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Testing how teachers' self-efficacy and student-teacher relationships moderate the association between bullying, victimization, and student self-esteem

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ABSTRACT
This study investigated how teachers' self-efficacy for intervening in social dynamics and teacher-student relationships directly impact students' self-esteem, and indirectly buffer the negative association between both bullying and victimization and students' self-esteem. Teachers play a key role in shaping the peer relations in the classroom, and they might also be able to lessen the negative impact of bullying and victimization on students' self-esteem. Multilevel regression analysis on a sample of 59 Dutch teachers and 1,490 of their 5th grade students indicated that student-reported bullying and victimization were negatively related to students' self-reported self-esteem. Better student-perceived student-teacher relationships were related to higher self-esteem for all students, with additional increases in self-esteem for victims but decreases in the self-esteem of bullies. Teacher-reported self-efficacy was only related to lower self-esteem in bullies. Implications of these results and suggestions for further research are discussed.

Introduction

Students involved in bullying or victimization tend to have lower self-esteem (Hawker & Boulton, 2000; Tsaousis, 2016; van Geel et al., 2018). Self-esteem refers to subjective judgements about the self, related to perceptions of one's behaviour and performance in the presence of

others, including perceptions of others' evaluations of the self (Leary & Baumeister, 2000). A positive self-perception is an important psychological need for all human beings (Leary & Baumeister, 2000). According to the interactionist approach, a notion of the self is based on, and developed through, interactions with other human beings (Aspelin, 2017). Students in schools construct their self-view through the (dis)approval of significant others, such as teachers (Grolnick & Beiswenger, 2013; Harter, 1996). Teachers might have a buffering role for students who lack peer acceptance (Verschueren et al., 2012). The teachers' role can take multiple forms. At the classroom level, teachers need to be able to manage the classroom and intervene in social dynamics (Fischer & Bilz, 2019). At the dyadic level, the relationship between teachers and students can provide students with signals about their teachers' approval and support, which can result in differences in children's social adaptation to school (Doumen et al., 2011) and function as a protective factor against peer victimization and its negative effects on students' self-esteem (Sulkowski & Simmons, 2018). The aim of this study was to investigate how teachers' self-efficacy for intervening in social dynamics and their relationships with students directly impact students' self-esteem, and indirectly buffer the negative association between both bullying and victimization and students' self-esteem.

Teachers' self-efficacy

Teachers must manage the behavioural climate in classrooms (Farmer et al., 2011), and efficacious teachers can successfully oversee and influence this ecology (Hendrickx et al., 2017a). Teachers' Self-Efficacy (TSE) for intervening in social dynamics refers to the self-perceived ability of teachers to effectively manage and intervene in social behaviour and relationships (Bandura, 1977; Fischer & Bilz, 2019; Vieluf et al., 2013), including handling bullying situations (van Verseveld et al., 2019). Self-efficacy can be seen as a predictor of teachers' behaviour and actions (van Verseveld et al., 2019; Zee & Koomen, 2016). Teachers can influence the classroom norms guiding students' behaviour by tolerating and (de-)stimulating specific behaviour (Doumen et al., 2008). Efficacious teachers have classrooms with a lower overall level of aggression (Gest & Rodkin, 2011), a lower level of peer-reported bullying (Veenstra et al., 2014), and a more desirable prosocial classroom environment (Garner, 2017; Göçmen & Güleç, 2018; Zee & Koomen, 2016). Higher TSE was positively

related to the likelihood of intervening in bullying (Dedousis-Wallace et al., 2014; Duong & Bradshaw, 2013; Garner et al., 2013; Yoon & Kerber, 2003), effective classroom management (Hamm et al., 2011; Skinner et al., 2014), and positive teachers' outcome expectations of their interventions (Begotti et al., 2017). All these elements contribute to a safe and positive classroom atmosphere, which can positively affect students' self-esteem. We therefore expected that teacher self-efficacy, as a proxy for the likelihood of effectively intervening in social dynamics, would be positively associated with students' self-esteem.

In addition, teacher self-efficacy possibly also moderates the association between bullying or victimization and students' self-esteem. Bullies see that an efficacious teacher is likely to intervene in bullying situations (Dedousis-Wallace et al., 2014), which discourages future bullying. This might invoke feelings of guilt or shame in bullies, potentially lowering their self-esteem. At the same time, efficacious teachers provide victims with support, either directly, or indirectly by managing the social dynamics in the classroom, which could make victims feel valuable and potentially lessens the negative consequences of the victimization (Gutt & Randa, 2016; O'Connor et al., 2011; Zee & Koomen, 2016).

Student-teacher relationships

Teachers can also have an impact on students' development at the relationship level. Positive interactions with teachers can shape students' self-concepts. Interactions characterized by approval and support can result in positive social self-concepts in children (Leflot et al., 2010). Students who have a good relationship with the teacher have more positive social and academic self-concepts (Leflot et al., 2010), and individual support from teachers compensates for the negative effects of peer rejection (Spilt et al., 2014).

The student-teacher relationship can also moderate the association between bullying or victimization and students' self-esteem. A positive relationship with the teacher can, paradoxically and undesirably, relate negatively to bullies' self-esteem. When bullies have a close relationship with their teacher, they are expected to be more likely to comply with the rules and norms set by the teacher, in order to maintain or improve the good relationship they have with their teacher. A reduction in self-reported bullying was indeed associated with a more supportive student-teacher relationship (Murray-Harvey & Slee, 2010; van der Zanden et al.,

2015). Conversely, it can be expected that bullying harms the supportive student-teacher relationship, negatively affecting bullies' self-esteem.

The opposite may also occur. Based on the so-called 'Halo-effect', teachers may be more likely to attribute positive qualities to students if they have a more positive global evaluation of them, and to be more lenient when judging incongruent behaviours, like bullying (Marucci et al., 2020). Bullies who have a good relationship with their teacher are then expected to gain or maintain high self-esteem compared with bullies who have a poor relationship with their teacher.

A positive relationship with teachers is important for students' functioning in multiple domains, such as psychological adjustment (Sulkowski & Simmons, 2018). Teachers' support communicates to students that they are valued. Negative influences on students' self-esteem as a consequence of being victimized may thus be buffered by a good student-teacher relationship; indeed, this might reduce the detrimental consequences of lower peer acceptance, such as a damaged social self-concept (Spilt et al., 2014; Verschueren et al., 2012). A positive teacher-student relationship has been found to reduce the distress experienced as a consequence of victimization (Sulkowski & Simmons, 2018).

The present study

Both victimization and bullying are generally associated with lower self-esteem (Hawker & Boulton, 2000; Tsaousis, 2016; van Geel et al., 2018). We therefore expected that both bullying and victimization would be associated with lower levels of self-esteem (H1).

We examined the impact of TSE (at the class level) and the student-teacher relationship (at the relationship level) on students' self-esteem. Because teachers with high self-efficacy in social dynamics are more likely to intervene effectively (e.g., Dedousis-Wallace et al., 2014), we hypothesized that more efficacious teachers would generally have students with higher levels of self-esteem (H2). Similarly, students with positive student-teacher relationships receive more teacher approval and support (Leflot et al., 2010), which we expected would be related to higher levels of student self-esteem (H3).

In addition to these direct associations, we tested whether the two teacher factors moderated the negative associations between bullying, victimization, and student self-esteem. Given that teachers with high self-efficacy are expected to establish a classroom ecology that disapproves of

bullying, we hypothesized a stronger negative association between bullying and student self-esteem for bullying in classrooms with teachers who are high in TSE (H4). For the individual student-teacher relationship, we expected that bullies who had a close relationship with their teacher would want to maintain this relationship and not jeopardize it by bullying others and risking being disapproved of by the teacher. Therefore, we expected a stronger negative association between bullying and student self-esteem for bullies who indicated having a more positive relationship with the teacher (H5a). We also formulated a hypothesis in the opposite direction, based on the Halo-effect: bullies with a good student-teacher relationship might more easily get away with bullying, because this behaviour may be judged more mildly owing to the teachers' more positive overall evaluation of these students (Marucci et al., 2020). We therefore also expected a stronger positive association between bullying and self-esteem for bullies with a positive student-teacher relationship (H5b).

We expected victims to benefit from efficacious teachers and a supportive relationship with the teacher. First, we expected that teachers' self-efficacy would positively moderate the negative association between being bullied and students' self-esteem (H6), suggesting that victims, on average, have higher self-esteem when they have teachers who are efficacious in addressing the social dynamics. Second, a positive student-teacher relationship potentially buffers against problems with peers (Verschueren et al., 2012), and we expected a weaker negative association between victimization and student self-esteem when victims had a more positive student-teacher relationship (H7).

Method

Participants

Data were collected in September – November 2012 among students from fifty-nine 5th grade classrooms (Dutch grade 7) in 41 Dutch elementary schools as part of the project 'Our classroom is OK!' (e.g., Hendrickx et al., 2016). A total of 218 schools were contacted by phone call and letter, and grade 5 teachers and students were asked to participate. Active informed consent was obtained from the parents/guardians of all individual children in the study, and directly from the teachers who participated in the study. Only students with informed parental consent were included in the data collection. Both teachers and students filled out

a questionnaire. We did not have self–reported data for 80 students; these were removed from further analysis. In the final analyses, 1,490 students and 59 teachers from 59 classrooms were included. Students' mean age was 10.6 years ($SD = 0.50$, range 8.4-12.8), and 47% of the students were girls. Classroom size varied from 18 to 38 ($M = 25.9$, $SD = 3.97$). Teachers' mean age was 41.8 years (range 24.5 to 62.5, $SD = 12.0$); most were female ($N = 38$, 66%). Teachers' experience ranged from 1 to 39 years ($M = 14.8$, $SD = 10.9$). More than half (60.3%) of the teachers taught in the participating classroom for four days or more a week.

Measures

Self-esteem

Students' self-esteem was measured using a subscale of the Self-perception Scale for Children (Veerman et al., 1997), using six items on a five-point rating scale (1 'not at all true' to 5 'completely true') focused on being happy with oneself, with the way life goes, and with the way one does things (see Appendix 1). Three items were reverse scored and the scale had a Cronbach's alpha of .82.

Self-reported bullying and victimization

Students answered on a five-point rating scale the single items, 'I bully other children' (bullying) and 'I am bullied by other children' (victimization). They did not receive a definition of bullying beforehand. A score of 0 indicated 'not at all true', and 4 'completely true'.

Teacher Self-Efficacy (TSE)

A four-item scale, based on the Ohio State Teacher Efficacy Scale (OSTES) (Tschannen-Moran & Hoy, 2001), measured teachers' self-efficacy. Teachers responded on a seven-point rating scale (1 = no confidence, 7 = much confidence) to items that all started with 'How much confidence do you have in your ability to contribute to . . . ', followed by, for example, ' . . . your students showing less aggressive behaviour?' (see Appendix 2). The single-item scores were averaged into a scale score, with a Cronbach's alpha of .73.

Student-teacher relationship

The students' perceptions of the relationship with their teacher were measured using four items from a larger 30-item Questionnaire on

Teacher Interaction for Primary Education (QTI-PE; Wubbels et al., 2015). We only included items concerning the relationship with the teacher from students' perspectives: 'The teacher is friendly,' 'If the teacher promises something, they will act accordingly,' 'The teacher is mean,' (reverse scored) and 'If something worries you, you can tell the teacher' (see Appendix 3). Students answered on a five-point rating scale with 1"never" and 5"always". The mean of all four items was calculated, and the scale had a Cronbach's alpha of .74.

Gender

Gender (boy = 0; girl = 1) was included as control variable in all models.

Data analysis

To answer our research questions, we performed multilevel regression modelling in MLwiN 3.04 (Charlton et al., 2019). We used a model with two levels, with students (level 1) nested in classrooms (level 2). Multilevel analyses enabled us to investigate the direct and buffering effects of teacher factors at two levels: teacher self-efficacy at the classroom level and the student-teacher relationship at the individual level.

In the analyses, students' self-reported self-esteem was the dependent variable. We started with an empty model to calculate the variance at the student and classroom levels, which served as a starting point for additional models. We added all main effects in Model 1 to see if associations were in the expected directions. Interactions between teacher characteristics and bullying and victimization were added separately in Models 2 to 5, and simultaneously in Model 6. To simplify the interpretation of the results, teacher self-efficacy and student-teacher relationship were grand-mean centred before they were entered into the multilevel model. In addition, the results are displayed in Figure 1 to 3 for bullying and victimization, separately. The figures show separate slopes for each score of bullying or victimization and the interactions with either TSE or student-teacher relationship, to show the buffering effects on students' self-esteem in more detail.

Results

Table 1 provides descriptive statistics and correlations. The students generally had high self-esteem (M = 4.03), and student self-esteem was
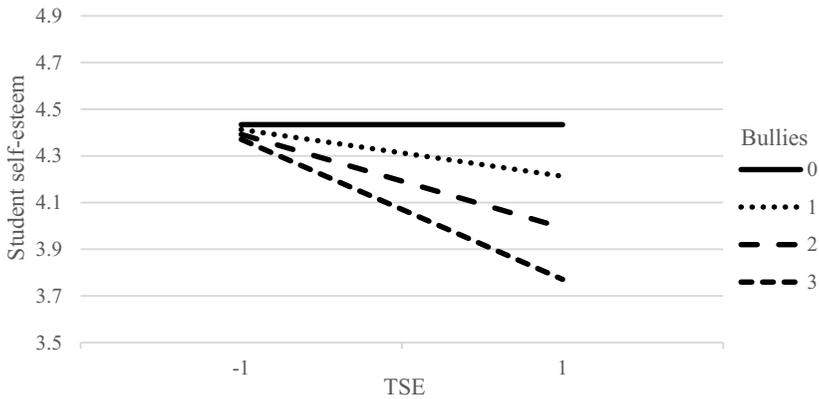
Figure 1. Bullies' self-esteem related to teachers' self-efficacy.

negatively correlated to both bullying ($r = -.20$) and victimization ($r = -.42$). There was a positive significant correlation between student-teacher relationship ($r = .20$) and students' self-esteem, whereas the correlation for teacher self-efficacy and student self-esteem was not significant. Self-reported bullying was lower ($M = 0.48$) than self-reported victimization ($M = 1.10$). On average, students indicated that they had a positive relationship with their teacher ($M = 4.46$), and student-teacher relationship correlated negatively to both bullying ($r = -.11$) and victimization ($r = -.09$). Teachers rated their efficacy rather high ($M = 5.55$), and there was a minor negative correlation with only victimization ($r = -.06$). Girls scored lower on student self-esteem, $t(1488) = 1.92$, $p = .027$, and bullying, $t(1488) = 5.50$, $p < .001$, and higher on student-teacher relationship, $t(1488) = -3.61$, $p < .001$, than boys. No difference was found between boys and girls in victimization, $t(1488) = 0.97$, $p = .167$, but girls reported less bullying than boys $t(1488) = 5.50$, $p < .001$.

Table 1. Descriptive statistics and correlations between main outcome variables and predictors.

	M	SD	1	2	3	4	5
(1) Self–esteem (0–5)	4.03	0.73					
(2) Bullying (0–4)	0.48	0.73	−.20**				
(3) Victimization (0–4)	1.10	1.12	−.42**	.22**			
(4) TSE[a](1-7)	5.55	0.69	−.03	−.03	−.06*		
(5) S–T Relationship[a] (1-5)	4.46	0.63	−.20**	−.11**	−.09**	.07*	
(6) Girl	.47	.50	−.05*	−.14**	−.03	.01	.10**

*$p = <.05$, **$p < .01$
[a]TSE = Teacher self-efficacy; S-T = Student-Teacher; centred variables were used in the analysis

Table 2 displays the results of the stepwise multilevel analyses, with Model 1 including all main effects on student self-esteem. As expected, both bullying ($b = -0.11$, $p < .001$) and victimization ($b = -0.25$, $p < .001$) were negatively related to student self-esteem; this is in line with Hypothesis 1. Contrary to Hypothesis 2, teachers' self-efficacy was unrelated to student self-esteem. The positive relation between student-teacher relationship and students' self-esteem ($b = 0.19$, $p < .001$) was in line with Hypothesis 3.

In Models 2 to 5, interactions between bullying/victimization and teacher characteristics were added separately to test Hypotheses 4 to 7. Model 2 added the interaction between bullying and teacher self-efficacy, to test the moderating effect of TSE on bullies' self-esteem. The results indicate that TSE was related to lower self-esteem in students who reported more bullying ($b = -0.09$, $p = .001$); this is in line with H4. Figure 1 shows student self-esteem for different levels of self-reported bullying for one score below and above the mean of TSE. Students who did not report bullying had similar levels of self-esteem, irrespective of their teachers' self-efficacy. Students who scored high on bullying, however, scored almost one standard deviation (0.7) lower on self-esteem when they were in a classroom with an efficacious teacher. Model 3 tested a comparable interaction between victimization and TSE on victims' self-esteem, but this was not significant, which contradicts H6.

Model 4 tested the interaction of student-teacher relationship and bullying on self-esteem; the findings show an additional negative effect on student self-esteem ($b = -0.07$). Figure 2 displays the divergent pattern for students' self-esteem with different scores on bullying. Students who did not report involvement in bullying had higher self-esteem when they had a positive relationship with their teacher. For students who scored high on bullying a reversed association was found; bullies' self-esteem was lowest when they had a positive relationship with the teacher, which is in line with H5a and contradicts H5b.

Model 5 shows a significant interaction between student-teacher relationship and self-reported victimization on students' self-esteem ($b = 0.04$, $p = .028$), indicating that victims who perceived a positive student-teacher relationship had higher self-esteem; this is in line with H7. Figure 3 shows that the slope for victims is clearly stronger than that for non-victims with every unit increase on teacher-student relationship, which suggests that the student-teacher relationship mattered most to the children who reported the most victimization.
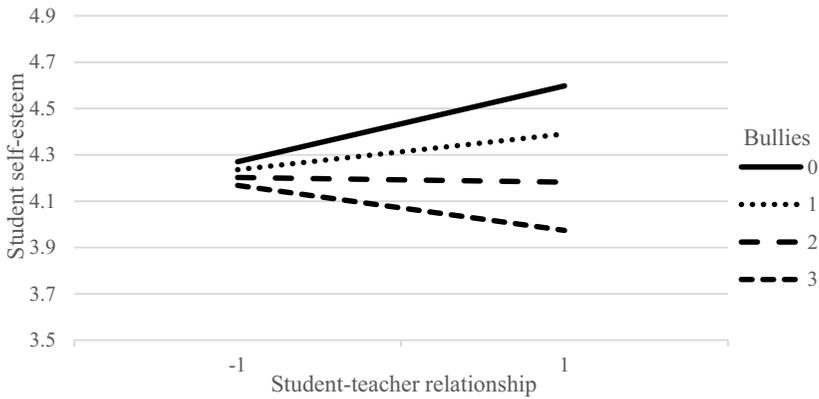
Table 2. Multilevel analysis.

	Model 1			Model 2			Model 3			Model 4			Model 5			Model 6		
	b	se	p	b	se	p	b	se	p	b	Se	p	b	se	p	b	se	p
Intercept	4.43	0.03	<.001	4.43	0.03	<.001	4.42	0.03	<.001	4.42	0.03	<.001	4.43	0.03	<.001	4.43	0.03	<.001
Bullying	−0.11	0.02	<.001	−0.11	0.02	<.001	−0.11	0.02	<.001	−0.11	0.02	<.001	−0.11	0.02	<.001	−0.12	0.02	<.001
Victimization	−0.25	0.02	<.001	−0.25	0.02	<.001	−0.25	0.02	<.001	−0.25	0.02	<.001	−0.25	0.02	<.001	−0.25	0.02	<.001
TSE[a]	−0.00	0.02	.500	0.04	0.03	.065	−0.01	0.03	.351	−0.01	0.02	.618	−0.00	0.02	.467	0.02	0.04	.265
S-T Relationship[a]	0.19	0.03	<.001	0.19	0.03	<.001	0.19	0.03	<.001	0.23	0.03	<.001	0.13	0.04	<.001	0.16	0.04	<.001
Girl	−0.13	0.03	<.001	−0.14	0.03	<.001	−0.13	0.03	<.001	−0.13	0.03	<.001	−0.13	0.03	<.001	−0.14	0.03	<.001
Bully*TSE[a]				−0.09	0.03	.001										−0.10	0.03	<.001
Victim*TSE[a]							0.01	0.02	.352							0.02	0.02	.170
Bully*S-T Relation[a]										−0.07	0.03	.006				−0.09	0.03	.005
Victim*S-T Relation[a]													0.05	0.02	.028	0.05	0.02	.010
Variance Student-level	.410	.015		.408	.015		.410	.015		.409	.015		0.409	0.015		0.405[c]	0.015	
Variance Class-level	.000	.000		.000	.000		.000	.000		.000	.000		0.000	0.000		0.000	0.000	
Deviance difference[b]	−9.01			−9.01	df = 1		−0.20	df = 1		−3.97	df = 1		−4.20	df = 1		−19.77	df = 1	df = 4
				(p = .003)			(p = .65)			(p = .046)			(p = .040)			(p < .001)		

[a]Centered variables were used in the analysis; [b]Decrease in deviance is based on comparison with Model 1; [c]Explained variance in relation to empty model was R² = (.526-.405)/.526)
*100 = 23.0%. TSE = Teacher Self-Efficacy, S-T = Student-Teacher Relationship.

Figure 2. Bullies' self-esteem related to student-teacher relationship.

Finally, all interactions were included in Model 6, and the effects remained relatively similar in size and direction. Model 6 also shows the lowest variance at the student level, which indicates that this model explained the most variance in student self-esteem (23.0%) and had the best goodness of fit (decrease in deviance compared with Model 1 = −19.77, $df = 4$, $p < .001$).

Discussion

The aim of this study was to investigate the association of teacher characteristics with students' self-esteem, and teachers' potential buffering role for the self-esteem of bullies and victims. The results were
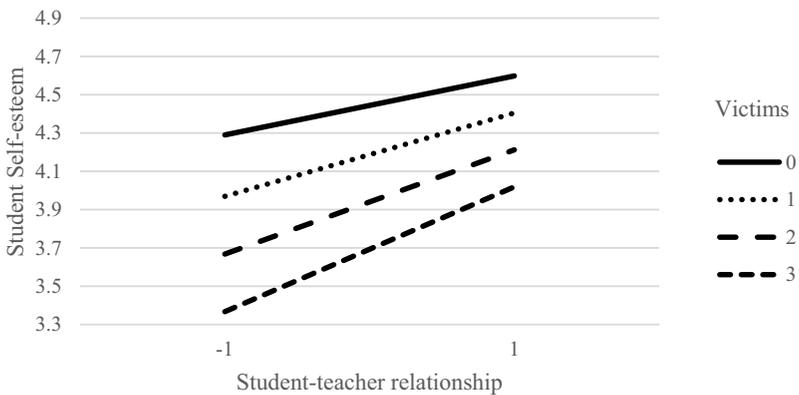

Figure 3. Victims' self-esteem related to student-teacher relationship.

consistent with our expectations that efficacious teachers and a positive student-teacher relationship relate positively to students' self-esteem. The findings further indicated that only bullies' self-esteem was negatively related to TSE at the class level. A positive student-teacher relationship at the individual level was related to higher levels of self-esteem for children who reported more victimization, but related to lower levels of self-esteem for children who reported more bullying.

Higher teacher-reported levels of self-efficacy were related to lower self-esteem when self-reported bullying was high. If teachers act decisively, bullies may become more aware that their behaviour is not tolerated, and this may be related to lower self-esteem. We expected that higher teacher-reported levels of self-efficacy would protect victims from further damage to their self-esteem. However, we did not find a moderation effect of TSE on the association between victimization and students' self-esteem. Whereas teachers with high self-efficacy act decisively towards bullies, this does not have a direct effect on victims' feelings. Perhaps general teacher self-efficacy does not give individual victims the feeling of being supported, which seems a necessary element to influence students' self-esteem (Tsaousis, 2016). A second reason for the absence of a buffering teacher effect on the negative consequences of victimization may be that TSE was measured using teachers' perceptions, which can differ from students' perceptions. There can be discrepancies between students' and teachers' perceptions of how teachers handle a bullying situation (Bradshaw et al., 2007). Teachers' self-reported efficacy might thus be less beneficial for victims in countering the negative consequences of victimization.

At the relationship level, a positive relationship with teachers was expected to matter for bullies' and victims' self-esteem. The findings suggested the better the relationship with the teacher, the stronger the negative association between bullying and self-esteem. Although speculative, our belief is that when students display bullying behaviour they jeopardize the relationship they have with their teacher, which can relate to lower levels of self-esteem. Good student-teacher relationships buffer students from the consequences of internalizing behaviour problems (O'Connor et al., 2011), and bullying by students might reduce this buffering effect.

That bullies with a positive student-teacher relationship are worse off in terms of lower self-esteem can be seen as an adverse outcome, especially because it has been found that lower student self-esteem amplifies externalizing behaviour such as aggression (Doumen et al.,

2011). A positive student-teacher relationship can help in communicating alternative behavioural strategies to aggressive children (Doumen et al., 2008). Therefore, it might matter *how* teachers approach bullies in relation to their bullying behaviour. Bullies are more likely to change if the teacher condemns the bullying or attempts to raise empathy for the victim, than if the teacher blames the bullies (Garandeau et al., 2016). Our study could not distinguish between the ways in which teachers supported and approached students, but future research would benefit from further investigating differences in teacher support for different groups.

The results also demonstrated a moderation effect of a positive student-teacher relationship on victims' self-esteem. Victims' self-esteem was higher (or less low) when they had a more positive student-teacher relationship. The positive relationship with the teacher was positively related to students' self-esteem, and may give a positive signal to peers which could potentially improve victims' social position in the peer group.

Strengths and limitations

Our study provides insight into the role of teachers in promoting students' self-esteem, and the findings indicate that teachers' characteristics are associated with students' self-esteem in general, and more specifically with the negative consequences of low self-esteem that bullies and victims experience. Owing to the cross-sectional nature of our data, we were unable to draw conclusions on the causality of the associations between TSE, student-teacher relationship, and students' self-esteem. Especially the findings showing a positive student-teacher relationship related to lower self-esteem in bullies would benefit from further research using longitudinal data to investigate the causal directions. Perhaps bullies who have a positive relationship with their teacher continue the bullying, and experience a deterioration in the relationship with their teacher which negatively affects their self-esteem. It is also possible that bullies have low self-esteem despite having a positive relationship with their teacher, and therefore still perceive bullying as a way of improving their self-perceptions.

Data used for this study come from grade 5, where students are mostly taught by one teacher throughout the academic year. The following school year, students often move to a new classroom with a different teacher, and in secondary schools, students even have different teachers for different subjects throughout the day or week. This could lessen the

impact of the teachers, but it is also possible that a positive relationship with one or two teachers is enough to buffer the negative impact of victimization on victims' self-esteem. Longitudinal data following a cohort of peers over a number of years with different teachers could provide further insight into the role of teachers.

A limitation of our study concerns the measurement of teachers' self-efficacy, which was measured using general items concerning the reduction of aggressive behaviour, fostering cooperation between students, and facilitating friendships. Perhaps measuring teachers' self-efficacy using items measuring more specifically the reduction of bullying and the support of victims (e.g., Fischer & Bilz, 2019) would have led to stronger conclusions. Another measurement limitation concerns the one-item questions on bullying and victimization. Students were asked to report on a five-point rating scale to what extent they bullied others and were bullied by others, but they did not receive a definition of bullying beforehand. This might limit the validity of the measurement, as these 10-year-olds might vary in their understanding of bullying and might not always distinguish between bullying and teasing (Espelage & Holt, 2013; Kert et al., 2010)

Despite these limitations, the findings of this study show that teachers can have an impact on students' self-evaluations. The role of teachers' self-efficacy needs further research to investigate how it affects students' self-esteem. Teachers' positive relationships with victimized students might prevent these students from ending up in the vicious circle of having reduced self-esteem as a result of being victimized, leading to increasing risks of persistent victimization.

Data availability

Disclosure statement

Funding

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Ethical approval

The Internal Review Board of the University of Nijmegen has approved data collection procedures, sociometric data collection, and an intervention, according to the Dutch ethical standards applicable in 2012.

Highlights

- Bullying and victimization related negatively to students' self-esteem;
- Teachers' self-efficacy was linked to lower self-esteem only in bullies;
- Student-teacher relationship related negatively to bullies' self-esteem;
- Student-teacher relationship related positively to victims' self-esteem.

Informed consent

Active informed consent was obtained from the parents/guardians of all individual children who participated in the study, and directly from the teachers who participated in the study.

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Appendix 1 Student self-esteem

NL	EN
1 = Ik ben vaak ontevreden over mijzelf[a]	1 = I am often dissatisfied with myself (R)
2 = Ik vind de manier waarop mijn leven gaat niet zo fijn[a]	2 = I do not like the way my life goes (R)
3 = Ik ben tevreden met de persoon die ik ben	3 = I am pleased to be the person I am
4 = Ik ben gelukkig met het soort kind dat ik ben	4 = I am happy to be the kind of child I am
5 = Ik ben erg blij met hoe ik ben	5 = I am very glad to be who I am
6 = Ik vind de manier waarop ik veel dingen doe niet goed[a]	6 = I disapprove of the way I do most things (R)

Answer categories: Five-point Likert scale with 1'completely false' and 5 'completely true'

Appendix 2 Self-efficacy Teacher

NL	EN
Hoeveel vertrouwen heeft u erin dat u ertoe kunt bijdragen dat . . .	How confident are you that you can contribute to . . .
1 = . . . de leerlingen in uw klas minder agressief gedrag vertonen?	1 = . . . your students showing less aggressive behaviour?
2 = . . . de leerlingen in uw klas beter samenwerken en elkaar meer helpen?	2 = . . . your students being better in cooperating and helping each other?
3 = . . . een leerling met weinig vrienden meer vriend(inn)en krijgt?	3 = . . . a student with few friends forming more friendships?
4 = . . . twee leerlingen in uw klas elkaar aardiger gaan vinden?	4 = . . . two students from your classroom liking each other more?

Answer categories: Seven-point Likert scale with 1'not confident' and 7'fully confident'Items used for '
Our school is OK!' project, based on: Tschannen–Moran and Hoy (2001). Teacher efficacy: Capturing an
elusive construct. Teaching and teacher education, 17(7), 783-805.

Appendix 3 Student-Teacher Relationship

NL	EN
1 = Leerkracht is vriendelijk	1 = The teacher is friendly
2 = Als leerkracht iets belooft, doet hij/zij het ook	2 = If the teacher promises something, they will act accordingly
3 = Leerkracht is gemeen	3 = The teacher is mean(R)
4 = Als er iets is, kun je het aan leerkracht vertellen	4 = If something worries you, you can tell the teacher.

Answer categories: Five-point Likert scale with 1'never' and 5'always'
Reference: Wubbels, T., Brekelmans, M., den Brok, P., & van Tartwijk, J. (2015). An Interpersonal Perspective on Classroom Management in Secondary Classrooms in the Netherlands. In C. M. Evertson & C. S. Weinstein (Eds.), Handbook of Classroom Management (1st ed., pp. 1161–1191). Routledge. https://doi.org/10.4324/9780203874783.ch45

Appendix 4 Full Table 2. Multilevel analysis

	Model 1			Model 2			Model 3			Model 4			Model 5			Full Model		
	b	Se	p	b	se	p	b	se	p	b	se	p	b	se	p	b	se	p
Intercept	4.43	0.03	<.001	4.43	0.03	<.001	4.42	0.03	<.001	4.42	0.03	<.001	4.43	0.03	<.001	4.43	0.03	<.001
Bully	-0.11	0.02	<.001	-0.11	0.02	<.001	-0.11	0.02	<.001	-0.11	0.02	<.001	-0.11	0.02	<.001	-0.12	0.02	<.001
Victim	-0.25	0.02	<.001	-0.25	0.02	<.001	-0.25	0.02	<.001	-0.25	0.02	<.001	-0.25	0.02	<.001	-0.25	0.02	<.001
TSE[a]	-0.00	0.02	.500	0.04	0.03	.065	-0.01	0.03	.351	-0.01	0.02	.618	-0.00	0.02	.467	0.02	0.04	.265
S-T Relationship[a]	0.19	0.03	<.001	0.19	0.03	<.001	0.19	0.03	<.001	0.23	0.03	<.001	0.13	0.04	<.001	0.16	0.04	<.001
Girl	-0.13	0.03	<.001	-0.14	0.03	<.001	-0.13	0.03	<.001	-0.13	0.03	<.001	-0.13	0.03	<.001	-0.14	0.03	<.001
Bully*TSE[a]				-0.09	0.03	.001										-0.10	0.03	.170
Victim*TSE[a]							0.01	0.02	.352							0.02	0.02	.170
Bully*S-T Relation[a]										-0.07	0.03	.006				-0.09	0.03	.005
Victim*S-T Relation[a]													0.04	0.02	.028	0.05	0.02	.010
Variance Student-level	.410	.015		.408	.015		.410	.015		.409	.015		0.409	0.015		0.405[c]	0.015	
Variance Class-level	.000	.000		.000	.000		.000	.000		.000	.000		0.000	0.000		0.000	0.000	
Deviance difference[b]				-9.01 (p = .003)		df = 1	-0.20 (p = .65)		df = 1	-3.97 (p = .046)		df = 1	-4.20 (p = .040)		df = 1	-19.77 (p < .001)		df = 4

[a]Centered variables were used in the analysis; [b]Decrease in deviance is based on comparison with Model 1; [c]Explained variance in relation to empty model was $R^2 = (.526-.405)/.526)*100 = 23.0\%$