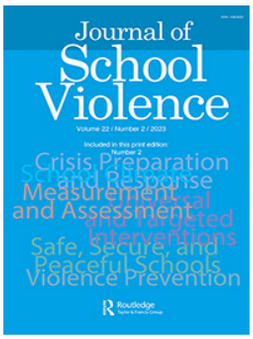

Journal of School Violence

ISSN: (Print) (Online) Journal homepage: https://www.tandfonline.com/loi/wjsv20

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To cite this article: Mattias Kloo, Robert Thornberg & Linda Wänström (2023) Classroom-Level Authoritative Teaching and Its Associations with Bullying Perpetration and Victimization, Journal of School Violence, 22:2, 276-289, DOI: 10.1080/15388220.2023.2180746

To link to this article: https://doi.org/10.1080/15388220.2023.2180746

Published online: 20 Feb 2023.

JOURNAL OF SCHOOL VIOLENCE
2023, VOL. 22, NO. 2, 276–289
https://doi.org/10.1080/15388220.2023.2180746

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Classroom-Level Authoritative Teaching and Its Associations with Bullying Perpetration and Victimization

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ABSTRACT

The aim of the present study was to investigate and clarify the association between authoritative teaching at the classroom level and bullying perpetration and victimization among Swedish upper elementary school students. For this purpose, authoritative teaching was analyzed both as combined construct, and as the effects of the two dimensions that characterize authoritative teaching (i.e. structure and support). In all, 1,522 students (M_{age} = 10.54 SD = 0.35) from 110 classrooms completed a questionnaire in their classrooms. The findings from the multilevel regression analyses showed that students in classrooms with less authoritative teachers engaged more in bullying behaviors and were more often victimized. When authoritative teaching was divided into structure and support, only teacher support showed a significant negative association with bullying perpetration and victimization.

ARTICLE HISTORY
Received 1 June 2022
Accepted 26 January 2023

KEYWORDS
Bullying; victimization; authoritative teaching; teacher support; teacher structure; classroom

From a young age, most children spend a large part of their weekdays at school, away from their home and usual caregivers. As children start school, a considerable portion of their time is spent not only mastering academic skills, but also developing socially as they play, talk, and interact with their peers, more or less under the supervision and guidance of their teachers. In this peer context, bullying may arise. *Bullying* is often defined, in accordance with Olweus's (1986) definition, as when one or more individuals, repeatably and over time, are subjected to negative acts, usually understood as aggressive and unwanted, and where the perpetrator(s) hold more power than their target.

Social-ecological theory (Bronfenbrenner, 1979) states that bullying is a social phenomenon produced by a complex interplay between individual and contextual factors (Hong & Espelage, 2012; Swearer & Hymel, 2015). In this theory, the *microsystem* refers to contexts with which individuals have direct contact (Bronfenbrenner, 1979). In the school setting, the two most immediate microsystems are student-teacher interaction and the peer group at the classroom level. Teachers occupy a unique position that grants them a special opportunity to affect students' relationships with and behavior toward one another (Bouchard & Smith, 2017; Jennings & Greenberg, 2009). This relationship between how teachers interact with students in the classroom and how students interact with each other in the peer group is an example of what social-ecological theory calls the mesosystem (Bouchard & Smith, 2017). *Mesosystem* refers to the interrelation or interaction between components of different microsystems (Bronfenbrenner, 1979). In the current study, we focus on the mesosystem by examining whether students' involvement in bullying is associated with teachers' degree of authoritative teaching.

The concept *authoritative teaching* has its roots in Baumrind's (1966) seminal work on parenting styles. Baumrind's (1966, 2013) posited that parents could and should make use of their authority and

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power as adults, given that they do so while simultaneously showing support and always with their child's best interests at heart, to help their child develop into a well-functioning and healthy adult. This translated into parents who not only showed warmth and support, but also employed strict discipline and fair rules developed and adjusted in concert with their children. These two aspects of parenting were operationalized as two orthogonal dimensions, representing the parent's degree of demandingness and responsiveness. Only those parents who scored high on both dimensions were dubbed authoritative (Baumrind, 1966, 2013), which has been linked with a range of positive outcomes (Pinquart, 2016, 2017 Pinquart & Kauser, 2018 Wong et al., 2021).

While this theory concerns parents and childrearing, researchers have pointed out the similarity between parents and teachers in their mission of promoting the positive development and learning of their children and students (e.g., Walker, 2009; Wentzel, 2002). In the authoritative teaching and school literature, two key concepts are structure and support (e.g., Bear, 2020; Gregory et al., 2010). *Structure* refers to the degree to which teachers present clear and high expectations, monitor student behavior, enforce rules fairly and consistently, and establish and maintain order (i.e., demandingness). *Support*, in turn, refers to the degree to which teachers build positive and close relationships with their students; are warm, caring, and supportive of students; and teachers' responsiveness to students' needs and concerns (i.e., responsiveness). In authoritative teaching, structure and support are both high and act in combination, which has been found to be associated with greater academic engagement and achievement (Konold et al., 2017, 2018) and fewer mental health problems (Cornell & Huang, 2016; Lau et al., 2018), less truancy (Keppens & Spruyt, 2019), and less violence and bullying among students (Cornell & Huang, 2016; Cornell et al., 2015; Fisher et al., 2018; Gerlinger & Wo, 2014; Gregory et al., 2010; Konold et al., 2017; Lau et al., 2018).

Teachers who combine warmth and responsiveness (support) with reasonable, fair, and rational control (structure) are expected to be more effective as socialization agents than teachers who are low in support, structure, or both. As Berk (2019) puts it, "children are far more likely to comply with and internalize control that appears fair and reasonable, not arbitrary" (p. 272). Furthermore, it is more likely that students will listen to and cooperate with teachers who they perceive as warm, caring, respectful, and supportive out of respect and to maintain their positive relationships with them (Bear, 2020). Authoritative teaching also provides models for caring, respectful, responsive, and self-regulated behavior. Thus, it could help increase the quality of inter-student relationships by providing a positive role-model for students and establishing safer, more supportive classroom climates.

A positive (i.e., warm, caring, close and supportive) student-teacher relationship is an essential part of the supportive dimension of authoritative teaching (Bear, 2020). According to previous research, positive student-teacher relationship quality is associated with less bullying perpetration and victimization (for a meta-analysis, see ten Bokkel et al., 2022), and more defending (Jungert & Piroddi, 2016; Sjögren et al., 2021). However, whereas the vast majority of these studies have examined the student-teacher relationship quality at the individual level, less is known about whether a positive student-teacher relationship quality at the classroom level is related to bullying perpetration and victimization. A few studies have been conducted and either found it to be linked to less bullying perpetration (Dietrich & Cohen, 2021) and victimization (DiStasio et al., 2016; Thornberg, Wänström, Pozzoli, et al., 2018) or unrelated to bullying perpetration (DiStasio et al., 2016; Košir et al., 2020; Thornberg et al., 2022) or victimization (Košir et al., 2020; Thornberg et al., 2022).

In addition, while studies investigating the association between antisocial behaviors and a wider authoritative approach on the school level (the so-called "authoritative school climate") often combine the two dimensions of structure and support into a more general authoritative measure (e.g., Cornell & Huang, 2016; Gerlinger & Wo, 2014), studies where they have been included separately have revealed interesting yet inconclusive results. In their study of Virginian high school students, Gregory et al. (2010) found lower rates of both teacher and peer reported bullying as well as self-reported victimization to be associated with higher scores on both dimensions, with support generally having a greater impact than structure. However, in a similar study among Virginian freshman students, Cornell et al. (2015) found the reverse to be true. There, authoritative structure outperformed support, which in

turn had a smaller regression coefficient or showed a non-significant association with different types of student victimization. The seemingly contradictory results notwithstanding, these two studies reveal the complexities of authoritative climates and the necessity of looking at each dimension to discover what really "works" in any given context.

Additionally, while there is merit in examining the climate of entire schools, in several countries (including Sweden, where the present study took place), students at elementary school (where Swedish students are approximately 7 to 13 years old) usually remain in a single formal group in the same grade (school year), organized by the school for the full school day or most of the courses. These units of students are often stable across multiple years, and it is within these units that students spend most of their schooldays, making them their primary arena for socialization for years at a time. Furthermore, these units of students stay in a single room for most subject lessons, with one or only a few teachers responsible for them (hereinafter these constellations are referred to as classrooms). As the primary adult authority within these classrooms, teachers become role-models and could, through their relationships with students, classroom management and teaching style, have a considerable effect on the social climate, norms, relationships, and behaviors within their respective classroom group of students (cf., Bear, 2020; Emmer & Sabornie, 2015). Thus, and in addition to previous studies on authoritative school climate and bullying, further research is needed to examine whether authoritative teaching at the classroom level (which represents a more direct and proximal microsystem than school level) is associated with bullying perpetration and victimization. Although studies have found a significant between-classroom variation in bullying (Coelho & Sousa, 2018; Salmivalli et al., 2011), research on authoritative teaching at the classroom level is scarce.

As far as we know, only two studies (Thornberg, Wänström, & Jungert, 2018; Wang et al., 2022) have examined the link between authoritative classroom climate and bullying victimization. The findings showed that students in classrooms with less authoritative climates were victimized to a higher degree. However, bullying perpetration was not included in the analyses, and the authoritative classroom climate was measured with items on teacher support, teacher structure, and student support, both averaged together (i.e., Thornberg, Wänström, & Jungert, 2018) and as separate variables (i.e., Wang et al., 2022). Further research, therefore, needs to single out student support to examine whether authoritative teaching (teacher structure and teacher support) is linked with less bullying perpetration and victimization. Likewise, research on the association between bullying and authoritative teaching or authoritative school climate has tended to focus on older students (e.g., Cornell et al., 2015; Gerlinger & Wo, 2014; Gregory et al., 2010), leaving the effects on elementary school students under-researched.

The present study

The aim of the present study was to investigate and clarify the association between authoritative teaching at the classroom level and bullying perpetration and victimization among Swedish upper elementary school students. For this purpose, the study analyzed authoritative teaching as a combined construct, but also the effects of both of the dimensions that characterize authoritative teaching (i.e., structure and support), and their potential interaction effect. This second method allowed us to more closely examine the degree to which each of these two authoritative dimensions – together with the interaction effect – each contribute to mitigating bullying.

Two main hypotheses were formulated. First, since previous research in the field of authoritative school climate has shown a negative association between authoritative climate and bullying, the same was hypothesized to be true when narrowed to authoritative teaching at the classroom level, for both bullying perpetration and victimization. Second, as the authoritative parenting literature frequently points out the importance and complementary effects of the two authoritative dimensions (Baumrind, 1966, 2013), this study also expected to find a negative interaction between the two effects as they pertain to bullying (i.e., scoring high on both dimensions would be associated with even less bullying perpetration and victimization).

Finally, as previous research has been inconclusive in terms of the effects of each of the authoritative dimensions at school level, and no study – to our knowledge – has attempted to parse out the effects of each of the authoritative dimensions at the classroom level, two exploratory analyses were conducted, one for bullying perpetration and one for victimization, each including structure and support separately. However, due to the lack of previous research, this analysis was given an exploratory examination and was thus conducted without any a priori hypothesis. Gender at individual level and the proportion boys at the classroom level were included as control variables. In accordance with previous meta-analyses (Cook et al., 2010; Mitsopoulou & Giovazolias, 2015), we hypothesized that being a boy would be linked with greater bullying perpetration, while gender would be unrelated to bullying victimization.

Method

Participants

To focus on young students, the data for this study consisted of the first wave of data collection for a longitudinal study that took place when the participants were in the fourth grade. Strategic sampling techniques were adopted to ensure a heterogenous sample. These included targeting schools from various socioeconomic areas, as well as including schools from different socio-geographic areas (from rural areas to mid-sized and large cities). A total of 2,408 Swedish students from 116 different classrooms at 74 schools were initially invited to participate in the study. Of these students, 1,522 (63.2% of the original sample; 782 girls, $M_{age} = 10.54$ $SD = 0.35$) from 110 classrooms ($M_{size} = 20.46$, $SD = 6.42$) at 71 schools were included in the final sample. Participation rates within classrooms varied from 31.8 to 100% with a mean participation rate of 69.2%. Most student exclusions ($n = 782$) were due to a lack of parental consent (the parents did not actively decline participation, but simply omitted to respond to the request to participate), while a few students did not participate because they were absent at the time of data collection. Additionally, 104 students were excluded due to either not completing all the scales used in this study or failing to save and submit their answers after finishing.

Procedure

The participants completed a web-based questionnaire in their ordinary classrooms. The questionnaire was introduced by either a member of the research team or a teacher who also instructed the participants, and who remained present throughout the session in order to answer questions and provide help (e.g., by giving reading support or by explaining and clarifying questionnaire items). The average completion time for the questionnaires was 30 minutes. Ethical approval was obtained from the Regional Ethical Review Board in Linköping before the study was conducted (dnr: 2015/110–31).

Measures

Gender

Gender was included at both the individual and classroom level. On the individual level, participants were asked whether they identified as either a boy or a girl (boy = 0; girl = 1). On the classroom level the proportion of boys was calculated based on class list from the respective schools.

Bullying perpetration and victimization

Two similar 11-item self-report scales developed in Sweden were used to measure bullying perpetration (Bjärehed et al., 2020) and bullying victimization (Thornberg, Wänström, & Jungert, 2018). In the bullying perpetration scale, the participants were asked, "Think about the past 3 months: How frequently have you done the following in school to someone who is weaker or less popular?" The

victimization scale started off similarly, but with the phrasing reversed to be about being victimized in school. In both cases this was followed by 11 items, each outlining different types of bullying behavior (three items relating to verbal bullying, three to relational bullying and five to physical bullying). Participants then reported how often they had engaged in or been subjected to each of these bullying behaviors on a five-point scale, ranging from 1 = *I have not done it at all/has not happened to me* to 5 = *several times a week*. Thus, the scales include all the aspects of bullying (i.e., negative acts, power imbalance, and repetition) without the need to refer to it as "bullying." After the data collection, mean scores were calculated for bullying perpetration and victimization (Cronbach's α = .87 and .89, respectively).

Authoritative teaching

To measure authoritative teaching, we used two subscales from the Authoritative Classroom Climate Scale (Thornberg, Wänström, & Jungert, 2018): (a) teacher support, which consists of four items (e.g., "our teachers really care about the students," "our teachers really give the students good help and support"), and (b) teacher structure, which consists of four items (e.g., "our teachers bring order and undisturbed working atmosphere in the classroom," "our teachers make clear demands on students"). Participants were asked to rate the extent to which they agreed with different statements along a 7-point scale, from 1 = *strongly disagree* to 7 = *strongly agree* (Cronbach's α = .84, .75, and .87, for teacher support, for structure, and as a combined measure, respectively). Furthermore, as this questionnaire was intended to measure class-level variables, the response from each classroom was pooled and a mean classroom-score was calculated for each subscale and the combined variable.

Scale transformation of dependent variables

Since reported bullying behavior was relatively rare within our sample, the scales for the dependent variables were severely skewed with a skewness and kurtosis of 3.95 and 24.81 for bullying perpetration and 1.82 and 7.25 for victimization, respectively. To deal with this problem, the scales were all natural-log transformed in an attempt to reduce skewness. Although this reduced skewness, it did not solve the issue entirely. After the transformation, skewness and kurtosis were still 2.95 and 14.46 for bullying perpetration and 1.24 and 4.18 for victimization, respectively.

Analytic strategy

Because the students who participated in the study were nested in different classrooms and the study sought to investigate classroom-level variables (i.e., authoritative teaching, teacher support, and teacher structure), multilevel models were used. Two multilevel analyses were conducted for each of the response variables bullying perpetration and victimization (both natural-log transformed).

The analysis was conducted in four steps. In the first step, an unconditional model with only a random intercept was fitted:

$$y_{ij} = \alpha_j + \varepsilon_{ij}$$

$$\alpha_j = \alpha + \nu_j$$

where y_{ij} is the log-transformed bullying perpetration or victimization score for individual i in classroom j, α_j is the intercept for classroom j, ε_{ij} is the individual residual, α is the mean intercept across classrooms, and ν_j is the residual for classroom j. The unconditional model was used both to estimate the variance between classrooms and to act as a baseline for later models.

In the second step the two gender-based control variables (i.e., the gender of the student and the proportion of boys in the class) were added to the model (Model 1):

$$y_{ij} = \alpha_j + \beta_1 Gender + \varepsilon_{ij}$$

$$\alpha_j = \alpha + \gamma_1 Prop.boys + \nu_j$$

where β_1 is the regression slope for gender and γ_1 is the slope for the proportion of boys in each classroom.

In the third step, we tested two diverging models by first including authoritative teaching as a combined variable to test the first hypothesis of the study (Model 2a):

$$y_{ij} = \alpha_j + \beta_1 Gender + \varepsilon_{ij}$$

$$\alpha_j = \alpha + \gamma_1 Prop.boys + \gamma_2 Authoritative\ teaching + \nu_j$$

and then by breaking down the variable into its two dimensions (i.e., teacher structure and teacher support), and the interaction effect between the two, and entering them separately for both the investigation of the second hypothesis of the study (relating specifically to the interaction term) as well as the exploratory part of the study. However, due to the interaction term turning out to not be significant and is therefore not reported. This resulted in the final model (Model 2b):

$$y_{ij} = \alpha_j + \beta_1 Gender + \varepsilon_{ij}$$

$$\alpha_j = \alpha + \gamma_1 Prop.boys + \gamma_3 Teacher\ structure + \gamma_4 Teacher\ support + \nu_j$$

where γ_2, γ_3, and γ_4 are classroom regression slopes based on teacher structure and support scores in each classroom, respectively. All analyses were conducted using RStudio (Version 1.4.1106) and the *lme4* and *lmerTest* packages.

Results

Descriptive statistics

The individual variables for bullying perpetration and victimization were positively correlated ($r = .46$, $p < .001$). Means and standard deviations for these variables are presented in Table 1. As shown, the students reported, on average, low levels of bullying perpetration ($M = 1.15$) and victimization ($M = 1.54$). Furthermore, boys had a higher mean for bullying perpetration compared to girls ($p < .001$). However, no such difference was found with regard to victimization ($p > .05$).

Table 2 shows bivariate correlations, means, and standard deviations for the classroom variables. As shown, the proportion of boys within a classroom was not significantly correlated with any other classroom-level variable. Bullying perpetration and victimization at the classroom level were strongly correlated with one another (we interpreted significant correlation coefficients from 0.10 to 0.29 as weak, from 0.30 to 0.49 as moderate, and 0.50 and above as strong – see Cohen, 1988), meaning that classrooms where students reported more bullying also reported more victimization. Likewise, teacher structure and teacher support were strongly correlated. Thus, classrooms that rated their teachers high on warmth,

Table 1. Individual levels of bullying perpetration and victimization, means, standard deviations, and gender comparisons.

	Total		Girls		Boys			
	M	*SD*	*M*	*SD*	*M*	*SD*	*t*	*d*
Perpetration	1.15	0.29	1.11	0.23	1.18	0.34	4.68***	0.24
Victimization	1.53	0.57	1.54	0.60	1.51	0.55	0.85	0.04

Note. Means and standard deviations are based on the untransformed variables. *t*-value and Cohen's *d* are based on the natural-log transformed variables.
***$p < .001$.

Table 2. Classroom-level variable correlations, means and standard deviations.

	1	2	3	4	5	6	*M*	*SD*
1. Prop. boys	-	.06	.03	−.17	−.16	−.18	0.52	0.11
2. Perpetration		-	.53***	−.27**	−.24*	−.27**	1.15	0.12
3. Victimization			-	−.49***	−.49***	−.52***	1.54	0.24
4. Teacher structure				-	.77***	.95***	5.81	0.50
5. Teacher support					-	.93***	6.34	0.48
6. Authoritative teaching						-	6.07	0.44

Note. Classroom level means and standard deviations are based on untransformed variables. In the classroom-level bivariate correlations, bullying perpetration and victimization variables are classroom means based on natural-log transformed variables, while the other variables are classroom means based on untransformed variables.
*$p < .05$, **$p < .01$, ***$p < .001$.

responsiveness, caring, and support tended to rate their teachers high on demandingness and on enforcing rules and classroom order. To make sure the multicollinearity issues were not a problem, VIF values for teacher structure and teacher support were examined using the *car* package in RStudio. The VIF values were 2.87 and 2.80 respectively, suggesting that multicollinearity would not be a severe problem in models that included both variables. Finally, teacher structure and teacher support, as well as the combined measure authoritative teaching, were weakly to moderately negatively correlated with bullying perpetration and moderately to strongly negatively correlated with victimization. In other words, bullying perpetration and victimization were less common in classrooms where teachers displayed more authoritative teaching in terms of warmth/support and demandingness/structure.

Multilevel analyses

The results from analyses of the unconditional models – models 1, 2a, and 2b for bullying perpetration and victimization – are shown in Table 3 and 4, respectively. Model coefficient estimates, standard errors, and results from likelihood ratio tests are presented.

Bullying perpetration

Analysis of the unconditional model of bullying perpetration showed that 5.5% of the total variance in bullying perpetration could be found between classrooms. The addition of the two gender control variables in Model 1 significantly improved the model fit (see Likelihood ratio test, $p < .001$). However,

Table 3. Estimates and standard errors from multilevel regression analysis for bullying perpetration.

	Unconditional		Model 1		Model 2a		Model 2b	
Perpetration	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	Se
Intercept	.758***	.004	.771***	.004	.773***	.005	.773***	.005
Child level								
Gender			−.025***	.006	−.026***	.006	−.025***	.006
Classroom level								
Prop. boys			.020	.035	−.004	.033	−.003	.033
Auth. teaching					−.035***	.008		
T. structure							−.005	.012
T. support							−.033*	.015
Random effects								
Intercept	.0007		.0007		.0005		.0005	
Residual	.0120		.0118		.0118		.0118	
AIC	−2343.6		−2360.6		−2374.9		−2374.1	
Likelihood ratio test			$\chi^2(2) = 21.02$***		$\chi^2(1) = 16.28$***		$\chi^2(2) = 17.45$***	

Note. $N = 1522$. Gender (boys = 0, girls = 1). The likelihood ratio test for Model 1 compared Model 1 with the unconditional model, while the tests for Models 2a and 2b were both compared to Model 1. Prop. boys = Proportion of boys; Auth. teaching = Authoritative teaching; T. structure = Teacher structure; T. support = Teacher support. All variables except gender were grand-mean centered.
* = $p < .05$, *** = $p < .001$.

Table 4. Estimates and standard errors from multilevel regression analysis for bullying victimization.

	Unconditional		Model 1		Model 2a		Model 2b	
Victimization	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	Se
Intercept	.908***	.008	.915***	.009	.907***	.008	.907***	.008
Child level								
Gender			−.013	.010	−.012	.010	−.012	.010
Classroom Level								
Prop. boys			.048	.072	−.024	.063	−.023	.063
Auth. teaching					−.109***	.016		
T. structure							−.043	.023
T. support							−.067*	.028
Random effects								
Intercept	.0043		.0044		.0024		.0024	
Residual	.0357		.0357		.0357		.0357	
AIC	−640.37		−638.28		−674.32		−672.57	
Likelihood ratio test			$\chi^2(2) = 1.91$		$\chi^2(1) = 38.04$***		$\chi^2(2) = 38.29$***	

Note. $N = 1522$. Gender (boys = 0, girls = 1). The likelihood ratio test for Model 1 compared Model 1 with the unconditional model, while the tests for Models 2a and 2b were both compared to Model 1. Prop. boys = Proportion of boys; Auth. teaching = Authoritative teaching; T. structure = Teacher structure; T. support = Teacher support. All variables except gender were grand-mean centered.
* = $p < .05$, *** = $p < .001$.

only the individual gender variable was significant in indicating that girls were less likely to engage in bullying perpetration than boys.

The addition of the authoritative teaching variables in Model 2a (authoritative teacher) and 2b (teacher structure and teacher support) also significantly improved the model fit ($p < .001$ for both variants). The combined measure of authoritative teaching in Model 2a showed a significant negative association with bullying perpetration. Thus, students in classrooms with less authoritative teachers engaged more in bullying behaviors. The addition also reduced the unexplained variance between classrooms by 28.7 to 31.1% (1-(0.0005129/0.0007190) = 0.2866481; 1-(0.0005129/0.0007190) = 0.3109875, for Model 2a and 2b respectively). Model 2b showed that, when authoritative teaching was divided into structure and support, only teacher support ($p = .030$) was significantly associated with bullying. In other words, students in classrooms where teachers were more caring, warm, responsive, and supportive engaged less in bullying perpetration.

Bullying victimization

Analysis of the unconditional model for victimization showed that 10.8% of the variance in bullying victimization was found between classrooms. The addition of the gender control variables did not significantly improve the model fit, and neither the gender variable nor the proportion of boys within the classroom were significantly associated with bullying victimization.

The addition of the authoritative teaching variables in Model 2a and 2b did, however, significantly improve model fit ($p < .001$ for both variants), and cut the amount of unexplained variance between classrooms nearly in half (1-(0.002388/0.004339) = 0.449643; 1-(0.002415/0.004339) = 0.4434201, for Model 2a and 2b respectively). The combined measure for authoritative teaching had a significant negative association with bullying victimization. Thus, students in classrooms with less authoritative teachers were more often victimized. Like with bullying perpetration, when authoritative teaching was divided into structure and support, only teacher support showed a significant negative association with bullying victimization ($p = .018$). Hence, students in classrooms with teachers who were high in warmth, caring, responsiveness, and supportiveness were less often bullied by their peers.

Discussion

In accordance with social-ecological theory (Bronfenbrenner, 1979), and Bouchard and Smith's (2017) call for the need for mesosystem-level analyses, this study examined the possible interplay between two proximal microsystems in the everyday school context. The findings showed that how teachers approach and interact with students was related to bullying perpetration and victimization in the peer group. In other words, these two microsystems were interrelated in their influence on bullying. As hypothesized, the present findings revealed that the prevalence of bullying perpetration and victimization were lower in classrooms with teachers who scored higher in authoritative teaching, measured as a combination of teacher structure and teacher support (Model 2a). This result was consistent with previous studies that have found that bullying is negatively associated with an authoritative school climate (Cornell & Huang, 2016; Gerlinger & Wo, 2014) and an authoritative classroom climate (Thornberg, Wänström, & Jungert, 2018; Wang et al., 2022), and adds to these findings by more specifically revealing the role of the teacher in this classroom setting.

Despite authoritative teaching being negatively associated with both bullying perpetration and victimization, the study did not find a significant interaction between the two authoritative dimensions. Our second hypothesis, which – based on authoritative parenting literature (Baumrind et al., 2010; Baumrind, 1966, 2013) – posited that the dimensions would interact and show an even greater negative association with bullying perpetration and victimization, was thus not supported. This may be largely due to both the high correlation between the two dimensions and the fact that the students in the sample tended to rate their teachers as high on both structure and support with little variation. This could mean that most teachers in the study could be considered authoritative, or at least close enough to achieve comparable results (Pinquart, 2016, 2017; Pinquart & Kauser, 2018; Wong et al., 2021).

The present study found teacher support to be the driving factor behind the negative association between authoritative teaching and both bullying perpetration and victimization. This is in line with the research conducted by Gregory et al. (2010), who likewise found this to be the case, but not with Cornell et al. (2015), who found the opposite to be true. However, when comparing the results, it should be noted that this study not only surveyed a younger population (Swedish 4th graders as opposed to US middle- and high-school students) but also looked more specifically at the role of the teacher in a classroom context as opposed to an authoritative school climate. Our findings also contribute to research on student-teacher relationship quality and its link to bullying (ten Bokkel et al., 2022); in particular the few studies examining the classroom level where findings have been inconsistent (Dietrich & Cohen, 2021; DiStasio et al., 2016; Košir et al., 2020; Thornberg et al., 2022; Thornberg, Wänström, Pozzoli, et al., 2018). While our findings support the idea that warm, caring, and supportive teaching at the classroom level should be a part of bullying prevention, future research is needed to examine possible mediators and moderators. For example, some studies suggest that student-student relationship quality at the classroom level has to be considered as it mediates the link between student-teacher relationship quality at the classroom level and bullying (Dietrich & Cohen, 2021; Thornberg, Wänström, Pozzoli, et al., 2018), which further demonstrates how the mesosystem between student-teacher interactions in the classroom and how students treat each other in the peer group affects bullying prevalence (cf., Bouchard & Smith, 2017).

While both teacher support and teacher structure were significantly and negatively correlated with bullying perpetration and victimization in the classroom-level bivariate correlation analyses, when included together in the same model, only teacher support was found to be significantly linked to bullying perpetration and victimization. However, we should recognize that the teachers in the sample were, on average, rated high on structure. The provided structure may therefore have been largely sufficient for most teachers to avoid the trap of being overly permissive, with additional degrees of structure then showing diminishing returns (Baumrind et al., 2010). Alternatively, despite authoritative teachers aiming to encourage child autonomy in the long term (Baumrind, 2013; Walker, 2009),

in the short term the requirement of implementing structure and rules comes with a risk of triggering psychological reactance in those affected (i.e., intentionally doing the opposite of what one is told to do, with the aim of hindering or reclaiming a perceived loss of freedom; Van Petegem et al., 2015). Thus, being "too strict" (i.e., scoring high on structure) may sometimes have the opposite of the intended effect among a subset of students who are more prone to reactance (Van Petegem et al., 2015). As such, reactance could perhaps partly cancel out any of the positive effects that additional structure may provide, both in terms of classroom level rule adherence and through increased bullying in the absences of the teacher (e.g., Elledge et al., 2013).

The fact that teacher support had a greater negative association with both bullying perpetration and victimization further speaks to the idea of authoritative teachers' potential to shape the classroom climate and how their students behave toward each other (Walker, 2009; Wentzel, 2002) by acting as a warm, caring, responsive, and supportive teacher in their daily interactions and relationships with their students (Bouchard & Smith, 2017; Jennings & Greenberg, 2009). Even though teacher support primarily operates in the mesosystem our findings suggest that this is the most important component in authoritative teaching as part of bullying prevention. While this study cannot answer exactly how this shaping happens or how teacher support is associated with bullying, there are several possible explanations. For example, although students lack the necessary authority to properly model the behavior of a highly structured teacher, they have the ability to mimic and learn how to be more attentive, caring, and kind, perhaps making teacher support more influential on the classroom climate and students' social behavior.

Additionally, as supportive teachers assist and encourage their students and promote a sense of school belongingness through positive, warm, and supportive teacher–student relationships (Allen et al., 2018), they may simultaneously decrease some of the "needs" students may have to bully. Frustration, boredom, and lacking a sense of belongingness have all been identified as reasons why students may engage in bullying (Underwood & Ehrenreich, 2014; Vasileia et al., 2017; Yoneyama & Naito, 2003). These reasons can all be potentially alleviated by a warm, responsive, and caring teacher who offers support to struggling students and influences the whole classroom to become more prosocial, caring, supportive, and cohesive (Jennings & Greenberg, 2009).

Furthermore, when students experience their teacher as supportive, they may be more likely to report their victimization to them, helping these teachers to effectively intervene against it. According to a study by Bauman et al. (2016), when students who had been subjected to peer-mistreatment were asked whether different types of interventions had made the situation better or worse, those reported as most effective were interventions characterized by a supportive and caring attitude (e.g., listening to the student and checking up on them afterward). For these reasons, along with previous studies having found that victimization is generally less likely to happen in classrooms characterized by a positive, caring, and supportive climate (Dietrich & Cohen, 2021; Thornberg et al., 2017, 2022), teachers need to lead classrooms in that direction.

Limitations

A few limitations should be addressed. First, because this study had a cross-sectional design, we are unable to pinpoint the direction of effects. Although our findings suggest that teachers may prevent and lower the prevalence of bullying perpetration and victimization within their classroom through more authoritative teaching and classroom management, it is also possible that the direction could be reversed or that the variables mutually affect each other. Future studies would therefore benefit from a longitudinal design to examine the directionality over time.

Second, despite Baumrind's (1966, 2013) theory of parenting styles (and by extension teaching styles; Walker, 2009; Wentzel, 2002) which emphasizes the importance of providing both structure and support (i.e., authoritative parenting/teaching), with problems occurring primarily when both or either dimension is low, very few participants and classrooms in this study rated their teachers as low on either. This may mean that this study mainly ended up comparing relatively authoritative teachers

(who scored high in both structure and support) against each other, leading to smaller differences that require more statistical power to detect and with results that may not be generalizable to classrooms where teachers score low on one or both dimensions. Taken together with the high correlation between teacher structure and support, this may be the reason why the present study was unable to discover any effects of teacher structure on bullying.

Third, as the data for bullying perpetration and victimization were based on self-reports, the results may have been affected by social desirability, self-censure, perception, and recall biases, including intentionally exaggerated responses. Despite the efforts made to decrease the risk of social desirability and self-censure biases and to increase sincere and accurate reports on bullying and victimization (e.g., promising participant confidentiality and not using the word "bullying" in the bullying scales), the negative behavioral descriptions in the scale (Guerra et al., 2011) may still have led to both being underreported.

Similarly, not wanting to think ill of or badmouth their teacher, courtesy, loyalty, and social desirability biases may have led some of the participants to rate their teacher more favorably than they deserve. However, if this occurred, the effects would be somewhat mitigated by averaging the teacher-related variables across the whole class. Still, using a multi-method approach – in which self-reports are complemented with peer-reports on bullying perpetration and victimization – and classroom observations on teaching could help minimize this type of problem further, and would be recommended for future studies.

Lastly, despite attempts to represent schools from different societal contexts (e.g., by including schools from areas with different degrees of socioeconomic status and urbanization), we studied students in the fourth grade and from specific areas in Sweden. Our sample may or may not be similar to the population of students with whom readers primarily work or in which they have an interest. Thus, replications from other countries, school systems, and age groups would help create a fuller understanding of how authoritative teaching or classroom management is linked with bullying perpetration and victimization. Likewise, as the participation rate of this study was 63.2% the result may be affected by selection bias and some important student characteristics may have been underrepresented potentially leading to both over- and underestimation of the association between variables.

Practical implications

Despite the limitations, the results of this study helped elucidate the effects authoritative teaching may have on the prevalence of bullying among students. This study demonstrated that 5.5% and 10.8% of the variance in bullying perpetration and victimization respectively was due to classroom-related factors, and that a large portion of this variation could be explained by authoritative teaching, particularly in terms of warmth, caring, responsiveness, and supportiveness. Naturally, authoritative teaching is not the sole solution to ending bullying, but – bearing in mind the myriad factors that can play a part in creating and enabling bullying, as described in social-ecological theory (e.g., Bronfenbrenner, 1979; Hong & Espelage, 2012; Swearer & Hymel, 2015) – they certainly seem to play an important role. Furthermore, given the ubiquity and severity of the issue at hand, even small improvements – such as teachers being more authoritative – could potentially save countless students from experiencing the trauma of being bullied by their classmates and all the destructive repercussions this entails.

Moreover, considering that authoritative teaching benefits students' social, cognitive, and academic development (Cornell & Huang, 2016; Cornell et al., 2015; Gerlinger & Wo, 2014; Gregory et al., 2010; Wentzel, 2002), it also has the potential to reduce bullying while simultaneously improving the life of students more generally. Thus, teachers can consciously choose to act as a promotive and a preventive factor at the same time. However, because of this wider purview and the greater aim to create a positive classroom climate and relationships with students that not only promote academic learning, but also promote well-being and prosocial development while preventing and reducing violence, harassment,

and bullying, this assignment is not a quick fix but rather a continuous, persistent, and determined effort on the part of schools and teachers.

Being a teacher is, however, frequently stressful and demanding, and building genuine warm and supportive relationships with a diverse group of students while also establishing a safe structure within the classroom necessarily requires social-emotional competencies, as well as considerable work and emotional investment (Jennings & Greenberg, 2009; Smith & Whitley, 2022). Both teacher training programs and in-service professional development programs must address teachers' need to develop their social-emotional competencies – including self-awareness, self-management, responsible decision-making, social awareness, and relationship skills – to reduce distress and improve their wellbeing, student-teacher relationships and classroom management skills (Smith & Whitley, 2022)

Disclosure statement

No potential conflict of interest was reported by the author(s).

Funding

The work was supported by the Vetenskapsrådet [D0775301].

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