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ORIGINAL ARTICLE

The Associations between Anti-Bullying Interventions and Bullying and Cyberbullying Rates in Albanian Schools

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Abstract

To tackle school bullying, teachers can implement school, class, parent, or individual level activities. Applying a socio-ecological model of development, the present study (1) investigates which prevention and intervention activities are implemented in Albanian schools according to teacher perspectives, and (2) examines how these teacher-reported activities are associated with bullying and cyberbullying rates reported both by teachers and students. Representative data in schools all over Albania were collected via a stratified sampling procedure to select schools and a random sample method to select teachers and students. In total, 144 schools serving grades 4 to 12 and 3560 teachers (81% female) and 2377 students (54% girls) participated. The teachers indicated which school, class, parent, or individual level activities have been implemented in their school by answering a 14-item self-report. Both teachers and students reported the bullying and cyberbullying rates in their schools by answering an Olweus-type questionnaire. Multilevel confirmatory factor analysis and multilevel structural equation modeling on school level was applied to answer the research questions. Remarkably, the teacher and student perspectives regarding bullying and cyberbullying rates were not significantly correlated. Higher bullying and cyberbullying rates reported by teachers were significantly associated with higher levels of individual level activities, but with lower levels of class level activities. There were no associations between teacher reported intervention strategies and student reported bullying and cyberbullying rates. The study has major implications for the anti-bullying work in Albanian schools.

Keywords Teacher · Bullying · Cyberbullying · Bullying prevention · Multi-level SEM

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Bullying is a major problem in schools around the world and teachers have an important role for prevention and intervention (De Luca et al., 2019). Applying a socio-ecological model of development (Bronfenbrenner, 1979), teachers can implement prevention and intervention measures on the school, class, parent, and individual levels. Whole school anti-bullying programs usually comprise various measures on different socio-ecological levels (Menesini & Salmivalli, 2017). Because specific whole school anti-bullying programs combine certain measures on different socio-ecological levels that are usually implemented together, to disentangle the applied measures from the specific anti-bullying program is rather difficult (Gaffney et al., 2021). Thus, based on longitudinal (quasi)experimental studies, it is still not fully understood which measures on different socio-ecological levels produce the strongest bullying reducing effects. However, even without implementing an anti-bullying program, schools might implement various anti-bullying interventions and these interventions might covary with the bullying and

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cyberbullying rates in these schools. The present study sheds light on this question (1) by assessing the implementation of a variety of anti-bullying measures in a large representative sample of Albanian schools according to teachers' perspectives and (2) by examining how the implemented measures on the school, class, parent, and individual levels are associated with bullying and cyberbullying rates in these schools perceived from both students' and teachers' perspectives.

Preventive and Interventive Strategies on Different Socio-Ecological Levels

In line with the classical definitions (e.g. Roland, 1989), we conceptualize bullying as a repeated, intentional subtype of aggressive behavior that is characterized by a power imbalance between the perpetrator(s) and the target who is not able to defend him- or herself. Bullying can be carried out via a large number of different types of direct or indirect behaviors both offline and online (Strohmeier & Gradinger, 2022) and is associated with a large number of negative consequences for all students involved (Salmivalli et al., 2021).

Many whole school anti-bullying programs comprise prevention and intervention measures on the school, class, parent, and individual levels (Menesini & Salmivalli, 2017). However, even without implementing a whole school anti-bullying program (like e.g., KiVa), schools can implement measures on different socio-ecological levels to prevent or combat bullying (Gaffney et al., 2021; Rigby, 2012) and there is an ongoing debate about which strategies should be recommended to schools.

When anti-bullying measures are implemented on the school level, activities are carried out that are likely to have an impact on *all* teachers and students in a school. These activities might comprise teacher trainings, the reorganization of the physical space, or a more effective supervision of students during recess times. Whole school anti-bullying programs usually consist of these or similar elements that are however implemented in different ways. While in Scandinavian anti-bullying programs teachers on duty wear high visible vests during recess times (Limber et al., 2018; Yun & Salmivalli, 2021), vests for teachers are a rather unusual measure of anti-bullying programs implemented in Central or South European countries (Strohmeier et al., 2021b). Overall, the presence of a whole school approach and anti-bullying policies were associated with larger effect sizes compared with their absence in the reduction of bullying rates in longitudinal (quasi)experimental studies when comparing the effectiveness of the presence or absence of components in different anti-bullying programs (Gaffney et al., 2021).

Class level measures are intended for specific classes and comprise a large variety of different contents that are usually implemented by the classroom teacher like for instance anti-bullying curriculum materials, class exercises, classroom discussions or class rules. In many anti-bullying programs (e.g., KiVa, ViSC), class level activities represent core program elements and teachers receive in-depth trainings and highly structured manuals to implement them with high fidelity (Herkama et al., 2022; Strohmeier et al., 2021a). Although there is an overlap in training content between different anti-bullying programs, class level activities usually vary considerably depending on the theoretical rationale of the program. For instance, only the KiVa program comprises an online game in which students are able to try out different bystander roles in bullying situations to find out which behavior helps most to improve the situation (Valenzuela et al., 2022). There is also evidence that teachers who implement program specific activities in their classes improve more regarding their attitudes and competences to combat bullying compared with teachers who only participate in the school level measures (Schultes et al., 2014). Overall, it was found that anti-bullying programs that included class rules were more effective in reducing bullying compared to programs in which this component was absent (Gaffney et al., 2021).

Some anti-bullying programs also comprise parent level activities, for instance when information about bullying is provided to parents, when parents are invited to school presentations, or when parents directly participate in the program (Solomontos-Kountouri et al., 2016). Low-threshold parent level activities seem to be highly beneficial, because programs that offer information for parents have larger effect sizes in the reduction of bullying rates compared to programs where this component was lacking (Gaffney et al., 2021).

Beside universal actions that comprise preventive measures on the school, class, and parent levels, indicated actions are different types of talks that are carried out by teachers on the individual level *after* a bullying incident has happened (Rigby, 2014). The question how teachers should best carry out these indicated actions received a lot of research attention (e.g., Burger et al., 2015; Salmivalli, 2023). When implementing the KiVa program in Finland within a large-scale randomized control trial, half of the schools were randomly assigned to either implement a confronting versus a non-confronting empathy raising approach to tackle ongoing bullying cases. Within this randomized control trial, the confronting versus the non-confronting approach were equally effective to stop bullying (Garandeau et al., 2014). When the program implementation was followed longitudinally over a period of six years, Finnish teachers were more likely to use the confronting approach and only rarely applied the non-confronting approach (Johander et al., 2021). This finding is in line with studies in which teachers were asked about their most likely reactions when presented with a

hypothetical bullying case (Burger et al., 2015; Kollerová et al., 2021). When comparing the effectiveness of components implemented within different anti-bullying programs, it was shown that programs containing guidelines how to work with individual victims were more effective in reducing bullying compared to programs in which such guidelines were absent (Gaffney et al., 2021).

Overall, a large body of evidence has been accumulated to better understand which measures on different socio-ecological levels should be recommended to schools to prevent and to combat bullying. However, because these elements have usually been implemented *within* specific anti-bullying programs, it is not known how these measures are associated with bullying and cyberbullying rates when implemented by schools that do not take part in a specific anti-bullying intervention program. Gaffney and colleagues (2021) investigated how the presence or absence of one anti-bullying element (e.g., teacher trainings, class rules, parental involvement) is associated with the reduction of bullying rates within (quasi) experimental studies when implemented *within* a specific anti-bullying program. Because it was not possible to also control for all other implemented components in these analyses when focusing on one single component (e.g., teacher trainings, class rules, parental involvement), it is difficult to interpret the effectiveness of the specific component without considering the concrete anti-bullying program in which they have been implemented. Thus, when investigating effective components that have been implemented *within* specific anti-bullying programs, the identified effective component is confounded with the implemented program by design.

The present study aims to overcome this methodological challenge, because a large representative sample of Albanian school teachers reported whether a variety of anti-bullying measures have been implemented in their schools *independent* of the participation in a specific anti-bullying program. Because both teachers and students also provided information on the bullying and cyberbullying rates in their schools, we investigate the associations between the implemented school, class, parent, and individual level anti-bullying measures as reported by teachers and the (cyber)bullying rates perceived from both the teachers' and the students' perspectives.

Teacher and Student Perceptions on Bullying and Cyberbullying Rates

When simultaneously asking teachers and students about the bullying and cyberbullying rates in their schools, the rates usually do not match. As summarized by Rigby (2020), the vast majority of available studies documented that teachers *underestimate* the bullying and cyberbullying rates in their schools compared with their students. If this is the case, this might indicate that teachers are not fully aware of the ongoing bullying between their students, for instance because the bullying incidents happen when teachers are not present and when they are not able to observe them. But also, when teachers are able to observe peer dynamics, it is often difficult for them to recognize bullying episodes, for instance when victims do not match stereotypical characteristics or when the bullying behavior is carried out indirectly or online (Bauman & Del Rio, 2006). Rigby (2020) also pointed to methodological differences as possible reasons why teacher and student perceptions might not match. In studies to date, teachers are usually asked to estimate the bullying rates in their *schools*, while students are usually asked to rate their *individual* involvement in bullying dynamics. When applying the same reliable instruments, Rigby (2020) observed that teachers actually *overestimated* the bullying rates compared to their students. Based on these results, Rigby (2020) concluded that teachers in Australia might be well aware of the ongoing bullying in their schools and even over-sensitive to the topic when applying the same reliable instruments to both teachers and students. Importantly, Rigby (2020) concluded that studies comparing teacher and students' perspectives need to be interpreted with caution considering the concrete item formulations.

The Albanian Context

Albania is an interesting national context to study the associations between teacher interventions and (cyber)bullying, because school bullying emerged in the public discussions just a decade ago. Since then, very few representative studies on school bullying have been carried out and no whole school anti-bullying program has been implemented in Albanian schools to date (Ismaili, 2015). Studies however indicate that bullying is an important topic also in Albanian schools. A large-scale representative study carried out by the Council of Europe (2017) revealed that 19.2% of students were actively or passively involved in bullying at least two or three times per month. More specifically, 9.7% of students identified as victims, 5.2% confessed to bully others, and 4.3% had roles as both perpetrators and victims.

Besides bullying, the Albanian educational system struggles with a lot of other challenges that are mostly related to unsatisfactory levels of financing (Psacharopoulos, 2017). As a consequence, schools face difficulties in terms of basic infrastructure such as furniture, heating, internet connection or laboratory equipment. Another big challenge is the unsatisfactory qualification of teachers as well as the shortage of psychologists and social workers available in schools. Although Albania is slowly improving the quality of education, there is a significant gap between urban and rural areas (OECD, 2017).

The Present Study

Utilizing a large scale representative Albanian teacher sample, the main goal of the present study is to assess anti-bullying intervention strategies that have been implemented on the school, class, parent, and individual levels from teachers' perspectives and to examine the associations between the applied intervention strategies with bullying and cyberbullying rates perceived from both teachers' and students. Unlike the majority of previous studies that have been carried out with convenient samples of teachers in English speaking countries (van Aalst et al., 2022), the present study collected data from a very large representative sample of Albanian teachers serving students in grades 4 to 12. The teachers also provided information regarding their perceived bullying and cyberbullying rates in the schools. In addition, a representative and random sample of students provided information regarding their individual involvement in bullying and cyberbullying episodes. Thus, the present study is able to avoid some of the main limitations of previous studies like for instance a biased teacher sample (van Aalst et al., 2022), and is able to assess the associations of the implemented intervention strategies *independent* of a specific anti-bullying intervention program with bullying and cyberbullying rates perceived from both teachers and the students. It is important to understand that random samples of teachers and students *nested in schools* were collected. Therefore, multilevel structural equation modeling on school level was applied to answer our two main research questions:

1. How are bullying and cyberbullying rates reported by both teachers and students associated?
2. How are teacher-reported anti-bullying interventions associated with bullying and cyberbullying rates perceived by teachers and students?

Method

Procedure

A stratified sampling procedure was used for the selection of schools based on geographic location (urban vs. rural), size of schools, type of schools (public vs. private), academic level of school (general secondary vs. vocational secondary). A total of 144 schools was contacted and all of them were willing to participate in the study. After selecting the schools, teachers and students were randomly selected for participation on individual level. Because the schools, teachers and students were selected randomly, their previous involvement in bullying was not taken into consideration. Ethical approval for the study was obtained from the Ethical Research Committee of the Faculty of Social Sciences at the University of Tirana, Albania. The study was conducted according to the 1964 Helsinki declaration and its later amendments ensuring the adherence to ethical standards in research involving human participants. Active informed consent was obtained from parents, teachers and students and confidentiality to all participants was guaranteed. Data were anonymized to protect participants' identities, and sensitive information was handled with utmost care. Data were collected through paper and pencil questionnaires, which were completed during one regular school hour in the school's class under the supervision of two trained research assistants. Prior to data collection teachers and students were again assured that their answers would be kept confidential and that their participation is voluntary.

Participants

In total, 3560 teachers and 2342 students nested in 144 schools participated in the study. The majority of teachers were female (N = 2877, 80.8%) and worked in public schools (N = 3387, 95.1%) that were located in urban areas (N = 2750, 77.2%). Overall, 66.3% (N = 2360) worked as teachers in primary schools (grade 1–9), 28.8% (N = 1026) in secondary general schools and 4.9% (N = 174) in secondary vocational schools. The majority of teachers were regular subject teachers (N = 1648, 46.3%) or class teachers (N = 1719, 48.3%), 3.1% (N = 111) were school directors and 2.3% (N = 82) had some other positions (e.g., teachers with special duties). The teachers were diverse regarding their teaching experience in this school with 31.5% (N = 1122) stating that they have over 20 years of experience, 18.6% (N = 662) had 15 to 20 years of experience, 26.1% (N = 928) had seven to 14 years of experience, 19.2% (N = 683) had two to six years of experience, and 4.6% (N = 165) were teaching less than one year.

Slightly more than half of the students were female (N = 1295, 54.5%). The students were equally distributed between grade 4 to 12. In total, 73.9% (N = 1757) students attended primary schools (grade 1–9), 22.6% (N = 537) attended secondary general schools and 3.5% (N = 83) attended secondary vocational schools. The majority of students stated that they have Albanian ethnicity (N = 2113; 90.2%), while 194 students (8.3%) did not answer this item, and 35 students (1.5%) were of Greek, Macedonian, Montenegrin, Roma, Egyptian or "other" ethnicity.

Measures

Demographic Information

The teachers answered questions regarding the location of their school (1 = *urban*, 2 = *rural*), school type (1 = *primary school (grade 1–9)*, 2 = *general secondary school*, 3 = *vocational secondary school*), professional role (1 = *director*, 2 = *teacher*, 3 = *class teacher,* 4 = *other*), gender (1 = *woman*, 2 = *man*), and teaching experience in this school (1 = *less than 1 year*, 2 = *2–6 years*, 3 = *7–14 years*, 4 = *15–20 years*, and 5 = *20 + years*). The students answered questions regarding their school type (1 = *primary school (grade 1–9)*, 2 = *general secondary school*, 3 = *vocational secondary school*), gender (1 = *girl*, 2 = *boy*), school grade, and ethnicity (1 = *Albanian*, 2 = *Greek*, 3 = *Roma*, 4 = *Macedonian*, 5 = *Montenegrin*, 6 = *Egyptian*, 7 = *other*).

Anti-Bullying Intervention Strategies in Schools

Teachers were asked to indicate the degree to which the following interventions have been implemented in their school on a five-point rating scale ranging from 1 (*never*), 2 (*rarely*), 3 (*sometimes*), 4 (*frequently*) and 5 (*always*). Three items measured school level activities (α = 0.80), namely (1) "effective supervision of students outside classrooms", (2) "staff training related to bullying", and (3) "reorganizing the physical space (e.g. classrooms, playground) to reduce potential of bullying". Four items measured class level activities (α = 0.91), namely (1) "regular classroom discussion on topics surrounding bullying", (2) "use of anti-bullying curriculum materials (e.g., videos, books)", (3) "class exercises such as role plays, writing assignments", and (4) "development and posting of class rules". Three items measured parent level activities (α = 0.89), namely (1) provide information to parents (e. g., newsletters, literature), (2) invite parents to school for presentations, seminars, etc., (3) have parents participate directly in school anti- bullying activities. Finally, four items measured individual level activities (α = 0.93), namely (1) individual counseling for students who have been victimized, (2) individual counseling for students who have bullied others, (3) small group counseling for students who have bullied others, (4) small group counseling for students who have been victimized.

Attendance of Teacher Training

Teachers were asked whether they have ever attended any anti-bullying training or workshop with the answer option *yes* and *no*.

Teacher Perceptions of Bullying and Cyberbullying Rates in School

Teachers were asked to rate the amount of bullying and cyberbullying in their schools. After providing the following definition bullying was measured with four items (α = 0.83) and cyberbullying was measured with one item, respectively. "*We say a student is being bullied when another student, or several other students (1) say mean and hurtful things, or make fun of him or her, or call him or her mean and hurtful names (VERBAL), (2) completely ignore or exclude him or her from their group of friends or leave him or her out of things on purpose (SOCIAL), (3) hit, kick, push, shove around, or lock him or her inside a room (PHYSICAL), (4) tell lies or spread false rumors about him or her or send mean notes and try to make other students dislike him or her (PSYCHOLOGICAL), or (5) use a digital device to bully (CYBERBULLYING). When we talk about bullying, these things happen repeatedly, and it is difficult for the student being bullied to defend himself or herself. We also call it bullying when a student is teased more than just once in a mean and hurtful way. But we do not call it bullying when the teasing is done in a friendly and playful way. Also, it is not bullying when two students of about equal strength or power argue or fight.*" Please indicate the extent to which you agree or disagree with each of the following statements about bullying at your school by checking ONE response for each statement, (1) PHYSICAL bullying is a problem among students at our school, (2) VERBAL bullying is a problem among students at our school, (3) SOCIAL bullying is a problem among students at our school, (4) PSYCHOLOGICAL bullying is a problem among students at our school, and (5) CYBERBULLYING is a problem among students at our school. The five-point response scale ranged from 1 (*strongly disagree*), to 2 (*disagree*), 3 (*neutral*), 4 (*agree*) to 5 (*strongly agree*).

Involvement in Bullying and Cyberbullying of Students

Students were asked to indicate whether they were personally involved in bullying and cyberbullying using the Olweus questionnaire (Solberg & Olweus, 2003). After providing the original Olweus definition (see Supplementary Material) both bullying perpetration (α = 0.81) and bullying victimization (α = 0.80) were measured with five items each and cyberbullying perpetration and cybervictimization was measured with one item each. The five-point response scale ranged from 1 (*it hasn't happened to me in the past couple of months*), to 2 (o*nly once or twice*), 3 (*2 or 3 times a month*), 4 (*about once a week*) to 5 (*several times a week*). Students were asked to indicate whether they were bullied globally, followed by four specific items regarding verbal bullying, social exclusion, physical bullying, psychological

bullying. Exactly the same items were asked for bullying others. Cyberbullying and cybervictimization were asked with one item each. For the multi-level analyses on school level, the bullying victimization and bullying perpetration items were collapsed, to get a comparable measure of to what degree bullying and cyberbullying is a problem in the respective schools from the perspective of students.

Measurement Models and Cross-Level Measurement Invariance

Multilevel confirmatory factor analysis (Hox et al., 2018) was conducted to investigate the adequacy of the measurement models for all multiple-item measures and cross-level measurement invariance (Jak, 2019). In the first step, a configural invariance model was estimated with factor loadings freely estimated at the individual and school level. In the second step, a metric invariance model was estimated with factor loadings constrained to be equal across levels. A model selection method based on the Bayesian information criterion (BIC) was used to decide between the configural and metric invariance model. Note that the BIC was recommended given that the BIC showed a low rejection rate to no or small noninvariance (Liang & Luo, 2020).

The results reported in Table 1 showed that the assumption of cross-level measurement invariance was tenable for the measurement model for teacher-perceived intervention strategies, teacher-perceived bullying, and student-reported bullying. In addition, the measurement models showed an acceptable model fit according to common cut-off values (i.e., CFI/TLI > 0.90 and SRMR/SRMR < 0.08). Note that the SRMR at the school level ($SRMR_B$) was not taken into account since simulation studies showed that the measure is depending on the ICC(1) and the number of groups (e.g., Hsu et al., 2015).

Analytic Strategy

Multilevel structural equation modeling (Stapleton, 2013) at two analytic levels (Level 1: individual, Level 2: school) was conducted using Mplus version 8.6 (Muthén & Muthén, 2017) to test the hypotheses of the current study (see Fig. 1 for the path diagram of the statistical model). At the individual and school level, teacher-perceived bullying and cyberbullying were predicted using teacher-perceived school, classroom, individual, and parent level measures while statistically controlling for teacher gender, teaching experience, and teacher training. In addition, student-reported bullying and cyberbullying aggregated at the school level were predicted using teacher-perceived intervention measures. Note that student-reported bullying and cyberbullying could not be predicted at the individual level since it was not possible to match teachers and students within schools.

Maximum likelihood estimation method with standard error robust against violation of the multivariate normality assumption was used to estimate model parameters. Latent centering equivalent to group-mean centering was applied to all predictors at the individual level (Asparouhov & Muthén, 2019).

Missing Data

In total, 18.74% of the teacher data stemming from 1,877 incomplete records and 4.69% of the student data stemming from 230 incomplete records were missing. The percentage of missing values across the 22 teacher variables ranged from 0.00% to 28.15%, the percentage of missing values across the 6 student variables ranged from 4.16% to 5.47%. Full information maximum likelihood method was used to deal with missing data (Enders, 2023).

Table 1 Multilevel confirmatory factor analysis result: model fit and cross-level invariance testing

	χ^2	df	CFI	TLI	RMSEA	$SRMR_W$	$SRMR_B$	BIC
Teacher-perceived intervention strategies								
Configural invariance	559.16	137	.961	0.948	0.030	0.049	0.089	99676.02
Metric invariance	557.35	147	.962	0.953	0.029	0.049	0.092	99605.77
Teacher-perceived bullying								
Configural invariance	16.32	4	.993	0.979	0.031	0.016	0.006	33070.16
Metric invariance	22.13	7	.992	0.986	0.026	0.017	0.044	33049.47
Student-reported bullying								
Configural invariance	41.92	10	.970	0.939	0.037	0.029	0.030	19414.71
Metric invariance	47.01	14	.969	0.955	0.032	0.029	0.048	19385.85

N = 3,560 teachers and 2,342 students in 144 schools. Five residual covariances were specified for teacher-perceived intervention strategies due to correlated method variance stemming from similar item meaning or wording (see Bandalos, 2021)

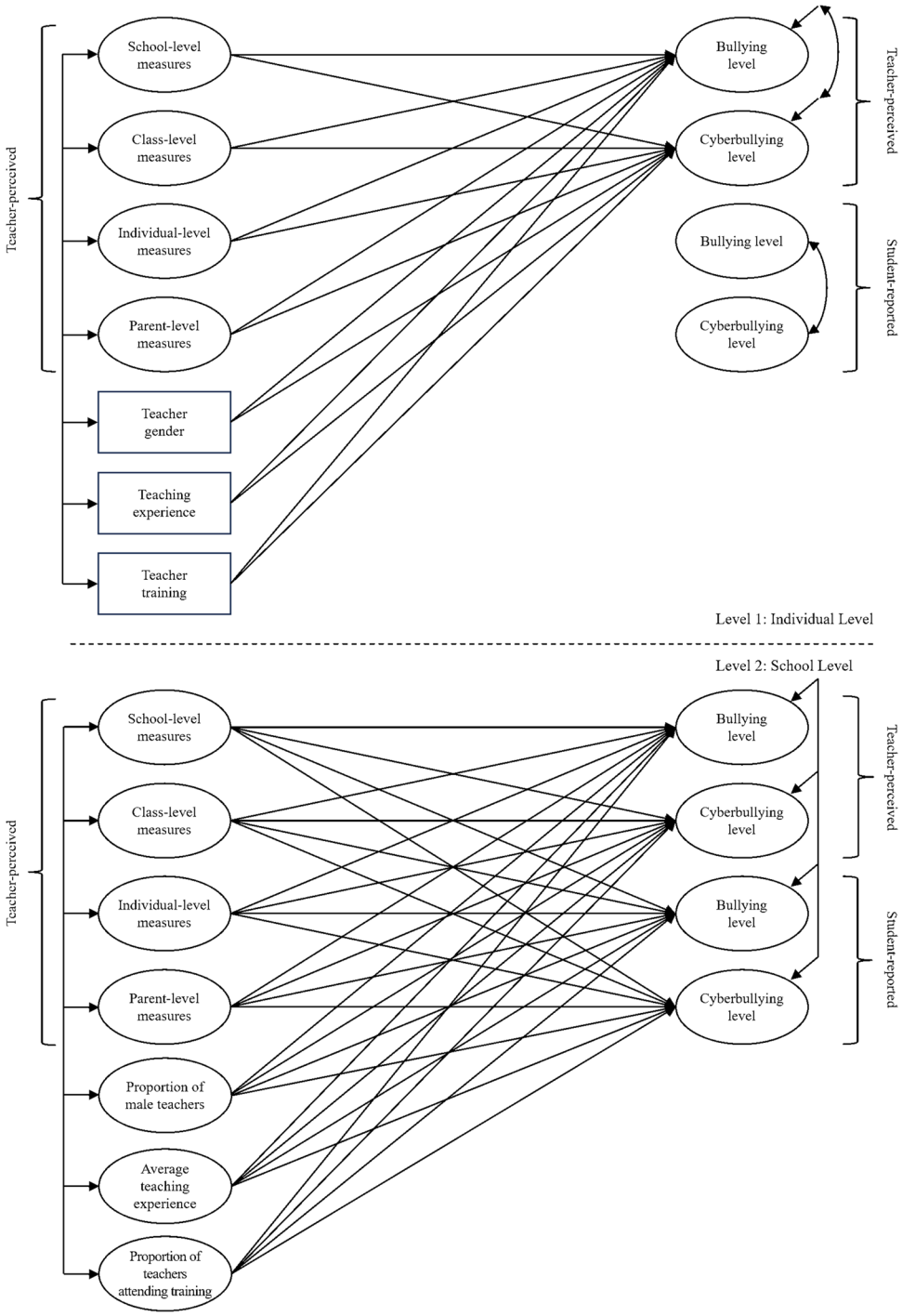

Fig. 1 Path diagram of the statistical model in the current study. *Note*. Measurement models were ommitted in the figure for brevity

Results

Descriptive Statistics

Means, standard deviations, and correlation coefficients among the study variables based on the measurement models are presented in Table 2. When aggregating the data on the individual level (Table 2, lower triangle), the results of the correlation analysis showed that teacher-perceived individual level measures were positively associated with teacher-perceived bullying (latent $r = 0.07$), while teacher-perceived parent level measures were negatively associated with teacher-perceived bullying (latent $r = -0.07$). Furthermore, having attended a teacher training was positively associated with the perception of higher levels of individual, class, parent, and school level anti-bullying measures. When aggregating the data at the school level (Table 2, upper triangle), teacher-perceived class level

Table 2 Descriptive statistics: bivariate correlation coefficients at the individual and school level, and intraclass correlation coefficients

	1	2	3	4	5	6	7	8	9	10	11
1. Teacher-perceived school level measures		**0.76**	**0.49**	**0.83**	**-0.54**	0.09	**0.62**	-0.10	0.04	-0.13	-0.18
2. Teacher-perceived class level measures	**0.66**		**0.58**	**0.64**	**-0.43**	**0.37**	**0.43**	**-0.34**	**-0.31**	-0.13	**-0.25**
3. Teacher-perceived individual level measures	**0.49**	**0.67**		**0.29**	**-0.34**	0.09	**0.30**	**0.28**	**0.21**	-0.14	-0.20
4. Teacher-perceived parent level measures	**0.73**	**0.61**	**0.51**		**-0.35**	0.03	**0.53**	-0.21	-0.06	-0.06	-0.09
5. Teacher gender (0 = female, 1 = male)	0.01	**-0.09**	**-0.07**	**0.04**		-0.27	-0.19	-0.03	-0.17	0.20	0.19
6. Teaching experience	0.03	**0.06**	0.03	0.01	0.02		-0.06	-0.09	-0.07	0.01	-0.20
7. Teacher training (0 = no, 1 = yes)	**0.23**	**0.14**	**0.13**	**0.14**	0.05	0.01		0.09	0.09	0.04	0.02
8. Teacher-perceived bullying level	-0.06	-0.03	**0.07**	**-0.07**	-0.05	0.00	-0.01		**0.85**	0.14	0.09
9. Teacher-perceived cyberbullying level	-0.02	-0.01	0.05	0.01	0.02	0.03	0.02	**0.58**		0.07	0.17
10. Student-reported bullying level											**0.86**
11. Student-reported cyberbullying level											
M	2.69	3.29	2.37	2.37	0.20	3.53	0.22	2.79	2.67	1.24	1.13
SD	0.36	0.36	0.43	0.46		0.38		0.47	0.58	0.18	0.14
ICC(1)	.205	.176	.158	.206	.051	.095	.163	.264	.201	.162	.095
ICC(2)	0.913	.897	.885	.914	.689	.811	.889	.936	.912	.888	.811

N = 3,560 teachers and 2,342 students in 144 schools. Correlation coefficients at the individual level in the lower triangle, and correlation coefficients at the school level in the upper triangle. Statistically significant correlation coefficients at α = .05 are shown boldface

ICC(1) Intraclass Correlation Coefficient 1, i.e., proportion of between person variance to the total variance, *ICC(2)* Intraclass Correlation Coefficient 2, i.e., reliability of aggregated variable

measures were negatively associated with teacher-perceived bullying (latent r = -0.34), cyberbullying (latent r = -0.31), and student-reported cyberbullying (latent r = -0.25), while teacher-perceived individual level measures were positively associated with teacher-perceived bullying (latent r = 0.28) and cyberbullying (latent r = 0.21). When inspecting the means of the study variables (see Table 2), it is important to understand that both teachers and students reported rather low levels of bullying and cyberbullying rates. While for students the means around 1 (1.24 for bullying and 1.12 for cyberbullying) indicate that they are very close to the "never" category, for teachers the means around 3 (2.79 for bullying and 2.67 for cyberbullying) indicate that they are very close to the "neutral" category. Thus, for students, bullying and cyberbullying does rather not happen very frequently, while for teachers it is rather not a big problem in their schools.

Associations between Bullying and Cyberbullying Rates from Teacher and Student Perspectives (RQ1)

The results reported in Table 2 (upper triangle) showed no statistically significant association between bullying (latent r = 0.14, p = 0.192), and cyberbullying (latent r = 0.17, p = 0.224) rates from teacher and student perspectives when aggregating the data at the school level. Note that this analysis was only possible on school level and not on individual level, because students and teachers were nested at school.

Associations between Anti-Bullying Interventions and Bullying and Cyberbullying Rates from Teacher and Student Perspectives (RQ2)

When aggregating the data on the individual level (level 1), results reported in Table 3 showed that teacher-perceived individual level anti-bullying measures are positively associated with teacher-perceived bullying (Est. = 0.15, p = 0.004) and cyberbullying (Est. = 0.13, p = 0.038) while statistically controlling for all other predictors. School level, class level, and parent level anti-bullying measures were not statistically significant in predicting teacher-perceived bullying or cyberbullying.

When aggregating the data on the school level (level 2), the results reported in Table 3 showed that teacher-perceived individual level anti-bullying measures are positively associated with teacher-perceived bullying (Est. = 0.70, p < 0.001) and cyberbullying (Est. = 0.72, p = 0.001) while statistically controlling for all other predictors. Teacher-perceived class level anti-bullying measures, on the other hand, were negatively associated with teacher-perceived bullying (Est. = -1.28, p < 0.001) and cyberbullying (Est. = -1.84, p < 0.001). School level and parent level anti-bullying measures were not statistically significant in predicting teacher-perceived bullying or cyberbullying. Moreover, none of the teacher-perceived anti-bullying intervention strategies were statistically significant in predicting student-reported bullying or cyberbullying.

Table 3 Associations between anti-bullying interventions and bullying and cyberbullying rates from teacher and student perspectives

	Teacher Perspectives						Student Reports					
	Bullying			Cyberbullying			Bullying			Cyberbullying		
	Est.	SE	Sth. Est.	Est.	SE	Sth. Est.	Est.	SE	Sth. Est.	Est.	SE	Sth. Est.
Fixed Effects												
Level 1 – Individual Level												
School level measures	-0.04	0.10	-0.03	-0.09	0.11	-0.05						
Class level measures	-0.08	0.08	-0.08	-0.09	0.08	-0.06						
Individual level measures	**0.15**	0.05	0.18	**0.13**	0.06	0.10						
Parent level measures	-0.07	0.04	-0.08	0.03	0.06	0.03						
Teacher gender (0 = female, 1 = male)	-0.08	0.06	-0.04	0.05	0.08	0.02						
Teaching experience	0.00	0.02	0.00	0.03	0.03	0.03						
Teacher training (0 = no, 1 = yes)	-0.01	0.05	-0.01	0.07	0.07	0.02						
Level 2 – School Level												
School level measures	0.33	0.62	0.23	0.81	0.99	0.44	-0.10	0.30	-0.16	-0.06	0.19	-0.12
Class level measures	**-1.28**	0.29	-0.99	**-1.84**	0.43	-1.10	-0.05	0.14	-0.08	-0.08	0.10	-0.19
Individual level measures	**0.70**	0.15	0.69	**0.72**	0.22	0.55	-0.02	0.06	-0.04	-0.02	0.05	-0.05
Parent level measures	-0.02	0.31	-0.02	0.11	0.48	0.07	0.06	0.13	0.12	0.05	0.09	0.15
Proportional of male teachers	-0.11	0.30	-0.04	-0.44	0.41	-0.11	0.21	0.23	0.16	0.17	0.16	0.18
Average teaching experience	0.07	0.07	0.08	0.10	0.12	0.08	0.04	0.05	0.08	-0.02	0.04	-0.07
Proportion of teachers attending training	0.37	0.22	0.16	0.31	0.33	0.10	0.11	0.11	0.11	0.07	0.08	0.09
Random Effects												
Level 1 – Individual level	0.53			1.31								
Level 2 – Class level	0.09			0.17			0.04			0.02		
Model Summary												
R^2 at the Individual Level	0.02			0.01								
R^2 at the School Level	0.58			0.52			0.07			0.10		

N = 3,560 teachers and 2,342 students in 144 schools. Model fit: $\chi^2(585) = 1394.28$. CFI = .964, TLI = 0.959, RMSEA = 0.015, SRMRW = 0.031, SRMRB = 0.118. Statistically significant results at $\alpha = .05$ are shown boldface

Est. Unstandardized parameter estimate, *SE* Standard error, *Std. Est.* Standardized parameter estimate

$p < .001$

Discussion

During the last years, anti-bullying programs have been implemented in many countries all around the world and meta-analyses showed that they are effective in reducing bullying and cyberbullying rates in schools (Gaffney et al., 2019a, b). Because anti-bullying programs are usually implemented as a package, it is still difficult to say which components – independent of the implementation of the whole program – could be recommended to schools to reduce their bullying and cyberbullying rates (Gaffney et al., 2021). The present study aims to fill this gap by asking a large representative number of teachers which anti-bullying measures on the school, class, parent, and individual level have been implemented in their schools, and by examining how the implemented measures are associated with bullying and cyberbullying rates perceived by both the teachers and their students. Data has been collected in Albania, a country in which school bullying is a rather new topic and evidence-based whole school anti-bullying programs have not been implemented yet (Ismaili, 2015).

Teacher and Student Perceptions Diverge

When inspecting the mean levels (Table 2), Albanian teachers report that school, class, parent, and individual level measures are rarely or sometimes implemented in their schools, while bullying and cyberbullying is rather not a problem in their schools. Based on mean level results (Table 2), students also only rarely reported that they were personally involved in bullying or cyberbullying as either perpetrator or target. However, this agreement between teachers' and students' average perception of bullying and cyberbullying was qualified when looking on the correlations between teacher and student perceptions on school level.

It is important to understand that the correlations were conducted on the school (level 2) and not on the individual

level (level 1), because random samples of teachers and students participated in the study from each school. Thus, by examining correlations on school level, we were able to shed light on the degree of agreement of bullying and cyberbullying rates perceptions between students and teachers located in the *same* schools. It is important to recall that teachers were asked to indicate whether bullying is a problem in their schools, while students were asked to what degree they were individually involved in bullying. Descriptively, we observed small positive associations between teacher and student perceptions (latent *r*'s ranging between 0.07 and 0.17) on school level that were however not significantly different from zero. To the best of our knowledge, this is a novel result, because studies to date did not aggregate teacher and student data on school level when comparing teachers' and students' perceptions of prevalence rates. Instead, prior studies just compared similarities or differences between student and teacher perspectives based on individual level data (for a summary see Rigby, 2020). Thus, from a statistical point of view, these former results that mostly showed an underreporting of bullying from teachers compared with their students need to be interpreted with caution, because ideally data should have been aggregated on the school level.

The small correlations between teachers' and students' perceptions of prevalence rates have implications for preventive efforts, as they might suggest that the understanding of bullying between teachers and students is not well enough aligned. Although both teachers and students were presented with the same bullying definition in the questionnaire before answering the items, it is still possible that their understanding of the phenomenon diverges. Because school bullying is a rather new topic in the Albanian school system, the concept might not be commonly known in the public. When teacher trainings would be organized on the school level and student activities would then be implemented by these trained teachers on the class level, it feasible that the understanding of teachers and students about what bullying is would get more aligned (Strohmeier & Spiel, 2019).

Anti-Bullying Interventions and Bullying Rates

Another novel finding of the present study is that in Albania, anti-bullying interventions are associated with bullying and cyberbullying rates when reported by teachers, but *not* when reported by students. More specifically, when teachers stated that bullying and cyberbullying is a bigger problem in their schools, they also reported that measures on the individual level (e.g., talks with bullies or victims) are implemented more often. However, when teachers perceived that bullying and cyberbullying is rather not a problem in their schools, they also perceived that more class-level components have been implemented in their schools. These results make sense when thinking about measures on the individual level as indicated actions that are employed *after* a bullying case has already happened, while measures on the class levels are universal actions that are implemented in terms of prevention *before* a bullying case has happened.

The non-existing association between the implementation of anti-bullying interventions reported by teachers and bullying and cyberbullying rates reported by students is worrisome, because it shows again that teacher and student perceptions are not well enough aligned. Because student reported prevalence rates are used to estimate the effectiveness of anti-bullying programs (Gaffney et al., 2019a, b), the zero correlation between implemented measures and perceived prevalence rates by students is a cause of concern. This knowledge is highly important to improve the future anti-bullying activities in Albania.

Study Strengths and Limitations

Instead of relying on rather small convenient samples of teachers as done in the majority of available studies (van Aalst et al., 2022), large scale representative data of teachers and students were collected all over Albania for the present study. While teachers filled in a measure comprising a rather large number of different anti-bullying components, teachers were asked whether they perceive that bullying and cyberbullying is a problem in their school, and students were asked to what degree they have been involved in bullying and cyberbullying. Except for the single cyberbullying items, the factor structure of all measures used in the present study were rigorously tested via multi-level confirmatory factor analyses. Thus, both the sampling strategy and the highly valid measurements are a strength of the present study.

However, it was not possible to also ask the students about their perspectives on the implemented anti-bullying interventions. Because it is possible that teacher and student perspectives do not match regarding their perceptions of implemented anti-bullying measures, future studies could try to also collect this information from students. Although both teachers and students were presented with the same bullying definition in the questionnaire, future studies should also make sure that the rating scales of the answering options between teachers and students are identical. When the same validated instrument is filled in by teachers and students, it is also possible to interpret mean level differences between them (Rigby, 2020).

Practical Implications and Future Research

The present study clearly shows that teacher trainings are a highly beneficial measure to increase the frequency of components on school, class, parent, and individual level that are implemented in a school to prevent and combat bullying. Because the perception of bullying and

cyberbullying rates between teachers and student on school level are not associated, it is important that the understanding of bullying between teachers and students gets better aligned. This could be achieved by several measures, for instance when trained teachers transmit their knowledge about bullying to their students via class-level activities. Another possibility is that teachers get feedback on the bullying rates that are perceived by their students, for instance by reporting back the prevalence rates on class or school level to them as done by the Olweus bullying prevention program (Limber et al., 2018). Future qualitative research could identify the crucial success factors how knowledge on bullying should be ideally transmitted from teachers to students to better align their views. Because the Albanian school system not only struggles with school bullying, but also with a multitude of other structural challenges, implementing fewer anti-bullying measures might be more realistic than implementing an evidence-based whole school program large scale. In a national context with a similar school system (the Republic of Kosovo), implementing fewer anti-bullying components was more effective in reducing bullying compared to implementing more components (Arënliu et al., 2020). Therefore, the implementation of an ultra-short (rather than a short) structured anti-bullying program on class level by teachers can also be recommended for Albania.

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Data Availability The data is available from the first author upon request.

Declarations

Ethics Approval We declare that the study was conducted according to the 1964 Helsinki declaration and its later amendments.

Conflict of Interest None of the authors have a conflict of interest to disclose.

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