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Longitudinal links of authoritative teaching and bullying victimization in upper elementary school

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ABSTRACT

The aim of the present study was to investigate whether authoritative teaching at the classroom-level was associated with bullying victimisation, and how this association evolved over the course of upper elementary school (i.e. in grades 4 through 6) by estimating whether the association declined with time. Data came from the first three waves of an ongoing longitudinal project examining social and moral correlates of school bullying. Survey data were analysed from 1,830 students. Multilevel analyses showed that teachers who displayed high levels of warmth, caring, and supportiveness together with high levels of structure, control, and demand- ingness tended to have students who reported less bullying victimisation. This association between authoritative teaching at the classroom-level and bullying victimisation, while still significant, decreased over the course of the two-year study.

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authoritative teacher;
classroom management;
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School bullying, usually defined as repeated aggression towards a less powerful student, is best understood as a social phenomenon that is influenced by school characteristics (Hong & Espelage, 2012; Saarento et al., 2015). According to the social-ecological model rooted in Bronfenbrenner's (1979) seminal work, bullying emerges and is sustained by the ongoing interplay between individual and contextual factors (Hong & Espelage, 2012), where teachers at the classroom-level and the school-level can exacerbate or reduce bullying (Bouchard & Smith, 2017; Saarento et al., 2015). Bouchard and Smith (2017) argue that teachers are uniquely situated in students' school context to prevent bullying and that 'researchers and educators must recognize more fully teachers' role in children's bullying experiences' (p. 109).

Peer interactions at elementary school occur mainly within classroom units/groups. Because there is limited interaction across the different classroom units, differences in the classroom climate related to bullying emerge and become entrenched, leading to

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studies that can detect substantial between-classroom variation in bullying, accounting for approximately 7% of the total variance (Coelho & Sousa, 2018; Saarento et al., 2015; Salmivalli et al., 2011; Sjögren et al., 2020). Furthermore, Kärnä and colleagues (2011) found that this between-classroom variation, depending on how it was measured (e.g. by self- vs. peer-report), was comparable to – or even larger than – between-school variation.

The role of classroom teachers and authoritative teaching

In most countries, including Sweden, where the current study was conducted, elementary school students are divided into groups of approximately 15–30 classmates with whom they spend most of their school day, and with each classroom taught by only a few teachers, these teachers become an essential part of their respective classroom climates. The most significant teacher is the class teacher, who assumes the primary responsibility for their respective classrooms and deliver the majority of the lessons. In Sweden, they usually stay with the same students through the lower elementary school. A new class teacher is then assigned when students enter upper elementary school and stays with the classroom unit through this school level (grades 4–6). Teachers inherently have authority over their students given the hierarchical structure of elementary schools, where student behaviour is shaped by their teachers (Emmer & Sabornie, 2015). With reference to the social-ecological framework, Hughes et al. (2014) argue that ‘as chief architects and managers of classroom contexts, teachers exert considerable influence on the classroom peer ecology’ (p. 309). When teachers are seen as trusted adults, this facilitates the establishment of a more positive and prosocial classroom climate in which bullying is less likely to occur (Bouchard & Smith, 2017).

One promising avenue to creating a classroom climate that deters bullying could be to adopt what the literature calls *authoritative classroom management* (Walker, 2009), *authoritative teaching style* (Wentzel, 2002), or just *authoritative teaching* (Ertesvåg, 2011; Hughes, 2002). Based on Baumrind’s (1966, 2013) influential work on parenting styles, authoritative teaching refers to teachers engaging in and managing their students in a manner that is simultaneously strict and emotionally supportive. In other words, authoritative teachers provide a combination of control/demandingness and warmth/responsiveness. They have high expectations and maintain order in the classroom by developing classroom rules in collaboration with the students early in the year and enforcing rules equitably and with the support of the students, while also showing genuine care, responding to students’ emotional needs, and being generally supportive (Ertesvåg, 2011; Hughes, 2002; Walker, 2009; Wentzel, 2002).

By adopting an authoritative teaching style, teachers repeatedly model warm, supportive, caring and respectful behaviours to their students. Through their classroom management and teaching, these teachers foster prosocial behaviour, prevent and firmly reduce antisocial behaviour, and promote a positive, caring and supportive classroom climate (Bear, 2020). In theory, they build close and trusting relationships with their students, while also consistently enforcing rules and order in a manner that increases students’ perceptions of school and classroom rules as clear, reasonable, and

fair. Students may, therefore, be more open and responsive to their teachers' efforts in enforcing rules and creating a caring and fair classroom community. This, in turn, serves to reduce antisocial, uncaring and aggressive behaviours, including bullying. Furthermore, and as Gregory et al. (2010) put it, 'when students feel that their teachers are caring and concerned, they are more likely to seek help' (p. 485). Accordingly, students who perceive their teachers as more supportive are more willing to seek help for bullying and threats of violence (Eliot et al., 2010). In addition, students who belong to classrooms where teachers show greater authoritative teaching are more inclined to defend victims and less prone to reinforce bullying when they witness it (Thornberg et al., 2018), and bullying victimisation is, in turn, lower in classrooms where students tend to defend victims and are less inclined to reinforce bullying (Nocentini et al., 2013; Salmivalli et al., 2011). Altogether, classroom contexts where teachers are more authoritative are expected to have students who display more pro-social behaviours and less antisocial and aggressive behaviours like bullying.

Most studies have been cross-sectional and examined authoritative climate at the school level and showed that higher level of authoritative school climate is associated with lower levels of fighting, teasing, bullying, and other aggressive behaviours in school (Cornell et al., 2015; Cornell & Huang, 2016; Fisher et al., 2018; Konold et al., 2017). However, considering the between-classroom variation in bullying, and the fact that the classroom-level represents a more approximate microsystem with a more direct influence on students than the overall school climate, further research is needed to examine whether authoritative teaching at the classroom-level is also linked to bullying victimisation. To date, only a few cross-sectional studies have examined this link, and the findings revealed that students in classrooms with more authoritative classroom climates were less frequently bullied (Thornberg et al., 2018; Wang et al., 2022). Based on the theoretical model on authoritative teaching and previous studies, we hypothesised that students belonging to classrooms where teachers are more authoritative are less likely to be targets of bullying and, thus, score lower in bullying victimisation.

Social and developmental challenges to bullying prevention during adolescence

Teachers' influence on student behaviour may decline as students enter early adolescence when peer relationships and adolescent culture increase in impact, and they strive for autonomy and seek to establish unique identities that differentiate them from their parents and other adults (Laursen & Veenstra, 2021). For example, Knoll and colleagues (2015) found that children younger than 12 years old were more influenced by adults, whereas 12- to 14-year-old adolescents were more influenced by their peers in risky situations. Similarly, LaFontana and Cillessen (2010) found that at ages 11 to 14, adolescents were becoming more likely to choose popularity over priorities that were more traditionally encouraged by adults, such as rule adherence, compassion, and athletic and academic achievement – a trend that culminated at ages 15 to 18.

All these concurrent developments have been shown to pose a problem for anti-bullying in general. A meta-analysis by Yeager et al. (2015) showed that although

antibullying programs were initially successful in reducing bullying among younger students, they begin to lose their effectiveness over the course of adolescence. As such, similar potentially positive antibullying effects from authoritative teaching may decrease as students grow older. Despite these developmental changes and the potential waning impact of teacher practices on the social lives of their students, teachers inevitably can still influence student attitudes and behaviours through the sheer number of hours they spend together at school. However, it is not clear whether authoritative teaching's association with bullying in classrooms decreases as youth matriculate into higher grade levels. Therefore, there is a need to examine the longitudinal association between authoritative teaching at the classroom-level and bullying victimisation across early adolescence.

Present study

The present study had two specific aims. First, the study aimed to investigate whether authoritative teaching at the classroom-level was associated with bullying victimisation among students in upper elementary school grade levels (grades 4–6). In Sweden, upper elementary school grade levels represent early adolescence as these students are approximately 10 to 13 years old. Second, the study aimed to examine how the association between authoritative teaching at the classroom-level and bullying victimisation evolved over the course of upper elementary school (i.e., in grades 4 through 6) to estimate whether the association declined with time.

Because previous cross-sectional research on the effect of authoritative schools and classroom climate has shown authoritative climates to be less conducive to bullying (e.g. Cornell et al., 2015), a negative association between authoritative teaching and bullying victimisation was hypothesised. However, as this study focused on early adolescence when there is a gradual shift away from adult authorities as influencers towards peers, it was also hypothesised that this negative association between authoritative teaching and bullying victimisation would weaken as students grow older.

Finally, considering the inconsistent findings regarding gender differences pertaining to victimisation – with no differences having been found in previous meta-analyses (Cook et al., 2010; Mitsopoulou & Giovazolias, 2015), but a more recent large-scale cross-cultural study including several countries finding that boys tended to be more frequently bullied than girls (Smith et al., 2019) – gender was added as a control variable in all analyses.

Method

Participants

The current study is part of a longitudinal project examining the social and moral correlates of bullying in schools (e.g. Bjärehed et al., 2021; Sjögren et al., 2020; Thornberg et al., 2019). However, the larger project's sample of 117 classrooms included 12 mixed-grade classrooms, which were excluded from this study due to both their rarity and their annual compositional change. This initial exclusion led to a sample of 2,314

students (1,114 [48%] girls and 1,200 [52%] boys) from 105 suitable fourth-grade classrooms in 63 schools, who were initially invited to participate in this study. Socioeconomic data were not gathered at an individual-level. Instead, the percentage of students' caretakers with university degrees at each school was used as a proxy for the school's neighbourhood socioeconomic status. The selection of the schools was strategic, in that our sample included students from socioeconomically and socio-geographically diverse sites in Sweden.

The present study followed a group of Swedish upper elementary school students from grade 4 through 6 (in Sweden, students typically enter grade 4 when they are 10 years old). Three waves of data were collected over a two and a half year period, with one initial wave of data collection (Time 1: school year 2015/2016) followed by two additional annual waves of data collection (Times 2 and 3: school years 2016/2017 and 2017/2018, mean number of months between data collections = 12.15, $SD=2.03$). Parental consent and student assent were obtained for each participant prior to their entry into the study. Parental consent rates were 74% at Time 1 (T1), 68% at Time 2 (T2), and 65% at Time 3 (T3). Students who did not have parental consent or were absent on the day of data collection (T1 = 7%, T2 = 2%, and T3 = 3%), and students who did not complete all scales used in the present study (T1 = 4%, T2 = 2%, and T3 = 0%) were excluded from the current study.

Although most students remained in the same classroom across grades 4–6, some changed classrooms. Furthermore, a few classrooms were reorganised between data collections, and both individual students and entire classrooms joined late or dropped out early from the study. Therefore, to avoid counting individual students multiple times and to ensure a higher degree of independence between classrooms in the analyses, decisions about which data to retain were made. That is, for students who switched classrooms between data collection waves, only data from the classroom they attended the longest (or in case of a tie, their most recent classroom, to counteract attrition) was used (e.g. if a student attended the same classroom during 4th and 5th grade but switched for 6th grade, only data from the two first waves were used). All in all, students were excluded at various waves as a result of their switching classrooms (T1 = 6%, T2 = 1%, and T3 = 6%). In addition, 0.7% of students changed their reported gender over the course of the study or did not report their gender at all ($N=13$). As this sample size did not allow for statistical analyses for this group, they were excluded from the analyses.

The final analytic sample who completed the questionnaire at least one wave consisted of 1,830 students (53% girls and 47% boys). Most of the participants (79%) had a Swedish ethnic background (i.e. were born in Sweden and had at least one Swedish-born parent), while a minority (21%) had a foreign background (i.e. were born in another country and/or both parents were born in another country). Of the 1,830 participants, 809 (44%) participated in all three waves of data collection, 711 participated twice (39%), and 310 participated once (17%). Thus, we analysed data from 1,316 students (mean age = 10.56, $SD=0.35$, girls = 52%) from T1, 1,547 students (mean age = 11.55, $SD=0.33$, girls = 53%) from T2, and 1,296 students (mean age = 12.58, $SD=0.35$, girls = 53%) from T3. For a more detailed breakdown regarding participation and exclusions, see [Table 1](#).

Table 1. Within-wave sample descriptions.

	T1	T2	T3
Participating schools	63	64	64
Parental university education rate by school (range and mean)	22–89% (53.09%)	23–90% (55.31%)	28–91% (56.70%)
Participating classrooms	94	105	95
Original sample size	2314	2448	2351
Received parental consent	1719	1663	1529
Misc. exclusions	403	116	233
Final participants	1316	1547	1296

Note: T1 = Time 1, T2 = Time 2, T3 = Time 3. Misc. Exclusions include students who were absent/did not give consent ($n = 163, 40$, and 65 for T1, T2 and T3 respectively), students who did not provide any answers on the relevant scales ($n = 86, 39$, and 6), students who did not fill individual items ($n = 0, 2$, and 0), students who switched classrooms and, to ensure independence between classrooms, were counted there instead ($n = 145, 22$, and 149), and students who reported inconsistent gender ($n = 9, 13$, and 13).

Procedure

Data for the study were collected using a web-based questionnaire that the participating students filled out in their regular classrooms using either their own computer or tablets provided by the university. Either a member of the research team or a teacher was present throughout the session to explain the study procedure and assist participants with any questions or concerns: for example, by clarifying questionnaire items or providing reading support. The average completion time for the questionnaire was 30 min. Approval from the Regional Ethical Review Board was obtained before the study was conducted.

Measures

Bullying victimization

The present study used an 11-item self-report bullying victimisation scale (Thornberg et al., 2018). The participants were asked: “Think about the past 3 months: How frequently have one or more students who is stronger, more popular, or more in charge in comparison to you done the following things towards you?” followed by 11 items describing different forms of bullying behaviour. Participants then rated how frequently they had been subjected to each behaviour along a 5-point Likert-type scale that ranged from 1 (*has not happened to me*) to 5 (*several times a week*) (Cronbach’s $\alpha = .89, .90$, and $.90$, and McDonald $\omega = .90, .90$, and $.90$ for each respective wave).

Authoritative teaching

The degree to which students viewed their teachers as authoritative was measured using two subscales from the Authoritative Classroom Climate Scale (Thornberg et al., 2018), each containing four items measuring *teacher support* (responsiveness/warmth) and *teacher structure* (control/demandingness), respectively. Both subscales consisted of statements (e.g., ‘our teachers really care about the students’ and ‘our teachers make clear demands on students’ for teacher support and teacher structure, respectively), which participants rated along a 7-point Likert-type scale ranging from 1 (*not at*

all accurate) to 7 (*very accurate*), corresponding to the degree to which they found the statements to be accurate. Although these subscales provided separate values for each of the two dimensions of authoritative teaching (i.e. responsiveness and control), a high correlation between the two ($r = .69, .76, .74$, for each respective wave) raised concerns about multicollinearity. As such, the subscales were merged to create a general authoritative teaching variable. This conceptualisation was supported by a one-factor CFA showing acceptable fit at wave 1 (CFI = 0.947, RMSEA = 0.064 (90% CI = .053–.075), SRMR = 0.036, $\chi^2(20) = 127.049$), wave 2 (CFI = .955, RMSEA = 0.074 (90% CI = 0.064–.083), SRMR = .032, $\chi^2(20) = 187.373$), and wave 3 (CFI = .960, RMSEA = .069 (90% CI = 0.058–.079), SRMR = 0.031, $\chi^2(20) = 142.151$) along with adequate Cronbach's α and McDonald's ω estimates (Cronbach's $\alpha = 0.83, 0.88$, and 0.86 and McDonald's $\omega = 0.83, 0.88$, and 0.86 for each respective wave). Finally, because these items measure a classroom-level variable (i.e. how the classroom collectively views their teacher), a mean score for each classroom was calculated from the answers of all participating students within that classroom.

Analytic strategy

Multilevel models were used given this was a longitudinal study that investigated the effect of a classroom-level variable on the evolution of bullying victimisation over a 2-year period among participants nested in different classrooms. More specifically, for the longitudinal analysis, a three-level multilevel analysis was conducted for each of the independent variables. In these models, the first level represented the singular observations from each of the three data collection waves, the second level represented each individual participant over the course of the study, and the third level represented each classroom and how they evolved over time. The intercept and time slope coefficients were allowed to vary across both individuals and classrooms.

As such, the analyses were conducted in five steps. After first fitting an empty model containing nothing but residuals for each level, a model adding the time variable as both a fixed and a random-effect was fitted (Model 1):

$$y_{ijk} = \alpha + \beta_1 \text{Time}_{ijk} + \nu_{jk} \text{Time}_{ijk} + \nu_{jk} + v_k + \varepsilon_{ijk}$$

where y_{ijk} represents the bullying victimisation score at data collection point i , for individual j , in classroom k . α is the mean intercept across the whole analysis. The regression slope for the time variable consists of a fixed part represented by β_1 and a random part represented by ν_{β_1jk} which refers to the residual for individual j in classroom k . Finally, ε_{ijk} , $\nu_{\alpha jk}$, and v_k represent, in turn, the residual within participants between timepoints, the residual between individuals in the same classroom, and the residual between classrooms.

In the third step, the gender control variable was added to the second level of the model (Model 2):

$$y_{ijk} = \alpha + \beta_1 \text{Time}_{ijk} + \nu_{jk} \text{Time}_{ijk} + \beta_2 \text{Gender}_{jk} + \nu_{jk} + v_k + \varepsilon_{ijk}$$

where β_2 represents the fixed regression slope for the gender control variable.

In the fourth step of the analysis, the authoritative teaching variable (which was centred around the grand mean) was added as a fixed effect (Model 3):

$$y_{ijk} = \alpha + \beta_1 \text{Time} + \nu_{jk} \text{Time}_{ijk} + \beta_2 \text{Gender}_{jk} + \beta_3 \text{Authoritative teaching}_{ik} + \nu_{jk} + v_k + \varepsilon_{ijk}$$

where β_3 represents the fixed regression slope for the classroom authoritative teaching variable. Finally, in the fifth step of the analysis, an interaction effect between authoritative teaching and the time variable was added (Model 4):

$$y_{ijk} = \alpha + \beta_1 \text{Time}_i + \nu_{jk} \text{Time}_{ijk} + \beta_2 \text{Gender}_{jk} + \beta_3 \text{Authoritative teaching}_{ik} + \beta_4 \text{Authoritative teaching}_{ik} \cdot \text{Time}_{ijk} + \nu_{jk} + v_k + \varepsilon_{ijk}$$

where β_4 represents the regression slope for the interaction between the classroom authoritative teaching variable and the time variable.

Model fit was estimated through likelihood ratio tests in between each step of the analyses to evaluate whether the added variables made significant explanatory contributions to the model. Apart from the step which added the gender control variable, each step made a significant contribution, and thus all models are presented in the result section.

For the study's cross-sectional analyses, a two-leveled simplified version of the above multilevel analysis was conducted, which omitted the time variable entirely, for each respective wave. As all analyses had an identical structure, they are presented together. Here, the first-level represents each individual student, and the second level represent each classroom, both at their respective waves.

These analyses were conducted in three steps. After first fitting empty models for each wave containing no independent variables and only a random residual for each level, models adding the control variable gender were fitted:

$$y_{ij} = \alpha + \beta_1 \text{Gender}_{ij} + \nu_j + \varepsilon_{ij}$$

where y_{ij} represents the victimisation score for individual i in classroom j . α is the over-all intercept for all classrooms in the study. β_1 represents the effect of the gender variable at the individual level. Finally, ε_{ij} and ν_j each represent the individual residual and the classroom residual, respectively.

In the third step of the cross-sectional analyses, the authoritative teaching variable was added:

$$y_{ij} = \alpha + \beta_1 \text{Gender}_{ij} + \beta_2 \text{Authoritative teaching}_j + \nu_j + \varepsilon_{ij}$$

where β_2 represents the classroom regression slope for the authoritative teaching variable.

All analyses were conducted in RStudio (Version 1.4.1106) using the lme4 and lmerTest packages.

Results

Descriptive statistics and gender and between-wave differences

As is shown in Table 2, bullying victimisation was generally low across all waves, only reaching a mean of 1.50–1.54 out of 5. It should, however, be noted that 38.2–40.2% of the respondents across data collection waves reported a value of 3 or higher on at

Table 2. Means (M), Standard Deviations (SD), and gender differences of bullying victimisation and individual authoritative teaching ratings at each wave.

	Total		Boys		Girls		<i>t</i>	<i>d</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
Victimisation T1	1.53	0.58	1.52	0.55	1.54	0.60	0.58	0.03
Victimisation T2	1.54	0.62	1.53	0.63	1.55	0.60	0.75	0.04
Victimisation T3	1.50	0.58	1.50	0.63	1.49	0.53	0.33	0.02
Auth. Teaching T1	6.09	0.88	6.09	0.87	6.08	0.90	0.25	0.01
Auth. Teaching T2	5.73	1.12	5.80	1.11	5.67	1.13	2.37*	0.12
Auth. Teaching T3	5.59	1.04	5.63	1.09	5.55	1.06	1.49	0.08

Note: *t*-test = Welch two sample.

Table 3. Pairwise correlations between the variables.

	Vic T1	Vic T2	Vic T3	Auth T1	Auth T2	Auth T3
Vic T1		0.53***	0.36***	−0.35***	−0.24***	−0.22***
Vic T2	0.57***		0.50***	−0.28***	−0.33***	−0.27***
Vic T3	0.36**	0.53***		−0.16***	−0.21***	−0.32***
Auth T1	−0.56***	−0.26*	−0.06		0.47***	0.37***
Auth T2	−0.33**	−0.46***	−0.11	0.54***		0.57***
Auth T3	−0.30**	−0.36***	−0.17	0.45***	0.71***	

Note: Correlations at the individual-level above the diagonal and correlations at the classroom-level below the diagonal. Vic = bullying victimisation; Auth = authoritative teaching; * $p < .05$; ** $p < .01$; *** $p < .001$.

least one item (i.e. reported being targeted by one or more bullying behaviours at least two times a month). Furthermore, although we included gender as a variable in the analyses, there was no significant differences among boys and girls at any of the data collection waves. In contrast, there were high ratings on the authoritative teaching variable that decreased over time. Table 3 shows bivariate correlations, means, and standard deviations for the victimisation and authoritative teaching variable at each wave, both at the individual and the classroom level. At the individual-level, all concurrent and longitudinal correlations were significant ($ps < .001$). This was also the case at the classroom-level, apart from that between victimisation at T3 and authoritative teaching at any time point.

Finally, comparisons between waves using the Friedman test and Wilcoxon signed rank test for victimisation, and one-way repeated measure ANOVA and paired sample *t*-tests for authoritative teaching revealed significant differences over time, at both the individual- and classroom-levels. While there were no differences in victimisation at the classroom-level over the course of the study, individual-level victimisation showed a significant increase between T1 and T2 ($p < .001$) but no significant differences between either T2 and T3 or T1 and T3. Conversely, for authoritative teaching a significant decrease was found between each wave at both the individual- and the classroom-levels ($ps < .001$).

Longitudinal multilevel analysis

The results from the longitudinal multilevel analyses for the study are presented in Table 4, including coefficient estimates, standard errors, and likelihood ratio tests for model comparisons.

Table 4. Longitudinal multilevel regression modelling for bullying victimisation.

	Model 1			Model 2			Model 3			Model 4		
	Estimate	SE		Estimate	SE		Estimate	SE		Estimate	SE	
Intercept	1.529***	0.023		1.519***	0.026		1.569***	0.025		1.584***	0.025	
Level 1												
Time	0.004	0.014		0.005	0.014		−0.047**	0.014		−0.050***	0.014	
Level 2												
Gender												
Level 3												
Auth. Teacher				0.019	0.023		0.017	0.023		0.018	0.023	
Interaction							−0.186***	0.022		−0.272***	0.032	
Time * Auth. Teaching												
Random Effects												
Individual	Intercept	Time		Intercept	Time		Intercept	Time		Intercept	Time	
Classroom	0.1554	0.0080 (−.14)		0.1553	0.0080 (−.14)		0.1587	0.0206 (−.18)		0.1593	0.0108 (−.18)	
Residual	0.0341	0.0093 (−.57)		0.0343	0.0093 (−.57)		0.0226	0.0076 (−.52)		0.0220	0.0064 (−.50)	
AIC	0.1689			0.1688			0.1645			0.1638		
Likelihood ratio test	6701.2			6702.5			6638.2			6625.8		
				$\chi^2(1) = .69$			$\chi^2(1) = 66.39***$			$\chi^2(1) = 14.35***$		

Note: Correlation between intercept and time variances is shown in brackets after the variance of time slope under random effects. ** $p < .01$; *** $p < .001$.

First, interclass correlations (ICCs) were calculated for victimisation based on an analysis of the empty longitudinal model. This analysis revealed that while most of the variance in victimisation was attributed to either personal variation ($\sigma_v^2 = .1486$; ICC = .417) or residual variance ($\sigma_e^2 = .1837$), a smaller but still considerable portion could be attributed to classroom variation ($\sigma_b^2 = .0240$; ICC = .067). Second, although there is no significant association between time and victimisation in Model 1, based on the negative correlation between the random time slope and the random intercepts, a higher initial victimisation rate for both participants and classrooms was associated with a steeper negative time slope and vice versa. This implies that victimisation rates among participants tended to converge over time.

Next, the addition of gender in Model 2 did not significantly improve model fit (see likelihood ratio test, $p > .05$), nor did gender have any significant association with victimisation. However, and as hypothesised, the addition of the authoritative teaching classroom variable to Model 3 did improve model fit ($p < .001$) and revealed a significant negative association between authoritative teaching and victimisation, as well as between time and victimisation. In other words, students in classrooms with a more authoritative teacher experienced less victimisation, and in classrooms with the same level of teaching authoritativeness, students experienced less victimisation over time. Compared to Model 2, Model 3 also decreased the remaining classroom intercept variance by 34.15%, variance due to the random time slope notwithstanding ($1 - 0.022566/0.034270 = .3415232$).

Finally, in Model 4, an interaction term between authoritative teaching and time was added, which improved model fit ($p < .001$). However, unlike the previous fixed effects, this interaction proved to have a significant positive association with victimisation, which indicated that although authoritative teaching by itself decreased victimisation, the effect lessened as the students matriculated through higher grades.

Follow-up cross-sectional multilevel analyses

To further elucidate the connection between authoritative teaching and victimisation over time and to give a more granular view of the association at each grade, three additional multilevel analyses were conducted – one for each of the data collection

Table 5. Within-wave cross-sectional multilevel regression modelling for bullying victimisation.

	Fourth Grade		Fifth Grade		Sixth Grade	
	Estimate	SE	Estimate	SE	Estimate	SE
Intercept	1.611***	0.030	1.511***	0.027	1.482***	0.031
Child Level						
Gender	0.028	0.031	0.040	0.031	−0.001	0.032
Class Level						
Auth. Teaching	−0.296***	0.049	−0.184***	0.035	−0.105*	0.046
Rand. Effect						
With Auth. T. vs.	Without	With	Without	With	Without	With
Without Auth. T.	Auth. T.	Auth. T.	Auth. T.	Auth. T.	Auth. T.	Auth. T.
Intercept	0.0335	0.0184	0.0323	0.0211	0.0327	0.0305
Residual	0.3005	0.3001	0.3519	0.3512	0.3067	0.3065
ICC	0.1000		0.0822		0.0964	

Note: ICC based on empty models. Portion of intercept variance explained by authoritative teaching based on grade: 44.92%, 34.76%, 6.82% * $p < .05$; *** $p < .001$.

waves in the study. The final multilevel models, ICCs, and the random effect variance with and without authoritative teaching for each wave, are presented in [Table 5](#).

These analyses showed that the ICC was generally stable throughout the study, fluctuating right above 9% and going from 10.0% at grade 4 ($0.03338/(0.03338 + 0.30048) = 0.09998203$) to 8.2% at grade 5 ($0.03155/(0.03155 + 0.35250) = 0.08215076$) and 9.64% at grade 6 ($0.0327/(0.0327 + 0.3064) = 0.09643173$). In addition, authoritative teaching had a significant negative association with victimisation at each of wave, confirming that more authoritative teaching coincided with less victimisation in the participating classrooms, in every grade. However, importantly, the effect of this negative association grew weaker at each successive grade. By comparing the proportion of classroom variance explained by authoritative teaching at each grade, authoritative teaching explained less variation in victimisation over time: explaining 44.92% ($1 - 0.01844/0.03348 = 0.4492234$) of variance in grade 4 to 34.76% ($1 - 0.02108/0.03231 = 0.3475704$) in grade 5, and finally drastically dropping to 6.82% ($1 - 0.03047/0.0327 = 0.06819572$) by grade 6. No significant association between gender and victimisation was found in any of the analyses.

Discussion

While there is a growing body of cross-sectional studies demonstrating that school contexts characterised by more authoritative teaching have lower rates of bullying victimisation (Cornell & Huang, 2016; Huang & Cornell, 2016; Wang et al., 2022), the present study was the first to investigate the longitudinal association between authoritative teaching at the classroom-level and bullying victimisation among early adolescents attending upper elementary schools in Sweden.

In accordance with the first hypothesis, we found that teachers who displayed high levels of warmth, caring, and supportiveness together with high levels of structure, control, and demandingness tended to have students who reported less bullying victimisation in their classrooms. Thus, our findings support the theoretical model of authoritative teaching (Ertesvåg, 2011; Hughes, 2002; Wentzel, 2002), rooted in Baumrind's (1966) seminal work on parental styles, assuming that authoritative teaching is a protective factor that decreases the risk of bullying victimisation and other adverse outcomes among students. While previous research has shown that greater authoritative teaching is related to less bullying victimisation at the schoolwide level (e.g. Cornell & Huang, 2016; Huang & Cornell, 2016), only a few studies have examined and demonstrated the link at the classroom-level (Thornberg et al., 2018; Wang et al., 2022), despite the fact that bullying perpetration and victimisation significantly vary across classrooms (Coelho & Sousa, 2018; Kärnä et al., 2011; Salmivalli et al., 2011; Sjögren et al., 2020).

The current study further contributes to the literature by adopting a longitudinal approach to examine the link between authoritative teaching at the classroom-level and bullying victimisation. Consistent with the second hypothesis of the study, this association, while still significant, decreased over the course of the 2-year study. These findings add to previous research by highlighting the importance of classroom-level factors. Furthermore, compared to earlier research where these factors accounted for

approximately 7% of total variance (e.g., Coelho & Sousa, 2018; Kärnä et al., 2011; Salmivalli et al., 2011), the variance explained in the current study was closer to 9%. While similar, this slightly higher variance explained may be due to our choice of using a bullying victimisation measure that did not explicitly mention “bullying” but instead queried about actual behaviours experienced. Given the negative stigma associated with bullying, the omission of bullying in the measure might have led to more truthful endorsement of student experiences with bullying (Modecki et al., 2014). This, in turn, allowed a higher rate of between-classroom variance to be detected. Additionally, this study also showed the importance of the classroom teachers and their association to the prevalence of bullying in their respective classrooms (their authoritative disposition initially accounting for 44.92% of classroom variance), while also revealing the limits of their influence, particularly over time.

Although there are many potential ways to understand the decrease in the association between authoritative teaching and victimisation, it is plausible to assume that developmental processes play a major role. As the students in the study progressed through early adolescence (grades 4–6), they likely experienced many gradual but major shifts in their development and in their understanding and impression of the social context of the classroom (Crone & Dahl, 2012). While parents, teachers, and other adults in general become less influential across early adolescence, friends, peers, and the broader peer group and adolescent culture become more dominant socialisation agents (Knoll et al., 2015; Laursen & Veenstra, 2021). Peer influence shapes the attitudes and norms prevalent in the peer group and in the classroom, which might be either pro- or antisocial (or a combination of the two; Laursen & Veenstra, 2021). This intensified peer influence brings with it a transfer of influence from teachers to classmates, and, may be the reason why the decrease in the explanatory power of authoritative teaching on victimisation (from 44.92% to 6.82% of classroom variance) did not come with a corresponding decrease in overall classroom variance (which stayed at around 9% of total variance).

Another plausible explanation pertains to the relatively stable social context experienced by the students in the study, who by the end had spent upwards of three years together with their classmates. In this context, once a social climate has been established and certain attitudes towards bullying have emerged, they may become harder to influence, thereby losing their association to the current authoritative teaching practices. Future studies could explore other social classroom factors which may develop more gradually. This could include factors such as collective moral disengagement (i.e. if classrooms find ways to morally justify bullying), or a climate defined by social comparisons and competition, all of which have previously been connected to classroom prevalence of bullying (Bjärehed et al., 2021; Di Stasio et al., 2016). Finally, while recognising the decline in the association between authoritative teaching and reduced bullying victimisation, the association still remained significant throughout, but to a lessening extent.

Limitations

A few limitations of the study should be addressed. First, data for this study were collected using student surveys, which may have affected the validity. As bullying

victimisation was based fully on self-reports, these responses were susceptible to social desirability, self-censure, and recall biases, as well as intentionally exaggerated responses. Although attempts were made to pre-empt most of these issues: for example, by both ensuring participants that their responses would remain confidential and avoiding using the term “bullying” in the bullying victimisation scale, they may still have led to underreporting and other biases. The same also goes for the authoritative teaching variable, albeit to a lesser extent, since – contrary to the victimisation variable – it consisted of a classroom mean that estimated their teachers’ authoritativeness rather than their own characteristics or behaviours. Still, biases such as perception, loyalty, or social desirability may still have led to some teachers, for example, receiving a slightly more favourable rating than they deserved. In future studies, these limitations could be offset by adopting multi-informant strategies where self-reports are complemented by peer-reports of victimisation and observational assessments of teachers. In relation to classroom observations, these could be guided by an observation protocol (cf., Westergård et al., 2019) and are often considered as a more objective measure of authoritative teaching, although we recognise that collecting reliable and valid observations are often time-consuming and expensive.

Second, while a longitudinal study design allows researchers to see the temporality of effects, it does not directly imply causation, and as such, we cannot conclusively state that authoritative teaching reduces victimisation or that students growing older necessarily leads to reduced teacher influence. Rather, the causation for the first association might, for example, be reversed, where less disruptive classrooms allow teachers the time and energy to act more authoritatively. The causation might also be reciprocal, or the concurrent and longitudinal associations between the two variables might be a result of other individual and contextual variables. Although conclusively establishing causation may be difficult without adopting an experimental design, future longitudinal studies could utilise more frequent data collections, thereby allowing for a more nuanced examination of temporal order effects to further test the theory of authoritative teaching and its associations with student outcomes.

Third, because the majority of participants in the study experienced being targeted by bullying behaviour very rarely if at all, the bullying victimisation variable used in the multi-level analyses emerged as severely skewed (skewness = 1.95, kurtosis = 7.85). Because this kind of skewness may lead to misleading results, two additional sets of analyses were conducted where, prior to the analyses, the victimisation variable was transformed, once by using natural-log transformation (skewness = 1.26, kurtosis = 4.43), then by dichotomising each victimisation item as 0 = *never happened to me* and 1 = *happened at least once*. The variable was then calculated as the sum of all victimisation items (range 0 – 11, skewness = 0.61, kurtosis = 2.32) (see Chen et al., 2020). However, regardless of how the variable was transformed, the interpretation of the results remained essentially identical and all significant associations were the same in each version.

Fourth, the fact that the model only contained a modest number of factors may be argued to be a limitation of the study. There exist a myriad of variables and possible mediating and moderating effects at the level of the individual, the peer group, the classroom, the school, or the neighbourhood. However, even though mapping and accounting for more complex relationships is possible to a certain degree, this was beyond the scope

of the present study. Finally, this study was conducted in Sweden and limited to a non-probability sample of upper elementary school students. The results should, therefore, be interpreted with caution when applied to different school systems. Replications in other countries, contexts, and age groups are needed to elucidate the association between authoritative teaching and victimisation more thoroughly.

Practical implications

With these limitations in mind, this study suggests that authoritative teaching should be considered as a vital component in bullying prevention at the classroom-level, especially among younger students, as teachers who provided a combination of high levels of disciplinary structure (control/demandingness) and emotional support (warmth/responsiveness) were found to have fewer problems with bullying victimisation in their classrooms. An authoritative teaching style was associated with less bullying over time, but the strength of this association weakened as the students became older. To impact bullying in these later years, teachers need to explore other avenues, such as, for example, staying informed about student groupings and individual relationships and working with them to avoid undue social friction when introducing group assignments (Audley-Piotrowski et al., 2015). As such, authoritative teaching may be considered a basic requirement in teachers' everyday school safety promotion and bullying prevention, but there is a need for additional school safety and antibullying components, particularly as youth enter mid-adolescence.

Considering the diminished effect of authoritative teachers on students over time, it will be critical for bullying prevention efforts to incorporate students more actively as change agents (e.g. peer as leaders). Although care should be taken here as relying on students to counteract bullying, if done incorrectly, has also been associated with increased victimisation (Gaffney et al., 2021). It would be critical not to 'mediate' bullying in a session that includes the bully and the victim, as this has been found to lead to increases in bullying in these dyads (Gaffney et al., 2021). Nevertheless, like authoritative parents, authoritative teachers and schools must engage in gradual and appropriate *autonomy granting* (Silk et al., 2003), particularly when students approach adolescence and shift their focus 'from dependency on adults to autonomy and relative self-reliance' (Gregory et al., 2010, p. 484). This can be done by encouraging students to express their thoughts, perspectives, and arguments, showing a willingness to accommodate to students' perspectives and increasing students' participation and engagement in joint decision-making processes. Accordingly, creating classroom rules in conjunction with students and involving them in group-based and in-class discussions during intervention activities have been identified as effective components of antibullying programs (Gaffney et al., 2021).

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Data availability statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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