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ORIGINAL PAPER

Peer Aggression and Conflictual Teacher-Student Relationships: A Meta-Analysis

Amanda Krause[1] · **J. David Smith**[2]

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Abstract
The relationship between teachers and students plays a critical role in the psychosocial development of children and youth. The literature documents numerous studies over several decades that have examined links between teacher-student relationships (TSRs) and bullying perpetration and victimization among students. The present meta-analytic study provides a definitive summary of the size and the direction of the association between these variables. We synthesized the results of 18 quantitative studies ($n = 20\,029$) that examined the association between TSR conflict and involvement in peer aggression and bullying (both perpetration and victimization) in school. Results revealed a significant positive effect of moderate size between TSR conflict and both bullying perpetration and victimization. Three moderators (grade level, informant, and scale quality) were assessed for their effects on the association between TSR conflict and peer aggression involvement. Results revealed a stronger association between bullying involvement (both bullying others and victimization) and TSR conflict (a) among elementary school students (versus secondary students), (b) when based on observer reports (versus self-reports), and (c) when researchers used well-established measures (versus new measures) of the variables. These results highlight the interconnectedness of students' relationship experiences with their teachers and their interactions in peer networks at school, and they underscore the need to consider both aspects in comprehensive climate and bullying prevention initiatives in schools.

Keywords Peer aggression · Bullying · Victimization · Teacher-student relationship conflict · Meta-analysis

Peer Aggression and Conflictual Teacher-Student Relationships: a Meta-Analysis

Peer aggression and bullying remains a global public health crisis. A recent publication from the United Nations Educational, Scientific and Cultural Organization (UNESCO) synthesizes several worldwide bullying-related trends (UNESCO, 2019) using self-report data from 11–17-year-old youth. While bullying prevalence varies substantially according to geographical region, globally, nearly one in three youth have experienced bullying victimization by their peers in the past month, with girls and boys being equally likely to be bullied. Furthermore, physical, sexual, and psychological bullying are the most rampant forms of bullying, as documented in this report, and cyberbullying is somewhat less common, affecting about 10% of youth. A substantial body of research clearly demonstrates that bullying involvement (as perpetrator, victim, or witness) is toxic to children's mental and physical well-being, particularly for those youth involved on a chronic basis. Children who bully show higher rates of concurrent externalizing behavior and future delinquency and criminal behavior (Sourander et al., 2006). Victimized children are at risk of several persistent physical (e.g., headache) and psychological (e.g., loneliness, depression, anxiety) symptoms (Due et al., 2005). Children who bully and are also bullied by others (i.e., bully-victims) are at highest risk for mental health and behavioral problems, concurrent psychiatric symptoms, and low self-esteem and negative self-image (Kumpulainen & Räsänen, 2000; Smokowski & Kopasz, 2005). As such, it is vital to advance our understanding of bullying in the school context and to develop viable solutions to bullying problems to improve the

✉ Amanda Krause
akrau101@uottawa.ca

J. David Smith
david.smith@uottawa.ca

[1] School of Psychology, University of Ottawa, Ottawa, ON, Canada

[2] Faculty of Education, University of Ottawa, Ottawa, ON, Canada

social contexts, like classrooms and schools, that make critical contributions to positive child and youth development.

Bioecological Model of Development and Teacher-Student Relationships

The bioecological model of development has been used frequently to understand the negative effects of peer aggression, as well as the positive potential of social contexts to mitigate, remediate, and ultimately prevent the harms that bullying causes (Bouchard & Smith, 2017; Wang et al., 2015). This theory suggests that development occurs through reciprocal interactions (i.e., proximal processes) between the developing child and others in various social–cultural environments that range in proximity to the developing child (Bronfenbrenner & Morris, 2006).

Teachers are in a unique position to influence students' behaviors in the peer group—in both positive and negative directions—via proximal processes occurring in the mesosystem. Mesosystems form when people from different microsystems (e.g., home, classroom, peer group) that contain the developing child interact. Classrooms provide numerous opportunities for mesosystems comprising teachers and peers to form which subsequently influence proximal processes inside and outside of schools. One possible mechanism for teachers' influence in mesosystems formed with students' is social reference. Social reference theory implies that students notice the quality of teachers' relationships with other students and then mirror these qualities in their own interactions with school peers (Hughes & Chen, 2011). For example, Hendrickx et al. (2017) found that when a teacher disliked a particular student, that student was then more likely to be disliked by peers. Additionally, cross-sectional research has shown that teachers have a unique influence on student bullying behavior, above and beyond other relationships the child may have. Specifically, supportive teacher-student relationships (TSRs) reduced levels of school bullying over and above the influence of supportive relationships with peers and family (Murray-Harvey & Slee, 2010). Given these findings, it is clear that teachers can play an important role in the child's peer interactions, with important implications for their psychosocial development.

Much research has investigated the impact of different types of TSRs and their behavioral and developmental outcomes. Generally, TSR quality has been measured on three distinct characteristics: closeness, conflict, and to a lesser extent, dependency (Birch & Ladd, 1998; Sabol & Pianta, 2012). Given that these relationship characteristics have typically been measured separately and not exhaustively, for the purposes of the current study, we focus on conflict in TSRs.

Conflictual Teacher-Student Relationships

Conflict between a student and teacher can take many forms and can produce several negative implications for the student. Conflict is usually characterized by mutual dislike, anger, lack of support, and volatility toward the other, and it often leads to disengagement from the classroom and increased externalizing behavior in the students experiencing conflict with their teachers (Longobardi et al., 2018; Marengo et al., 2018). Given these trends, it is not surprising that research has found that students who bully and students in the bully-victim role perceived their relationship with their teachers more negatively than any other group of students, including victimized children and non-involved students (Wang et al., 2015). Similar results were found in a cross-sectional Italian study involving 435 sixth- to eighth-grade students. Results revealed that students who perceived their relationship with their teacher as more conflictual had significantly greater involvement in bullying and pro-bullying behaviors (e.g., encouraging the bully by laughing or cheering; Longobardi et al., 2018). Marengo and colleagues (2018) also explored student-perceived levels of conflict and involvement in bullying in a group of Italian middle-school students. Differing results were found in that children involved as victims and bully-victims perceived their relationship with their teacher as more conflictual compared to students not involved in bullying. However, children who bully did not perceive their relationships with their teacher as conflictual. This may be due in part to the fact that many children who bully possess more social competencies compared to victimized children and bully-victim children. For example, several researchers have reported that children who bully often display strong social skills that allow them to successfully influence their peers and gain popularity status (Marengo et al., 2018; Vaillancourt et al., 2003).

The link between conflictual TSRs and bullying has also been established in younger children. Troop-Gordon and Kopp (2011) longitudinally examined fourth- to fifth-grade students' perceptions of their relationships with their teachers and their bullying involvement. The researchers found that TSRs that were characterized by increased conflict were negatively associated with acceptance from peers and positively associated with physical and relational aggression.

Beyond the direct association between peer aggression and TSR conflict, certain sample and methodological characteristics have been investigated to assess their effect on the strength and direction of the link between the two constructs. We identified three variables that may moderate the relationship between peer aggression and TSR quality, and we integrated them into our analyses. We selected school level as a possible moderator to capture developmental influences on aggression, such as the well-documented trends of

decreasing physical bullying and increasing verbal, social, and cyberbullying as children age (Berger, 2007). Study informants, which vary in the research, may also moderate the relationship, given the evidence that self-reports and teacher reports of TSR quality share little agreement, while peer and teacher reports converge. Finally, and in a more exploratory vein, we decided to assess the potential moderating effect of scale quality, since the literature is split between studies using a small number of extensively validated measures (e.g., Student–Teacher Relationship Scale; Pianta, 2001) and studies using newly created measures which lack substantial validity evidence.

The Current Study

The research reviewed above indicates that TSRs defined by high levels of conflict appear to be associated with higher levels of peer bullying perpetration and victimization. The current meta-analytic study provides a large-scale summary of the strength and direction the association between conflictual TSRs and peer aggression involvement among students. In this light, the present meta-analysis was designed to answer two questions: First, what is the strength of the association between conflictual TSRs and involvement in peer aggression in both perpetrator and victim roles? We predict an overall positive association between involvement in peer aggression in both roles and conflictual TSRs. In other words, we expect students who report having more conflictual and discordant relationships with their teachers will report greater experiences of involvement in peer aggression, both perpetration and victimization. Second, what is the impact of several key moderating variables on the association between peer aggression and TSR conflict? We selected three moderators for this analysis that have an empirical and/or conceptual link to our primary research variables and for which there were sufficient data to conduct these supplementary analyses: school level, informant, and scale quality. We expected that all three moderators would produce significant effects.

Methodology

Study selection

A systematic literature search was conducted to locate relevant literature for the meta-analysis. Studies were obtained from four online databases: ERIC, PsycINFO, Education Source, and ProQuest (theses and dissertations). Several combinations of Medical Subject Headings (MeSH) and key words were used to locate relevant literature. MeSH terms that were used included: relational aggression (i.e., encompassing all forms of interpersonal aggression including physical and verbal), bullying, victimization, teacher-student interactions, teacher-student relationships. Examples of key words that were used included: "bully*," "victim*," "peer harass*," "relation* aggress*," "teacher adj2 student adj2 relation*," "teacher NEAR/2 child NEAR/2 interact*" (see" Appendix A" for full search strategy). Additionally, backward referencing searches and forward referencing searches were utilized. The full systematic search for all four databases was conducted on September 23, 2019. A total of 816 unique articles were identified in our initial search for literature matching our search terms. These articles were uploaded onto a systematic review management website where they were prepared for inclusion screening.

Studies in this meta-analysis included quantitative continuous measures of (a) peer aggression and (b) TSR conflict completed within the school context by at least one of three informants (student [self], teacher, peer). Additionally, study participants were in grades K-12 and drawn from general school populations, and articles reported individual-level statistics (either correlation coefficient, or sufficient statistical information to calculate such ESs). Finally, all included studies were published in English, leaving us with 18 studies for the current meta-analysis (see Fig. 1 for a detailed illustration of the study selection process). The first author was the primary screener for all studies. During the first phase of screening (i.e., only titles and abstracts), a more cautious approach was taken where only articles that were clearly and unambiguously outside the inclusion criteria were excluded. Throughout the entire screening process, when it was unclear whether a study fit within the set inclusion and exclusion criteria, a decision was made through discussion between the two authors.

For the purposes of our study, we operationalized the term peer aggression as any behavior that intended to hurt someone within an interpersonal context. Consequently, this term includes various forms of bullying and victimization as well as other forms of peer aggression (e.g., proactive and reactive aggression) that do not necessarily fall within the confines of the traditional bullying definition. This included various forms of perpetration and victimization including, but not limited to, physical, verbal, and relational aggression; vandalism of student property; and cyberbullying. Peer aggression was also distinguished from more general forms of aggression, and we excluded all studies that assessed aggression not directed at peers (e.g., disruptive classroom behavior, throwing objects). Prior research has identified unique characteristics and risks to children who are involved in bullying in both perpetrator and victim roles (i.e., bully-victims; Stein et al, 2007). As only five studies included data specifically on students in the bully-victim role, we decided to not to analyze this group of students separate from the other bullying involvement categories. We

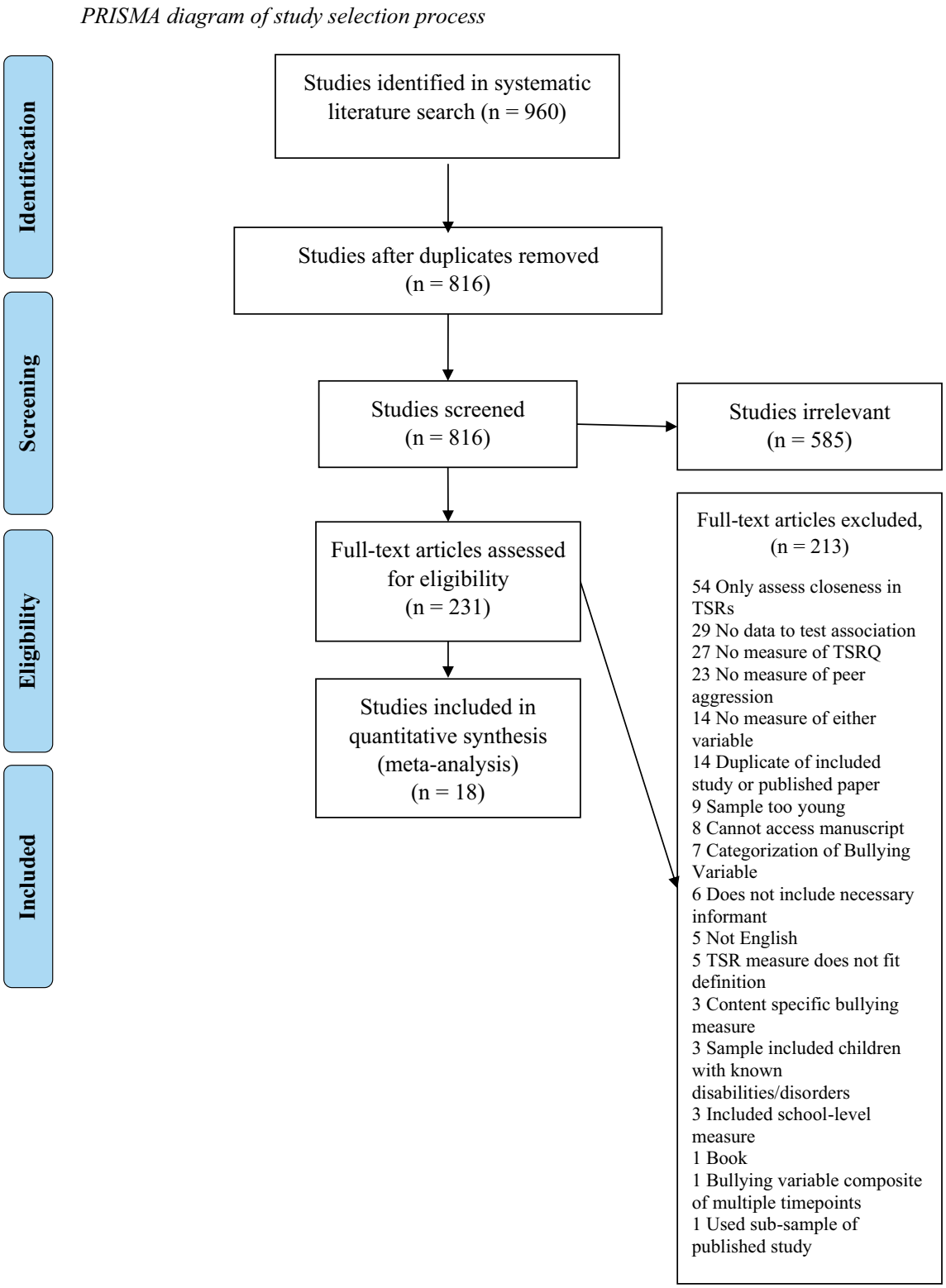

Fig. 1 PRISMA diagram of study selection process

also excluded other bullying-related roles (e.g., pro-bullying behavior, bystander) due to very minimal available research.

For our study, TSR conflict is defined as incorporating negative aspects of the TSR. Studies that assessed concepts such as conflict, lack of support, and unfair treatment within

the teacher-student dyad were included (e.g., Doumen et al., 2008; Runions, 2014).

Coding of Study Characteristics

Table 1 lists all the studies along with their coded characteristics. Each study was coded across five different categories including: source characteristics (e.g., status of publication), sample characteristics (e.g., sample size, gender breakdown), measurement characteristics (e.g., measures used, informant), design characteristics (e.g., cross-sectional or longitudinal), and quality assessment (i.e., items extracted from Quality Assessment Tool for Studies with Diverse Designs, QATSDD; Sirriyeh et al., 2012). Some studies did not provide sufficient information to code for all the characteristics listed above. Cells were left blank if there was missing information.

The first author was also the primary coder and coded the entire set of studies. A second coder was recruited to code a subset of the final sample of studies. The coder was trained to identify and code each component of the above characteristics and coded over 20% (4 studies) of the final set of studies to ensure inter-rater reliability. Agreement among raters was very high, indicating 95.8% agreement.

Aggregation of Effect Sizes

To ensure independence of effect sizes for our analyses, as a preliminary step, we aggregated multiple effect sizes for peer aggression and conflictual TSRs that were reported in five of the nine longitudinal studies included in our database. Effect sizes were combined if they corresponded with timepoints occurring within the same academic year (e.g., T1 = fall, T2 = spring). In all cases, the smallest sample in the longitudinal studies (due to attrition) was chosen to compute the inverse variance weight of the aggregated effect size. For longitudinal studies that included timepoints beyond one academic year, only the first time point was extracted. This decision was based on prior research indicating that peer aggression and TSR quality change as students age (Havik, 2017). Lastly, there were several different studies in the published literature that reported findings on the same sample of students. In some of these cases, two studies provided unique data (e.g., one study reported bullying victimization data and another study reported bullying perpetration data) on the same sample. In this instance, both studies with their respective data were included in the final set. If the data in the two studies were exactly the same, only one study's data were included. Once all effect sizes were extracted and aggregated to ensure independence, there was a final total of 25 separate effect sizes.

Characteristics of Included Studies

Of the 18 included studies, 15 (83%) were published studies, and three (17%) were unpublished studies (two master's theses and one doctoral dissertation). Please refer to the reference section to see citations of all included studies (indicated by with an asterisk [*]). Publication dates of the included studies represent a decade of research, from 2008 to 2018. A total of 20,029 participants are represented in the present meta-analysis. As indicators of central tendency, the mean sample size within the final set was approximately 1132 participants, while the median was 422. Study sample sizes ranged from 116 to 7841 participants.

Geographical Diversity

The final set of studies represents children and adolescents from several different continents including North America, Europe, Asia, and Australia (see Table 2 for a breakdown across country and continent).

Description of Participants

Regarding the gender breakdown of participants, overall, there is an approximately equal proportion of males and females across all studies with all 18 studies reporting roughly equal numbers (between 45 and 55%) of boys and girls within their study. In relation to ethnic diversity of samples, studies were coded for whether they had a homogenous sample of participants (i.e., over 80% of sample is comprised of one ethnicity) or a heterogeneous sample (i.e., sample combines multiple ethnicities). Six studies (33.3%) reported ethnically homogenous samples. Five studies (27.8%) reported samples that were considered heterogeneous. Seven studies (38.9%) did not report any ethnic information. All school levels were represented in the current dataset: 14 (77.8%) studies included students at the elementary school level (Kindergarten–Grade 5) only and four studies (22.2%) included students who were in intermediate/middle schools (Grade 6–8) or secondary schools (Grade 9–12).

Quality Assessment

All studies in the final set were binary coded for reporting quality using three quality assessment criteria to determine the amount and specificity of information for each indicator. A combined rating (out of three) was computed for each study. Considering all the studies in the final set, 14 (77.8%) met all three quality assessment criteria and four studies (22.2%) met two of three quality assessment criteria. Of the three quality assessment criteria, the item that was most often missing or considered inadequate was the clear

Table 1 Characteristics of studies included in the meta-analyses

Authors	*N*	Sample Characteristics			Ethnicity	Peer Aggression (PA) Measure	Measurement Characteristics		TSR Informant	Effect Size*r*
		Country	School Level	Gender			PA Informant	Teacher-Student Relationship (TSR) Measure		
Archambault et al., 2016	333	Canada	Elementary	52.6% female		Extracted items from Socio-educational Environment Questionnaire to assess frequency of victimization	Self	Extracted items from the Student–Teacher Relationship Scale (Pianta, 2001) to assess conflict level in TSR	Self	.392 (V/TSRcon)
Chen & Astor, 2011	7841	Taiwan	Middle; Secondary	51.3% female, 0.3% did not indicate gender		Created own scale to assess student violence against students and direct victimization	Self	Created own scale to assess experiences of poor TSR	Self	.098 (V/TSRcon) .173 (P/TSRcon)
Chen & Astor, 2012	3058	Taiwan	Middle; Secondary	49.5% female, 2.3% did not indicate gender		Created own scale to assess student violence against others and direct victimization	Self	Created own scale to assess experiences of poor TSR	Self	.135 (V/TSRcon) .211 (P/TSRcon)
Doumen et al., 2008	154	Belgium	Elementary	52% female	9% at least one parent who was not Belgian nationality	Subscale Aggressive with Peers of the Child Behaviour Scale (CBS; Ladd & Profilet, 1996) to measure frequency of peer aggression; Extracted single item from CBS (Ladd & Profilet, 1996) for peer nomination procedure to assess bullying perpetration	Teacher; Peer	Conflict subscale in Student–Teacher Relationship Scale (STRS; Pianta, 2001) to assess conflict experienced in TSR; Peer nomination procedure paralleled STRS (Pianta, 2001) to assess peer's perspective of conflict in TSR of classmates	Teacher; Peer	.527 (P/TSRcon)

Table 1 (continued)

Authors	*N*	Sample Characteristics			Ethnicity	Peer Aggression (PA) Measure	Measurement Characteristics		TSR Informant	Effect Size*r*
		Country	School Level	Gender			PA Informant	Teacher-Student Relationship (TSR) Measure		
Gyllborg, 2013	116	USA	Elementary	54.3% female	90.4% (103) White, 5.3% (6) Hispanic, .9% Black (1), 3.5% Asian (4)	Relational aggression subscale of Children's Social Behaviour Scale (CBS-S; Crick & Grotpeter, 1995) to measure relational aggression; Relational victimization subscale from Children's Social Experiences Questionnaire to assess relational victimization experiences	Self	Short form of Student–Teacher Relationship Scale (Pianta, 1995) to assess conflict and closeness in TSR	Teacher; Self	.210 (V/TSRcon) .280 (P/TSRcon)
Kremer, 2010	153	USA	Elementary	47.1% female	42% Hispanic, 46% White, 2% African-American, 4% Native American, 1% Asian, 5% Biracial	This Child's Interactions with Peers Scale (Ladd & Kochenderfer-Ladd, 2002) to assess frequency of peer victimization	Teacher	Truncated version of Student–Teacher Relationship Scale (Pianta, 1994), to assess closeness, and conflict	Teacher	.576 (V/TSRcon)

Table 1 (continued)

Authors	*N*	Sample Characteristics			Ethnicity	Peer Aggression (PA) Measure	Measurement Characteristics		TSR Informant	Effect Size*r*
		Country	School Level	Gender			PA Informant	Teacher-Student Relationship (TSR) Measure		
Longobardi et al., 2018	435	Italy	Middle; Secondary	48.8% female	4.4% of sample consisted of 1st of 2nd generation immigrants	Olweus Bully/Victim Questionnaire (OBVQ; Olweus, 1996) and Participant Role Scale (PRS; Jungert et al., 2016) to assess involvement in bullying behavior and victimization	Self	Student Perception of Affective Relationship with Teacher Scale (SPARTS; Koomen & Jellesma, 2015) to assess closeness, conflict, and negative expectations within TSR	Self	.241 (P/TSRcon)
Lucas-Molina et al., 2015	1864	Spain	Elementary	50.7% female		Adapted from another study (Children's Ombudsman of the Region of Madrid, 2006) to assess frequency of victimization and peer aggression	Self	Adapted from Benbenishty and Astor (2005) to assess student-perceived teacher support in TSR; Student-to-teacher aggression scale (Mendoza, 2006), to assess frequency of aggressive behaviors toward teacher by student; Direct and indirect teacher-to-student aggression scale (Mendoza, 2006) to assessed frequency of teacher aggressive behavior toward student	Self	.210 (V/TSRcon) .259 (P/TSRcon)

Table 1 (continued)

Authors	*N*	Sample Characteristics			Ethnicity	Peer Aggression (PA) Measure	Measurement Characteristics		TSR Informant	Effect Size*r*
		Country	School Level	Gender			PA Informant	Teacher-Student Relationship (TSR) Measure		
Murray-Harvey & Slee, 2010	888	Australia	Middle; Secondary	49% female	No specific data on sample-population typically Anglo-European, with minority of Asian, Middle-Eastern, and Indigenous Australian students	Your Life at School questionnaire to assess frequency of bullying perpetration and victimization	Self	Your Life at School questionnaire to measure presence of stressfulness and supportiveness in TSR	Self	.585 (V/TSRcon) .359 (P/TSRcon)
Reavis et al., 2010	218	USA	Elementary	56% female	64% Caucasian	Peer nomination procedure (Coie et al., 1982) to assess peer victimization	Peer	Student-Teacher Relationship Scale (STRS; Pianta, 2001) to assess conflict and closeness in TSR	Teacher	.060 (V/TSRcon)
Rucinski, 2010	526	USA	Elementary	53.8% female	44.5% (234) Hispanic, 18.1% (95) Black, 11.8% (62) White, 25.5% (134) Other racial-ethnic groups (approx. 95% of Other group identified as Asian/Pacific Islander)	Aggression Scale (Orpinas and Frankowski, 2001) to assess frequency of peer aggression	Self	Student-Teacher Relationship Scale (STRS; Pianta, 2001) to assess closeness and conflict of TSR; Drawn from Classroom Assessment Scoring System to assess trust and emotional support (Pianta et al., 2010)	Teacher; Self	.110 (P/TSRcon)

Table 1 (continued)

Authors	*N*	Sample Characteristics			Ethnicity	Peer Aggression (PA) Measure	Measurement Characteristics		TSR Informant	Effect Size*r*
		Country	School Level	Gender			PA Informant	Teacher-Student Relationship (TSR) Measure		
Rudasill et al., 2013	1364	USA	Elementary	48.3% female, 1 missing	80% (1097) White, 13% (176) Black, 7% (91) Hispanic, Asian-American, or American Indian	Adapted from Child Behaviour Scale (Ladd & Profilet, 1996), Peer Victimization Scale (Kochenderfer & Ladd, 1996), and Relational Aggression scale (Crick et al., 1996) to assess bullying perpetration and victimization	Teacher	Student-Teacher Relationship Scale (STRS; Pianta, 2001) to assess closeness and conflict of TSR	Teacher	.234 (V/TSRcon) .388 (P/TSRcon)
Runions & Shaw, 2013	377	Australia	Elementary	50.1% female	Most spoke English in home. Non-English speakers were representative of immigration to Western Australia	Derived from the Social Behaviour Questionnaire (SBQ; Tremblay et al., 1991) to assess physical peer aggression	Teacher	Student–Teacher Relationship Scale (STRS; Pianta, 2001) to assess closeness and conflict in TSR	Teacher	.741 (P/TSRcon)

Table 1 (continued)

Authors	*N*	Sample Characteristics			Ethnicity	Peer Aggression (PA) Measure	Measurement Characteristics		TSR Informant	Effect Size*r*
		Country	School Level	Gender			PA Informant	Teacher-Student Relationship (TSR) Measure		
Runions, 2014	794	Australia	Elementary	48% female	Teacher reported on perceived ancestries of children: 58.4% North-Western Europe, 5.4% Aboriginal or Torres Straight Islander, 5.6% Asian, 1.8% African, 10.2% Continental European, 2.0% Middle-Eastern or North African, 17.2% reported I don't know	Social Behaviour Questionnaire (SBQ; Tremblay et al., 1991) to assess victimization experiences	Teacher	Student-Teacher Relationship Scale (STRS; Pianta, 2001) to assess level of conflict in TSR	Teacher	.343 (V/TSRcon)
Stipek & Miles, 2008	301	USA	Elementary	51.7% female	35% African-American, 34% White, 28% Latino, 2% Asian, 1% Native American	Subscale of the Child Behaviour Scale (CBS; Ladd & Profilet, 1996) to assess peer aggression	Teacher	Items from the Student–Teacher Relationship Scale (STRS; Pianta et al., 1995) to assess level of conflict in TSR	Teacher	.523 (P/TSRcon)
Troop-Gordon & Kopp, 2011	410	USA	Elementary	52.9% female	87.1% European American, 1% African-American, 1.2% Asian-American, 4.6% Native American, 1% Hispanic, 5.1% mixed ethnic background	Peer rating derived from Ladd and Kochenderfer-Ladd's (2002) scales to assess frequency of peer aggression and victimization	Peer	Student–Teacher Relationship Scale (STRS; Pianta & Steinberg, 1992) to assess closeness and conflict	Teacher	.348 (P/TSRcon)

Table 1 (continued)

Authors	*N*	Sample Characteristics			Ethnicity	Peer Aggression (PA) Measure	Measurement Characteristics		TSR Informant	Effect Size*r*
		Country	School Level	Gender			PA Informant	Teacher-Student Relationship (TSR) Measure		
Troop-Gordon & Kuntz, 2013	352	USA	Elementary	52.8% female	88% Caucasian, .9% Asian-American, .6% African-American, 1.4% Hispanic, 4.6% Native American, 4.6% mixed or other ethnicity	Adapted from Multi-Informant Peer Victimization Inventory (Ladd & Kochenderfer-Ladd, 2002) to assess peer harassment	Self	Items taken from the Student–Teacher Relationship scale (STRS; Pianta & Steinberg, 1992) to assess closeness and conflict in TSR	Self	.131 (V/TSRcon)
van der Zanden et al., 2015	781	Netherlands	Elementary	49.9% female		Bullying others' and 'victim of bullying' subscale of Olweus Bully/Victim Questionnaire (Olweus, 1989) to assess frequency of bullying perpetration and victimization	Self; Self	Questionnaire on Teacher Interaction (QTI; Wubbels et al., 2006) to assess aspects of closeness and conflict	Self	.137 (V/TSRcon) .160 (P/TSRcon)

Note P = Peer perpetration, V = Peer victimization, TSRcon = Teacher-student relationship conflict

Table 2 Breakdown of included studies and participants by geographical region

Geographical Region	Number of Studies	Number of Participants
By Country		
Australia	3	2379
Belgium	1	148
Canada	1	333
Italy	1	435
Netherlands	1	781
Spain	1	1864
Taiwan	2	10 899
USA	7	3190
By Continent		
North America	8	3523
Europe	4	3228
Asia	2	10,899
Australia	4	2379

description of the data collection procedures. It is worth noting here that the absence of this information in the reports does not necessarily equate to a low-quality study.

Meta-analytic Procedure

The effect size chosen for this meta-analysis is the correlation coefficient (*r*). Although most studies included a correlation matrix within their published manuscript (15), some studies did not. Corresponding authors of each manuscript were emailed to request the bivariate correlations for the study variables of interest. One study reported a beta value from a regression analysis (Lucas-Molina et al., 2015), which was transformed to *r* using the method recommended by Peterson and Brown (2005). Recently, this method of transforming beta values to correlation coefficients has received some criticism (Roth et al., 2018), but the solution was deemed to be more favorable than excluding the study altogether (Borenstein et al., 2011).

All correlation coefficients extracted from studies were first transformed using Fisher's *Z* (Borenstein et al., 2011). Effect sizes were weighted using the inverse variance on the basis of the standard error reported in each study (Card, 2011). All meta-analyses were conducted with the converted data; however, effect sizes were transformed back to *r* values for easier interpretation. Comprehensive Meta-Analysis (CMA) Version 3 was used for computation of effect sizes and all subsequent moderator analyses (Borenstein et al., 2013). A random-effects model was chosen for the main analysis since we assumed that between-study variance was from both sampling error and from other factors that may contribute additional heterogeneity to the findings. Two separate random-effects model meta-analyses were run: a) bullying perpetration and TSR conflict and (b) bullying victimization and TSR conflict. We used Cohen's (1992) recommendations for qualitatively assessing effect size values as small ($r = 0.10$-0.29), medium ($r = 0.30$-0.49), or large ($r > 0.50$).

Moderator Analysis Procedure

Moderation analyses of three categorical variables (school level, informant, scale quality) were conducted to determine their effects on the association between conflictual TSRs and peer aggression. We conducted a mixed-effects analysis for the moderator analyses. Importantly, when moderator levels included fewer than five studies, we used a fixed-effects model to combine effect sizes (Hedges & Vevea, 1998). Additionally, each moderator level included a minimum number of effect sizes ($k \geq 3$; Borenstein et al., 2011).

Results

Publication Bias

Two methods were used to assess for publication bias (Borenstein et al., 2011; Card, 2011). Rosenthal's failsafe-*N* equaled 360 for bullying perpetration and TSR conflict, much greater than the required 75. Egger's linear regression (Egger et al., 1997) was not significant ($p = 0.19$). For peer victimization and TSR conflict, Rosenthal's failsafe-*N* was above the suggested guideline of 70 at 148 studies, and Egger's test corroborated these results with non-significant results ($p = 0.55$). These results suggest that there are no compelling indicators of publication bias in these meta-analyses.

Bullying Perpetration and Teacher-Student Relationship Conflict

Figure 2 shows the distribution of the 13 effect sizes for the association between bullying perpetration and conflictual TSRs, which ranged from $r = 0.110$ to 0.630. In support of our hypothesis, the meta-analytic results revealed a positive, medium-sized correlation between bullying perpetration and conflict in the TSR [$r = 0.318$ (95% CI. $0.250 < r < 0.382$), $Z = 8.718$, $p = 0.000$]. These results indicate that as bullying perpetration increases, conflict in TSRs also increases. The test for homogeneity of variance was significant across the 13 studies [$Q\,(12) = 235.794$, $p = 0.000$], indicating that variability in effect sizes was due to factors other than sampling error. The finding, I^2 index = 94.911, supports the same conclusion.

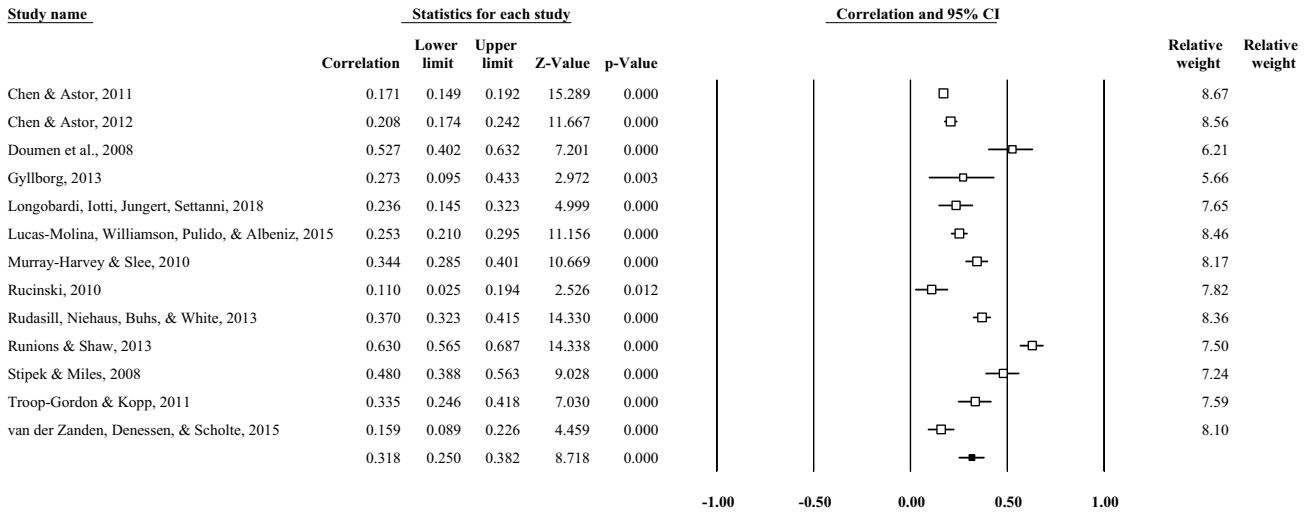

Fig. 2 Distribution of effect sizes and summary effect for bullying perpetration and teacher-student relationship conflict

Bullying Victimization and Teacher-Student Relationship Conflict

The second meta-analysis investigated peer victimization and conflictual TSRs. Figure 3 shows the distribution of the 12 effect sizes, which ranged from 0.060 to 0.526. The results from the meta-analytic investigation revealed a small, positive correlation between bullying victimization and TSRs characterized by conflict and hostility [$r = 0.250$ (95% CI. $0.170 < r < 0.327$), $Z = 5.964$, $p = 0.000$]. These results indicate that students who experience higher rates of victimization from their peers tend also to experience greater conflict with their teachers. The test for homogeneity of variance was significant, indicating that the variance seen between studies is more than what sampling error could account for [Q (11) = 273.271, $p = 0.000$]. The finding, I^2 index = 95.975, supports this conclusion.

Moderator Analyses

School Level

Results of the school-level moderator analysis can be found in Table 3. Grade level was divided into two ordinal categories: primary (Kindergarten–Grade 6) and intermediate/

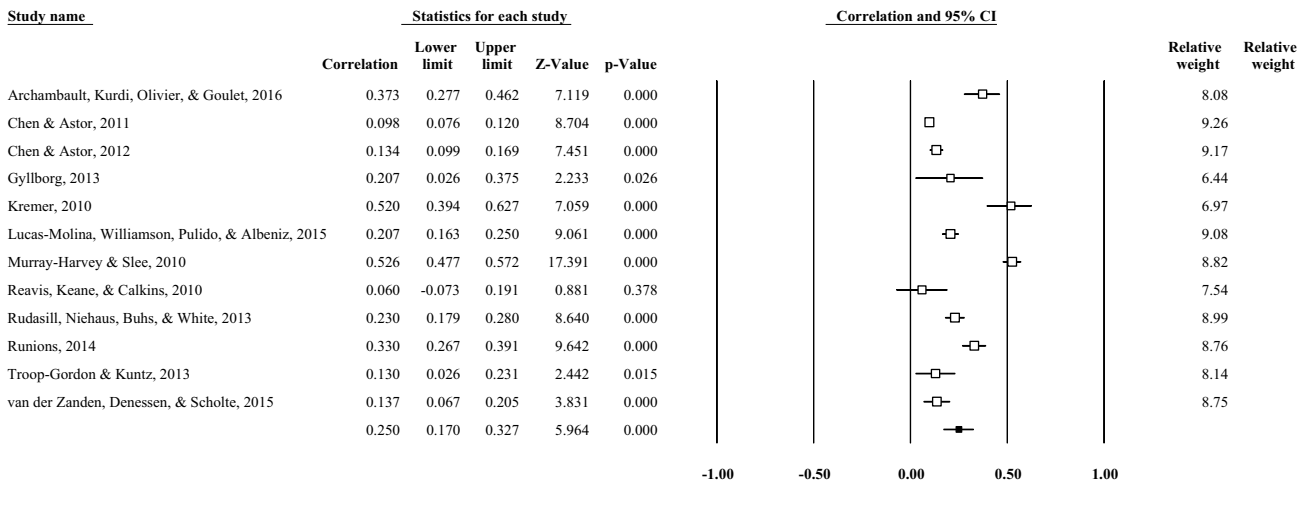

Fig. 3 Distribution of effect sizes and summary effect for peer victimization and teacher-student relationship conflict

Table 3 School-level moderator analysis for each meta-analysis

Peer Aggression and Teacher-Student Relationships	School-Level Category				
	Elementary	*k*	Intermediate/Secondary	*k*	*Q*
P x TSRcon	.311	9	.196	4	60.457**
V x TSRcon	.229	9	.143	3	31.058**

Note. P = Perpetration, V = Victimization, TSRcon = Teacher-student relationship conflict. ** indicates *p*-value ≤ .001

secondary (Grade 7–Grade 12). Given developmental factors influencing bullying and interpersonal aggression more generally that were noted above, we split the dataset by school level (primary and intermediate/secondary) to capture in an approximate way the potential moderating effect of development on TSR conflict and aggression. We determined that dichotomizing the variable by school level was the most expedient approach, as the data included in this meta-analysis were most commonly reported by school or grade level. For bullying perpetration and TSRs characterized by conflict, a significant moderating effect was found between elementary school participants ($r = 0.311$, $p = 0.000$, $n = 9$) and participants in intermediate or secondary school level ($r = 0.196$, $p = 0.000$, $n = 4$), (Q (1) = 60.457, $p = 000$). These results reveal that conflictual TSRs are more strongly associated with increased peer-directed aggression in younger students compared to older students. School level had a significant moderating role on the association between peer victimization and conflictual TSRs (Q (1) = 31.058, $p = 0.000$), where a stronger correlation was found between bullying victimization and TSR conflict in primary school-level participants ($r = 0.229$, $p = 0.000$, $n = 9$) compared to students in intermediate or secondary school ($r = 0.143$, $p = 0.000$, $n = 3$).Overall, this moderator analysis revealed that grade level had a significant effect on the association between both peer aggression and victimization and teacher-student conflict with stronger associations between the variables observed in younger students.

Informant

The results of the informant moderator analysis can be found in Table 4. Informants were divided into two categories: self and observers (the latter comprising peer and teacher reports). Peer and teacher reports were combined in the observer category because a) there were few studies that utilized peer and teacher reports, compared to studies who used self-reports, and b) research indicates a large amount of inter-rater agreement among observers for both TSR quality and peer aggression (Cornell & Brockenbrough, 2004; Li et al., 2012; Peets & Kikas, 2006; Zee et al., 2020). Studies

Table 4 Informant-type moderator analysis for each meta-analysis

Peer Aggression and Teacher-Student Relationships	Informant Category				
	Self	*k*	Other	*k*	*Q*
P x TSRcon	.190	6	.441	3	139.048**
V x TSRcon	.149	6	.267	4	32.581**

Note. P = Perpetration, V = Victimization, TSRcon = Teacher-student relationship conflict. ** indicates *p*-value ≤ .001

were included in this moderator analysis only if they used the same informant (self/self or observer/observer) for both the peer aggression and TSR measures.

For bullying perpetration and conflictual TSRs, informant was a significant moderator (Q (1) = 139.048, $p = 0.000$). A much stronger effect size was observed when observers reported ($r = 0.441$, $p = 0.000$, $n = 3$) than when the students self-reported ($r = 0.190$, $p = 0.000$, $n = 6$). For peer victimization and TSR conflict, a significant moderating effect for informant was also found (self: $r = 0.149$, $p = 0.000$, $n = 6$; observer: $r = 0.267$, $p = 0.000$, $n = 4$), Q (1) = 32.581, $p = 0.000$, again indicating a strong effect size for observer reports over self-reports. Overall, the results of this moderator analysis indicate that there is a significant moderating effect of informant for both meta-analyses and that the association between peer aggression and conflictual TSRs is stronger for observers.

Scale Quality

Some studies included in the meta-analysis used established measures (e.g., STRS; Pianta, 2001) with strong foundations of validity evidence and extensive track records in the literature, while others used measures created specifically for the individual study and therefore lacked a track record in the literature as well as substantial validity evidence. Measures were considered established if they had been used in prior studies and the research reports included prior validity evidence pertaining to the scale. Measures were categorized as novel if they were created uniquely for the purposes of the study and there was no prior validity evidence pertaining to the measure reported. The results of the moderator analysis can be found in Table 5. Studies were included in this moderator analysis only if they used the same quality of measure for both variables (i.e., established/established or novel/novel for both peer aggression and TSR quality).

A significant moderating effect of scale quality was found for bullying perpetration and conflictual TSRs, Q (1) = 51.787, $p = 0.000$, indicating that there was a stronger association observed when established measures were used ($r = 0.330$, $p = 0.000$, $n = 6$) compared to novel measures ($r = 0.194$, $p = 0.000$, $n = 3$). A significant moderating effect was found for the correlation between peer victimization and

Table 5 Measure-type moderator analysis for each meta-analysis

Peer Aggression and Teacher-Student Relationships	Measure Category				
	Established	*k*	Novel	*k*	*Q*
P x TSRcon	.330	6	.194	3	51.787**
V x TSRcon	.240	7	.143	3	29.739**

Note. P = Perpetration, V = Victimization, TSRcon = Teacher-student relationships conflict. ** indicates *p*-value ≤ .001

TSR conflict, $Q\,(1) = 29.739$, $p = 0.000$, indicating that there was a stronger association for studies that utilized established measures ($r = 0.240$, $p = 0.000$, $n = 7$) versus studies that employed novel measures ($r = 0.143$, $p = 0.000$, $n = 3$). Overall, the moderator analyses suggest scale quality is an important moderating variable when examining bullying perpetration and victimization and TSR conflict. Specifically, the results show that when studies employed established measures, a stronger effect was observed than when novel measures were used.

Discussion

This meta-analysis is the first to quantitatively synthesize the extant literature on peer aggression and TSR conflict. While previous studies on the topic indicate relatively clear trends that involvement in peer aggression, either through perpetration or victimization, is associated with higher levels of conflict in TSRs (Chen & Astor, 2011; Longobardi et al., 2018), these trends had not yet been aggregated into quantitative effect sizes that clearly convey the strength and direction of the various findings reported in the literature. The results of the present study provide strong support for the conclusion that children and youth involved in peer aggression and bullying, either by perpetrating it or receiving it, tend to have relationships with teachers that are characterized by high levels of conflict. For the purposes of this study TSR conflict connotes relationships with teachers that entail hostility, mutual dislike, and discordance. A key strength of this meta-analysis is that it combines an exhaustive set of studies reported in the literature over the last decade that examined TSR conflict and peer aggression, including studies that revealed little or no support for a positive association between the variables.

The results from the two primary meta-analyses, which addressed perpetration and victimization separately, highlight the unique and critical role of TSRs within the interconnected social context of the classroom. New knowledge in this domain continues to emerge in the literature (e.g., Luckner & Pianta, 2011) and provides further support for Bronfenbrenner's (2006) systems perspective of development. This study examined peer aggression and TSR conflict at the level of the mesosystem, which, compared to microsystems, is more distant from the developing child and exerts its influence through indirect channels. The findings of this study lead us to speculate that teachers have considerable influence on students' social development in the context of other important relationships. This conclusion evokes Farmer's et al. (2011) description of the "invisible hand" of the teacher in shaping children's development, through modeling, scaffolding, and otherwise influencing the kind and quality of social activity that happens within their peer groups.

Most notably, the summary effects between peer aggression and TSR conflict were substantial in size, suggesting that TSRs characterized by conflict are moderately related to involvement in peer aggression and bullying. Previous scholarship investigating the cognate domain of TSR quality and academic achievement and engagement have found more robust associations for TSR conflict than for TSR closeness, providing compelling evidence that poor-quality, high-conflict TSRs are particularly damaging to student functioning (Baker, 2006; Hamre & Pianta, 2001). The results of the present meta-analyses extend this literature by providing evidence that a particularly damaging link exists between teachers' poor relationships with students and negative interactions in the peer context, at least as it concerns involvement in peer aggression and bullying. Our findings also generally align with the conclusion of Baumeister and colleagues (2001) related to "good" and "bad" effects across many disciplines in psychology: They reported that negative effects were consistently stronger than positive ones. It appears this general finding applies to the specific domain of relationships in the school context as well, given that conflict tends to be more stable year over year than closeness in TSRs, which tends to fluctuate more with each given year (Spilt et al., 2012).

It is, of course, important to reiterate that the summary effects of the two primary meta-analyses are correlational, thus preventing us from making any conclusions regarding causal ordering of the variables. TSR quality and peer aggression are likely multidetermined and have many causal factors contributing to diverse outcomes. Although there are limited studies determining the longitudinal relation between TSR conflict and peer aggression, relevant scholarship does suggest, however, that the causal relationship is bidirectional (e.g., Doumen et al., 2008; Stipek & Miles, 2008). By way of illustration, it is not difficult to imagine a scenario in which a teacher who observes a student bullying or being bullied developing negative feelings (e.g., anger, dislike, and disrespect) toward the child, and then acting out their feelings in various ways within interactions with the student, thereby further impairing their relationship and increasing the child's vulnerability to more involvement in peer bullying.

Our results prompt us to speculate that negative reputations developed within school contexts may account, at least in part, for the strength and stability of the association between TSR conflict and bullying involvement. Hamarus and Kaikkonen, (2008) studied students qualitative accounts of bullying experiences and concluded that bullying perpetrators create and propagate negative reputations that portray and name the victimized child as "different" in culturally unacceptable ways as part of the victimizing process. They proposed that bullying behavior like this serves to consign victims to low social status while at the same time creating cultural norms that all peers are pressured to abide. It may be that these reputations permeate even more deeply the school social context than described by the youth in Hamarus and Kaikkonen's study, potentially biasing teachers' perceptions of the students in their midst. These tenacious reputations possibly follow them throughout their schooling years, even as they switch teachers. Furthermore, conflictual relationships between a student and teacher can reinforce these negative reputations through social referral processes and lead to increased bullying involvement, in victim, bully, or bully-victim roles. However, research is needed to determine empirically if these reputation processes that promote marginalization and "othering" extend beyond the peer group to TSRs as well.

One other possible hypothesis that may explain our findings is the presence of a third variable. Research shows that students who aggress against and bully their peers tend to exhibit externalizing behavior problems and low levels of empathy (Cook et al., 2010; Smokowski & Kopasz, 2005), characteristics also associated with more conflictual relationships with teachers (Fowler et al., 2008; Lei et al., 2016). It is possible that some characteristics that place students at greater risk to be involved in peer aggression incidents, either as a perpetrator or victim, also serve to elevate conflict in the relationship with their teachers. For example, it is not difficult to imagine how some students' externalizing behavior challenges contribute to the reciprocal relationship between peer aggression experiences and poor-quality relationships with their teachers. On the other hand, evidence also indicates that the effects of positive TSRs reach beyond the classroom and actually buffer the negative effects of problems that students experience in relationships with peers and even parents (Wang et al., 2013). Ample evidence shows how students' positive relationships with teachers, particularly in the earlier grades, are fundamental to their school success in every important domain, including academics as well as psychosocial functioning (e.g., adjustment to school, prosocial behavior, bullying involvement), and motivation and school engagement (Sabol & Pianta, 2012).

While the literature on TSRs naturally emphasizes student outcomes, it is nonetheless worth considering how teachers' poor-quality relationships with their students impact the teachers themselves. Studies reveal that one of the main contributors to teachers' workplace stress and burnout is managing students' problematic and externalizing behaviors, processes that all impact the quality of TSRs in the classroom (Skinner & Beers, 2016; Spilt et al., 2011). Additionally, several studies assessing teachers' understanding of their relationships with students have found that teachers place great value and weight on their relationships with students. For example, Klassen et al., (2012) found that teachers' relationship with students, much more than relationships with school colleagues, had a strong, positive association with teachers' enjoyment and engagement (i.e., vigor, dedication, and absorption in work) in their work. Likewise, Hagenauer et al., (2015) found that teachers' emotional experiences in the classroom were most influenced by TSR quality, and when these emotional experiences were largely negative, they contributed directly to teacher stress in the longer term (Spilt et al., 2011).

Moderating Analyses

We identified three potential moderator variables in our dataset and conducted separate analysis for each in order to provide some additional interpretative context for understanding our main findings.

School Level

The results of the school-level analysis revealed that school level significantly moderated the relationship between peer aggression and TSR conflict, indicating that relationships characterized by dislike and discordance are more influential for younger children (i.e., Kindergarten–Grade 6) compared to older children (i.e., Grade 7–Grade 12). One possible explanation for this finding is that young children tend to be more amenable to adult influence than older students in secondary school (Hughes & Im, 2016; Pianta et al., 2003) and therefore more vulnerable to the negative effects of a conflictual relationship with their teachers. Factors related to differing school contexts may also help to account for the findings from this moderator analysis. Often, when students enter secondary school, they no longer interact with one teacher throughout the day, but rather with several teachers for different subjects. This may limit opportunities to interact in sustained ways with any one teacher and thereby limit opportunities to form relationship bonds. Additionally, as children grow older, their focus shifts away from adults in their life to their peers (Davis, 2003; Durkin, 1995) and may therefore mitigate the association between TSR conflict and peer aggression.

Informant

Informant was examined as a potential moderator since the research literature has long documented important differences in scores for peer aggression and TSR quality depending on who completed the measure (Cornell & Brockenbrough, 2004; Li et al., 2012). Our analysis revealed that informant type (self versus observer, which includes peers or teachers) significantly influenced results for both meta-analyses, with stronger associations between victimization and bullying others and TSR conflict when observed by others. By way of explanation, it is possible that observer informants are not always privy to more covert forms of bullying (e.g., exclusion, cyberbullying) and will therefore report lower bullying rates. This pertains particularly to teacher informants. Research has shown that as children age, their participation in more physical and more overt forms of bullying decreases (Berger, 2007), making it more difficult for teachers to observe and accurately report the frequency of bullying perpetration and victimization among students. Likewise, the TSR literature finds similar patterns in that student self-reports of TSR quality differ from teacher and peer reports of relationship quality (Li et al., 2012). One possible reason for the difference in informant reports is a difference in perception about the relationship experience between the participants (Pianta et al., 2003). For example, a teacher may believe that they are providing the student with adequate support, but the student does not feel like they are being offered enough support from their teacher. As such, rather than one informant considered the 'gold standard' for TSR measurement, our findings lend additional support for the recommendation that multiple informant perspectives should be sought in order to obtain a more complete picture of children's experiences in the school context, including TSRs (Wienke Totura et al., 2009).

The results also suggest that teacher and peer observers perceive stronger associations between bullying involvement and TSR conflict compared to students themselves. As one possible explanation, research has shown that teachers and students assess different aspects of the constructs of conflict (Hughes, 2011; Wubbels & Brekelmans, 2005). It is also possible, albeit purely speculative, that conflictual TSRs are more inferred by teachers and peers to try and explain a student's bullying behavior. For example, a teacher or classmate may see a child that is always getting in trouble at school and create a narrative about the particular child in that they seem to always have difficulties getting along with their peers and teachers. Future research probing the lived experience of teachers and students in their mutual relationships would be informative in shedding some light on this possibility.

Scale Quality

An array of measures was used to assess peer aggression and TSR quality among the included studies. Established and validated measures, such as the Student–Teacher Relationships Scale (STRS; Pianta, 2001) and the Olweus Bully/Victim Questionnaire (OBVQ; Olweus, 1996), were found frequently in the included studies. However, many researchers utilized novel measures that were created specifically for the individual study, or they extracted specific items from existing measures without validity evidence for this new version of the scale. The moderator analysis revealed that there was a significant effect of scale quality in both meta-analyses. An examination of moderator-level effect sizes within these significant findings reveals that studies that employed established measures documented stronger associations between bullying perpetration and victimization and TSR conflict than studies that used novel measures, suggesting that the long and arduous work of developing a valid measure of these psychological constructs pays dividends to the research literature in the long run, presumably generating more accurate and precise estimates of study effects.

Limitations

One limitation of the present meta-analysis is the difficulty in accounting for the large volume of between-study variance beyond sampling error. The studies included in the meta-analysis are diverse in their populations and their methodologies. This is also a key strength of the paper by making results more generalizable; however, it imparts a level of complexity and potential error, when trying to account for the underlying causes of the heterogeneity. While certain moderator analyses were conducted to explain some of the between-study variance, a significant amount of heterogeneity remained unexplained. Therefore, it is unclear as to how the association between peer aggression and TSR conflict might change as a function of a particular moderator. Additionally, for simplicity the moderator variables were dichotomized, and in some cases, combined across peer aggression and TSR quality (i.e., informant, measure type). Some limitations inevitably arise with these decisions. This is especially true for the informant moderator where peer and teacher reports were collapsed into a single informant type, "other." Despite compelling evidence that peer and teacher reports converge for both peer aggression and TSR closeness measures (Cornell & Brockenbrough, 2004; Li et al., 2012), each informant still represents a discrete perspective. Future syntheses should investigate informant differences

more closely. Another limitation of this meta-analysis is an inability to make any statements of causality regarding peer aggression and TSR quality given that all data included in the analysis were cross-sectional. As such, conclusions regarding the possible sequential nature of the association cannot be made. Future research intended to investigate the longitudinal nature of the association between peer aggression and TSRs would be informative in this regard. Lastly, we combined all forms of peer aggression into one composite score for our meta-analyses. In treating peer aggression monolithically, we likely obscured any different effects that might arise from various forms of peer aggression (e.g., proactive versus reactive aggression) as it pertains to conflictual TSRs. This will be an important avenue for continued research in this field.

Study Implications

The results of this meta-analysis have implications for both the bullying literature and key stakeholders involved in the implementation and maintenance of bullying prevention programs. The present study provides direction to the bullying and peer aggression literature by offering a deeper understanding of the specific context of a child and in particular at the level of mesosystem (Bronfrenbrenner, 2006). Importantly, because random-effects models were used for the two primary meta-analyses, the findings can be generalized beyond the studies included in this meta-analysis. In this way, educators, policy makers, and researchers can apply the findings from this meta-analysis to their own unique populations of students.

Importantly, the results of this meta-analysis point to direct recommendations for practice by highlighting the particularly damaging association between peer aggression and TSRs characterized by conflict. It appears that these negative relationships have a significantly strong link to peer aggression and potentially a strong influence on peer aggression. This is especially true for younger children (those in K-grade 6) compared to older students. These results indicate that we need to pay attention to conflict in TSRs as "red flags" and work to remediate these relationships. Programs should focus not only on fostering positive TSRs, but also concentrate on how to identify peer aggression risk factors such as TSRs characterized by high conflict and ultimately de-escalate and reduce hostility and discord when they are present. Research that examines teacher's social–emotional competencies is particularly relevant here (Bouchard & Smith, 2017; Jennings & Greenberg, 2009). Skills such as teacher attunement (i.e., identify and understand social dynamics of students; Gest & Rodkin, 2011), communicating care (Noddings, 2005), and mindfulness (Lynch & Ciccheti, 1992) are integral to mitigating conflictual TSRs and bolstering the development of close and supportive TSRs while also reducing bullying-related experiences among students.

Conclusion

Overall, the results of this meta-analysis reveal the dynamic and interconnected nature between children and youth who perpetrate against others and are victimized and their relationships with their teachers. That is, students who experience conflictual, discordant, and hostile relationships with their teachers are more likely to bully others or be bullied. It is also an important reminder about how two seemingly separate social contexts, TSRs, and student-peer relationships are nonetheless mutually influential. While the research synthesized in this meta-analysis is substantially diverse, remarkably, the trends remain consistent. The results of our meta-analyses suggest a global dynamic that students who experience a relationship with their teacher that is hostile, conflictual, and discordant will also manifest these characteristics in their relationships with their peers.

Appendix A

Literature Searches for Online Databases.

PsycINFO

MeSH Terms: Relational aggression (explode); victimization; teacher-student interaction.

Keywords: Teacher adj2 student adj2 relation*; teacher adj2 child adj2 relation*; teacher adj2 student adj2 interact*; teacher adj2 child adj2 interact*; 'peer harass*'; bully*; victim*; 'relation* aggress*.

Total Articles Identified: 229.

ERIC

MeSH Terms: Bullying; victims; teacher-student relationship.

Keywords: Teacher adj2 student adj2 relation*; teacher adj2 child adj2 relation*; teacher adj2 student adj2 interact*; teacher adj2 child adj2 interact*; bully*; victim*; 'peer harass*'.

Total Articles Identified: 409.

ProQuest (Theses and Dissertations)

MeSH Terms: None.

Keywords: Teacher n/2 student n/2 relation*; teacher n/2 child n/2 relation*; teacher n/2 student n/2 interact*; teacher n/2 child n/2 interact*; bully*; victim*; 'peer harass*'; 'relation* aggress*'.

Specifics. Select 'anywhere but full text'.

Total Articles Identified: 163.

Education Source

MeSH Terms: Bullying (explode); victims of bullying, teacher-student relationships.

Keywords: Teacher n2 student n2 relation*; teacher n2 child n2 relation*; teacher n2 student n2 interact*; teacher n2 child n2 interact*; bully*; victim*; 'peer harass*'; 'relation* aggress*'.

Specifics: Limit search to 'full text', academic journals only.

Total Articles Identified: 159.

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Availability of data and material The authors have not made their data available in a repository.

Declarations

Conflicts of interest The authors have no conflicts of interest to declare.

Ethics approval This was a meta-analysis using already published data. No ethics approval was required.

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All references marked with an asterisk (*) are studies included in the meta-analyses

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