$. This finding implies that the association between teacher-student relationships and peer victimization was stronger for negative teacher-student relationship indicators, such as conflict ($b = -0.21$, 95% CI [$-0.17, -0.25$]), as compared to positive indicators, such as closeness ($b = -0.12$, 95% CI [$-0.10, -0.15$]). Second, Informant significantly affected the association between teacher-student relationships and peer victimization, $F(1, 170) = 10.56$, $p = .001$. Associations between teacher-student relationships and peer victimization were stronger when the same person reported on both teacher-student relationships and peer victimization ($b = -0.16$, 95% CI [$-0.13, -0.19$]) as opposed to when

Table 3. Moderator Analyses of the Association between Teacher-Student Relationships and Peer Victimization

Model	Moderator	k	n (%)	b	SE b	95% CI	F	df	p
1	Gender[a]	55	170 (98.8)	0.33	0.32	−0.30, 0.97	1.09	1, 168	.298
2	Ethnicity[b]	25	87 (50.6)	0.03	0.09	−0.14, 0.21	0.16	1, 85	.688
3	SES[c]	13	52 (30.2)	0.17	0.12	−0.07, 0.41	1.99	1, 50	.164
4	Educational Level	55	169 (98.2)				0.41	1, 167	.523
	Elementary School		86	−0.13	0.02	−0.17, −0.09			
	High School		83	−0.15	0.02	−0.19, −0.11			
5	TSR Indicator	57	172 (100)				17.74	1, 170	<.001
	Positive		138	−0.12	0.01	−0.15, −0.10			
	Negative		34	−0.21	0.02	−0.25, −0.17			
6	TSR Level	55	169 (98.2)				0.25	1, 167	.619
	Dyadic		151	−0.14	0.02	−0.17, −0.11			
	Classroom		18	−0.16	0.04	−0.25, −0.07			
7	Informant	57	172 (100)				10.56	1, 170	.001
	Different		52	−0.09	0.02	−0.13, −0.05			
	Same		120	−0.16	0.02	−0.19, −0.13			
8	Months Between Measures	57	172 (100)	0.00	0.00	−0.00, 0.00	1.65	1, 170	.201

Note. For the categorical variables, regression coefficients represent the mean effect sizes (Fisher's Z) for each category; *k* = number of studies included in moderation analysis; *n* (%) = number of effect sizes included in moderation analysis and percentage out of total effect sizes (*n* = 172); *b* = regression coefficient; SE = standard error; CI = confidence interval; TSR = teacher-student relationship.
[a]Proportion girls.
[b]Proportion students from an ethnic minority background.
[c]Proportion students with a low socio-economic status (SES).

different persons reported on teacher-student relationships and peer victimization ($b = -0.09$, 95% CI [-0.05, -0.13]). The overall association also remained significant when only a subsample of effect sizes based on different informants ($n = 52$) was used, $r = -.12$, 95% CI [$-.08$, $-.16$], $p < .001$.

Longitudinal Associations

Within the subset of the 51 longitudinal associations between teacher-student relationship quality and peer victimization, the calculated regression coefficients ranged from $-.22$ to $.06$. The mean estimated effect of teacher-student relationships on subsequent peer victimization was -0.05 ($SE = 0.01$, 95% CI [-0.08, -0.02], $p < .001$). Hence, higher-quality teacher-student relationships at T1 were related to lower peer victimization at T2. Although this effect was small, it was found while controlling for the cross-sectional (T1) association between teacher-student relationship and peer victimization and the stability of peer victimization. The mean estimated stability coefficient for peer victimization was 0.45 ($SE = 0.05$, 95% CI [0.34, 0.56], $p < .001$). Moreover, it was tested whether the amount of time between measures affected the strength of associations. Months Between Measures appeared to be a significant moderator of the association between peer victimization at T1 and peer victimization at T2 ($b = -0.004$, 95% CI [-0.006, -0.001], $p = .006$). Thus, the stability of peer victimization was lower in studies with a longer time interval between measures. However, Months Between Measures did not significantly moderate the effect of teacher-student relationships at T1 on peer victimization at T2 ($b < 0.001$, 95% CI [-0.002, 0.002], $p = .982$). This implies that the amount of months between measures did not affect the strength of the effect of teacher-student relationships on subsequent peer victimization.

Associations Between Teacher-Student Relationships and Bullying Perpetration

Overall Associations

The 39 correlations between teacher-student relationships and bullying ranged from negative and medium to large ($r = -.38$) to positive and small ($r = .01$), except for a negative and large correlation ($r = -.62$) in one study (Hanif & Zaheer, 2018). Analyses of the overall association without the outlier resulted in an estimated mean Fisher's Z of $-.18$ ($SE = 0.02$, 95% CI [$-.22$, $-.14$], $t(37) = -9.18$, $p < .001$). Back transformation into a correlation yielded an estimated mean effect size of $r = -.17$, 95% CI [$-.21$, $-.14$]. This small to medium negative correlation indicates that higher-quality teacher-student relationships were related to lower bullying.

Analyses with the outlier resulted in a similar estimated mean Fisher's Z of $-.20$ ($SE = 0.03$, 95% CI [$-.25$, $-.14$]). The median sampling variance for this association was 0.001 and represented 11.5% of the total variance. Significant within-study variance was found (0.002, $\chi^2 (1) = 8.50$, $p = .004$), representing 18.7% of the total variance, suggesting that differences in effect sizes reported within the same study were larger than expected based on sampling variance alone. Between-study variance was also significant with 0.007 ($\chi^2 (1) = 8.59$, $p = .003$) and represented 69.9% of the total variance. Hence, moderator analyses were performed to gain more insight into variability within and/or between studies.

Moderators

Table 4 displays results of the moderator analyses of the overall association between teacher-student relationships and bullying perpetration. Most moderators (i.e., Gender, Educational Level, SES, Teacher-Student Relationship Indicator, and Teacher-Student Relationship Level) appeared nonsignificant. Two variables significantly affected the strength of the overall association, that is, students' Ethnicity and Informant. First, Ethnicity had a significant effect on the association between teacher-student relationships and bullying, $b = -0.26$, 95% CI [-0.07, -0.44], $p = .012$. Specifically, associations were stronger in samples with more ethnic minority students than in samples with less ethnic minority students. Second, Informant appeared significant, $F(1, 36) = 6.76$, $p = .014$. Similar to results for peer victimization, this finding indicates that associations between teacher-student relationships and bullying were stronger when the same informant was used to measure teacher-student relationships and bullying ($b = -0.19$, 95% CI [-0.16, -0.23]), as compared to different informants ($b = -0.10$, 95%, CI [-0.03, -0.17]). Again, the overall association remained significant when performing analyses in a subsample of effect sizes based on different informants ($n = 7$), $r = -.09$, 95% CI [$-.01$, $-.16$], $p = .03$.

Publication Bias

Funnel plots for the complete data set of cross-sectional and longitudinal associations between teacher-student relationships and peer victimization (Figure 2a) and between teacher-student relationships and bullying (Figure 2b), as well as for the subsample of longitudinal associations between teacher-student relationships and subsequent peer victimization (Figures 3a and 3b), showed a mostly symmetrical shape. This suggests that the presence of publication bias was unlikely. As a further check,

Table 4. Moderator Analyses of the Association between Teacher-Student Relationships and Bullying Perpetration

Model	Moderator	k	n (%)	b	SE b	95% CI	F	df	p
1	Gender[a]	22	36 (94.7)	0.14	0.74	−1.35, 1.64	0.04	1, 34	.849
2	Ethnicity[b]	6	16 (42.1)	−0.26	0.09	−0.45, −0.07	8.23	1, 14	.012
3	SES[c]	3	8 (21.1)	−0.24	0.48	−1.41, 0.92	0.26	1, 6	.628
4	Educational Level	24	38 (100)				1.52	1, 36	.225
	Elementary School		14	−0.14	0.03	−0.21, −0.07			
	High School		24	−0.19	0.02	−0.24, −0.15			
5	TSR Indicator	24	38 (100)				0.34	1, 36	.565
	Positive		33	−0.17	0.02	−0.21, −0.13			
	Negative		5	−0.20	0.04	−0.28, −0.11			
6	TSR Level	21	35 (92.1)				0.03	1, 33	.857
	Dyadic		26	−0.17	0.02	−0.22, −0.12			
	Classroom		9	−0.16	0.07	−0.29, −0.03			
7	Informant	24	38 (100)				6.76	1, 36	.014
	Different		7	−0.10	0.03	−0.17, −0.03			
	Same		31	−0.19	0.02	−0.23, −0.16			

Note. For the categorical variables, regression coefficients represent the mean effect sizes (Fisher's Z) for each category; k = number of studies included in moderation analysis; n (%) = number of effect sizes included in moderation analysis and percentage out of total effect sizes (n = 38); b = regression coefficient; SE = standard error; CI = confidence interval; TSR = teacher-student relationship.
[a]Proportion girls.
[b]Proportion students from an ethnic minority background.
[c]Proportion students with a low socio-economic status (SES).

sample size was added as a moderator. Only for the pathway from teacher-student relationships to subsequent peer victimization, this moderator appeared significant. However, as estimates were close to zero, $b < 0.001$, 95% CI [<0.001, <0.001], the impact of sample size on the estimated mean effect sizes was minimal.

DISCUSSION

Although teachers are considered key adults to tackle bullying in schools, results of studies investigating the association between affective teacher-student relationships and bullying perpetration and peer victimization are not conclusive (e.g., Bae et al., 2019; Shaw et al., 2019; Troop-Gordon & Kopp, 2011). Moreover, several characteristics of the sample and study methods might affect the strength of associations (e.g., Lei et al., 2016; Roorda et al., 2011). This study aimed to provide an overview of all existing research in this field by means of a state-of-the-art three-level meta-analysis. Results demonstrated negative, small to medium associations between teacher-student relationships and bullying perpetration, as well as between teacher-student relationships and peer victimization. Additionally, separate analyses focusing on longitudinal effect sizes between teacher-student relationships and peer victimization were performed. While controlling for their T1 association and the stability of peer victimization, higher-quality teacher-student relationships were related to less subsequent peer victimization. Furthermore, moderation analyses demonstrated stronger negative links between teacher-student relationships and bullying for samples with more ethnic minority students, and when the same informant reported about both

variables. Associations between teacher-student relationships and peer victimization were stronger for negative teacher-student relationship indicators (e.g., conflict) as compared to positive indicators (e.g., emotional support), and when the same informant was used to measure teacher-student relationships and peer victimization. These findings indicate that teachers and other school practitioners could invest in promoting positive and minimizing negative teacher-student relationships to help tackle bullying and victimization in schools.

Overall Associations

Results of the current meta-analysis showed that higher-quality teacher-student relationships were related to lower bullying and peer victimization. Thus, findings indicate that teachers may contribute to tackling bullying and peer victimization through the affective relationships with their students. This confirms previous research emphasizing the importance of studying characteristics of students' social context to gain insights in bullying and peer victimization processes (e.g., Ettekal et al., 2015). The results suggest that teachers may shape children's peer dynamics, both through the feelings of safety and security they can transmit to individual students (e.g., Verschueren & Koomen, 2012) and by means of the supportive classroom climate can they create (e.g., Hamre et al., 2013). Yet, since analyses were correlational in nature, these findings may also indicate that more bullying perpetration and peer victimization negatively affect the teacher-student relationship quality. Recent longitudinal research has found evidence for both pathways (e.g., Demol et al., 2020).

Figure 2. Funnel Plots for the Effect Sizes of the Association Between Teacher-Student Relationships and Peer Victimization (A), and Between Teacher-Student Relationships and Bullying Perpetration (B)
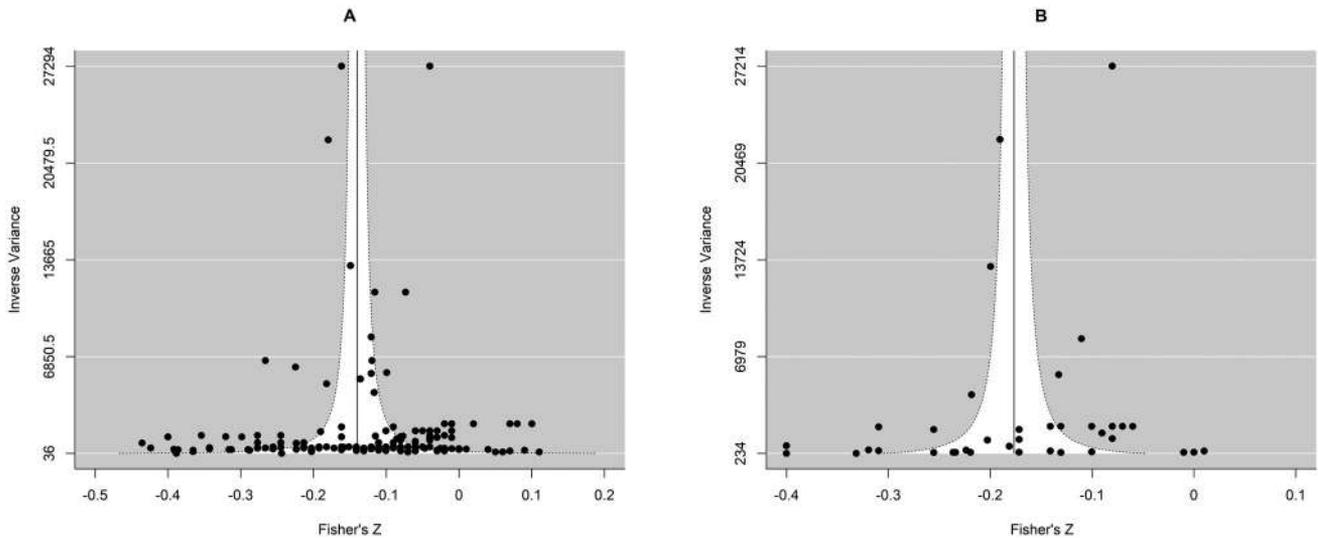
Note. The weighted mean effect size is displayed with a solid vertical line. Two outliers were removed.

To date, most research on teacher-student relationships has focused on the role of teachers in peer victimization, testing the assumption that high-quality teacher-student relationships may protect children from being victimized. The present study confirmed that higher-quality teacher-student relationships were related to less peer victimization. Interestingly, this study showed associations of similar magnitude for bullying perpetration. Bullying has been regarded as a means to achieve goals such as dominance or popularity among classmates (Sijtsema et al., 2009). When a high-quality teacher-student relationship helps to create a positive and tolerant classroom atmosphere and regulate individual students' emotions, students may feel less need to use such negative behavior to improve their social status. Conversely, as bullying behavior disrupts a positive classroom climate, it may create lower-quality teacher-student relationships as well. Our findings thus call for more research on the role of teacher-student relationships in bullying, especially since tackling bullying can be viewed as an important step toward preventing and reducing peer victimization. Longitudinal research and studies examining working mechanisms could help to gain more insight into how teacher-student relationships are associated with bullying over time.

Additionally, teacher-student relationships were not only negatively related to peer victimization at the same time point, but effects also seemed to hold over time. The selected analyses were conservative, given that the cross-sectional association between teacher-student relationships and peer victimization and the stability of peer victimization were taken into account.

Interestingly, the amount of time between measures did not affect the overall associations. This suggests that effects remain within the same school year (e.g., Serdiouk et al., 2016) but also may hold across school years (e.g., Runions & Shaw, 2013). Results contrast those of a prior meta-analysis, demonstrating that the time between measures affected the strength of associations between teacher-student relationships and students' engagement and achievement (Roorda et al., 2011). Future studies are encouraged to investigate how long-lasting the current promising effects are, as the maximum amount of time between measures was 72 months. Furthermore, more longitudinal research is needed to examine the effect of teacher-student relationships on subsequent bullying too. Given the small number of longitudinal studies on this topic, this pathway was not tested in the current study.

Moderating Effects

With regard to student characteristics, based on the academic risk perspective (Hamre & Pianta, 2001), overall associations were expected to be stronger for ethnic minority students and students from a low SES background. Support for this hypothesis was only found for the moderating effect of ethnic background on the link between teacher-student relationships and bullying. Results indicated that high-quality teacher-student relationships may especially help ethnic minority students to reduce their bullying behavior. Remarkably, similar moderating effects were not found for peer victimization. The

Figure 3. Funnel Plots for the Effect Sizes of the Stability of Peer Victimization (A), and the Longitudinal Association Between Teacher-Student Relationships and Peer Victimization (B)
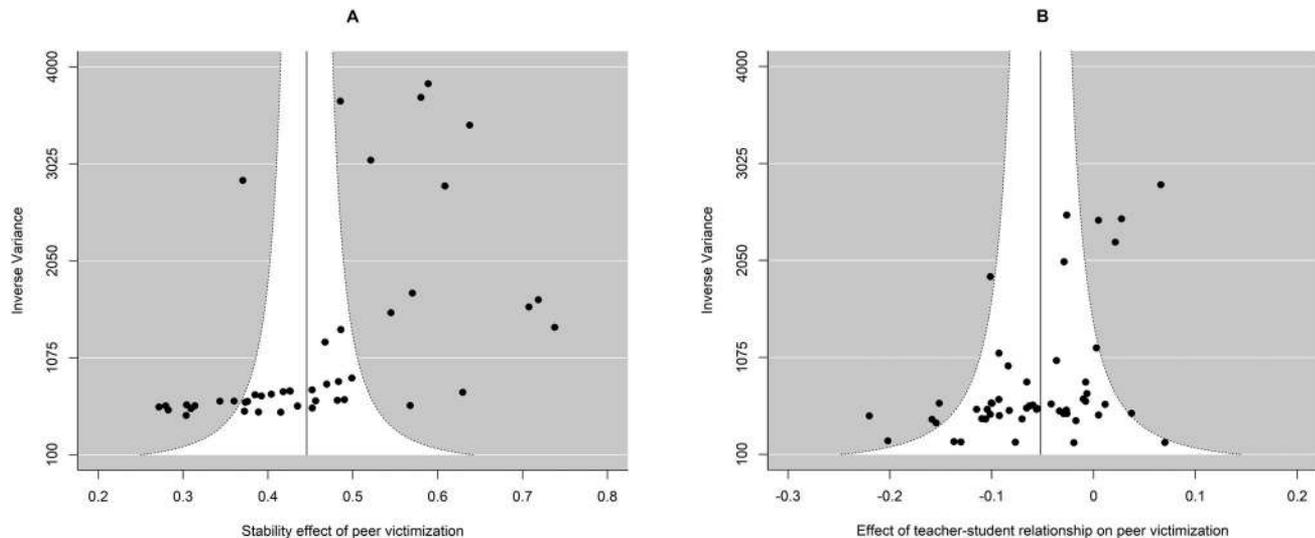
Note. The weighted mean effect size is displayed with a solid vertical line.

current findings underscore the benefit of focusing on two sides of the bullying phenomenon (i.e., perpetration and victimization) in findings ways to tackle this persistent peer problem. In addition, results showed that the link between teacher-student relationships and bullying perpetration and peer victimization was equally strong for students from diverse socio-economic backgrounds. This contrasts findings of Roorda et al. (2011), who demonstrated stronger links between teacher-student relationships and engagement and achievement when samples included more students from a low SES background. One possible explanation could be related to the analytical power, as for only eight out of 39 associations between teacher-student relationships and bullying, information about SES was provided. Future studies are encouraged to mention sufficient descriptive information about the sample under investigation. Regarding gender, tested in an exploratory manner, associations were robust and did not differ between boys and girls. In general, moderators from the academic risk perspective might mostly affect educational (e.g., achievement, engagement) and to a lesser extent relational (e.g., bullying, peer victimization) outcomes. Additionally, results indicate that students may benefit equally from high-quality teacher-student relationships in elementary and high school to reduce bullying and peer victimization. Thus, even when students move to adolescence and spend less time with single teachers, teachers may remain important for students' development (Bergin & Bergin, 2009). This contrasts previous research in adolescence, describing decreasing importance of teachers as compared to peers for students' social development (e.g., Engels et al., 2016).

Moreover, in line with our expectations (Lei et al., 2016; Vaish et al., 2008), associations were stronger for negative teacher-student relationship indicators (e.g., conflict, dissatisfaction) as compared to positive indicators (e.g., closeness, care). This was only the case among studies covering peer victimization. In the analyses focusing on bullying, associations were robust across positive and negative indicators of teacher-student relationships. One possible explanation could be the limited number of effect sizes for negative indicators of teacher-student relationships ($n = 5$) as compared to positive indicators ($n = 33$) regarding bullying. Based on our findings and previous research (Lei et al., 2016), future research is encouraged to further investigate how negative indicators of teacher-student relationships are linked with bullying and peer victimization, and to include both positive and negative indicators in the same study.

Interestingly, higher-quality teacher-student relationships at both dyadic and classroom level were related to lower bullying and peer victimization. These findings extend those of previous meta-analyses which only assessed dyadic teacher-student relationships (e.g., Roorda et al., 2011). Our findings are promising, as they may indicate two ways to reduce bullying and peer victimization in schools. Because the majority of included studies focused on dyadic ($n = 177$) instead of classroom-level teacher-student relationships ($n = 27$), more studies about the role of classroom-level teacher-student relationships in bullying and peer victimization, as well as studies with a combination of dyadic and classroom-level teacher-student relationships in one study, are encouraged.

Lastly, in line with our expectations (Roorda et al., 2011), overall associations were stronger when the same person reported on teacher-student relationships and bullying and peer victimization, as compared to when different informants were used. Our findings may reflect a single-source bias, especially because this moderating effect was found for both bullying and peer victimization. Furthermore, information based on questionnaires may be subjective and not fully capture reality. Notably, associations remained significant when only a subsample of associations based on different informants was analyzed, further confirming the robustness of the associations. Although some studies might have theoretically sound reasons for choosing one informant for multiple instruments when investigating bullying dynamics (Volk et al., 2017), our findings highlight the need for more multi-informant studies. This way, overestimation of associations is prevented and a more complete overview of classroom processes is created.

STRENGTHS AND LIMITATIONS

This meta-analysis has several strengths and limitations. Strengths include the use of positive and negative teacher-student relationship indicators and dyadic and classroom-level measures of teacher-student relationships. Moreover, this study focused on a broad age range of students from preschool to high school and on two sides of the bullying phenomenon (i.e., perpetration and victimization). Furthermore, multiple coders were used during the study selection process and discrepancies were discussed at each stage, resulting in a final set of studies based on deliberate decisions. Additionally, three-level meta-analytic models allowed us to optimally use all data present while taking the dependence of effect sizes into account.

However, some limitations need to be mentioned as well. First, no conclusions about causality from teacher-student relationships to bullying and peer victimization or vice versa can be drawn from the cross-sectional studies included in this meta-analysis. Based on an extension of attachment theory (e.g., Verschueren & Koomen, 2012) and the Teaching Through Interactions framework (Hamre et al., 2013), teacher-student relationships were viewed as predictors of bullying perpetration and peer victimization. However, longitudinal research has shown that bullying perpetration and peer victimization may affect teacher-student relationships as well (e.g., Demol et al., 2020). Thus, more longitudinal studies are needed to indicate how teacher and peer relationships affect each other over time. Relatedly, more experimental studies can help to identify which elements of the teacher-student relationship may aid to tackle bullying and peer victimization. Second, only published manuscripts were included in the current

meta-analysis. Although the funnel plots and Egger's regression test suggested no indications of publication bias and including unpublished studies could possibly introduce new sources of bias (Ferguson & Brannick, 2012), our sample may still not be fully representative of the entire range of studies. Third, negative teacher-student relationship indicators and classroom-level teacher-student relationships are less well-investigated than positive relationship indicators and dyadic teacher-student relationships, which made it difficult to draw conclusions about the moderating role of these variables on our overall associations. Fourth, statistical power of the analyses focusing on bullying was sometimes low (e.g., assessing the moderating role of SES) and some variables (e.g., gender) had only a small variance. Moreover, several studies missed necessary statistical information to obtain a correlation coefficient. Therefore, we recommend researchers to provide sufficient descriptive information about their sample and key variables. Fifth, two moderator variables demonstrated a lower inter-rater reliability during the training in the coding phase (i.e., ethnicity, level of teacher-student relationship). Hence, these results should be interpreted cautiously.

PRACTICAL IMPLICATIONS

This meta-analysis shows that higher-quality teacher-student relationships are related to less bullying perpetration and peer victimization, and that effects on peer victimization could hold over time. These findings provide several practical implications. First, teachers and other school practitioners should become (more) aware of their role as facilitator of and role model for peer relationships (Gest & Rodkin, 2011). Investing in positive relationships with students could therefore not only be viewed as an addition to, but rather a prerequisite for improving students' academic knowledge (Bergin & Bergin, 2009). Relatedly, policymakers are encouraged to promote a dual focus by integrating academic and social-emotional learning goals in the curriculum (Kochenderfer-Ladd & Ladd, 2016). This focus may help to foster positive relationships in the classroom, make teachers more attentive to students' needs, and help to detect bullying and peer victimization sooner. This is essential, as only a minority of victimized students disclose their victimization to the teacher (ten Bokkel et al., 2021).

Second, existing anti-bullying interventions could benefit from focusing more on improving positive teacher-student relationships and preventing negative teacher-student relationships. In line with school-wide frameworks (e.g., Cornell & Bradshaw, 2015), factors at multiple levels can aid to tackle bullying and warrant further investigation. Specifically, the present findings

indicate that improving relationships with both individual students and the class group may aid to reduce bullying and peer victimization. Additionally, findings indicated that high-quality teacher-student relationships were related to less bullying perpetration and peer victimization in both elementary and high school. Hence, building positive teacher-student relationships could be important to tackle bullying and peer victimization in both educational contexts. Conversely, since most included studies were cross-sectional, this finding may indicate that students' bullying or victimization status may affect their relationship with teachers in elementary and high school, making it crucial for teachers to be aware of these peer influences. Moreover, results tentatively suggest that teachers could specifically attend to the development of high-quality teacher-student relationships with ethnic minority students to reduce their bullying behavior. When teachers are somehow not able to build high-quality relationships with their class group or with individual students, they can make use of several interventions (for a meta-analysis, see Kincade et al., 2020).

CONCLUSION

The current multilevel meta-analysis provided a literature overview regarding the association between affective teacher-student relationships, and bullying perpetration and peer victimization, over the past twenty years. By examining 212 effect sizes within 65 primary studies and covering 185,881 students from preschool to high school, results indicated that higher-quality teacher-student relationships were related to less bullying perpetration and less peer victimization. In a subsample of longitudinal effect sizes, higher-quality teacher-student relationships were also related to less subsequent peer victimization These findings demonstrate that teachers may contribute to tackling the persistent problems of bullying and peer victimization in schools through their affective relationship with students. Furthermore, the association between teacher-student relationships and bullying was stronger among samples with more ethnic minority students and when the same informant reported about both variables. For peer victimization, associations were stronger when negative teacher-student relationship indicators were measured (e.g., conflict) as compared to positive indicators (e.g., closeness), and when the same informant was used. Thus, especially for peer victimization, reducing negative teacher-student relationships may be useful to tackle this peer problem. In general, teachers, school practitioners, policymakers and anti-bullying interventions could benefit from targeting the promotion of positive teacher-student relationships and the reduction of negative teacher-student relationships. Through more multi-informant, longitudinal and experimental studies, especially about bulling perpetration, the role of teachers in bullying and peer victimization can be further unraveled.

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The reference list of studies included in the meta-analysis is provided in the online supplementary materials.

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