

1-19-2023

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### Publication Info

Published in *Social Development*, Volume 32, Issue 3, 2023, pages 922-943.

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## ORIGINAL ARTICLE

# Student, classroom, and teacher factors associated with teachers' attunement to bullies and victims

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## Funding information

Institute of Education Sciences, Grant/Award Numbers: R305A04056, R305A140434, R305A160398

## Abstract

Teachers are instrumental in antibullying efforts given their position of authority in the classroom context, yet teachers can only be effective at reducing victimization and bullying in their classrooms if they are aware of who is involved. Consequently, teachers' attunement to bullies and victims is a critical component of social dynamics management and antibullying practices. Given the importance of teacher attunement, there is a pressing need to identify relevant factors related to the degree to which teachers are attuned to bullies and victims. The major objective of the current investigation was to examine student- (gender, popularity status), classroom- (average bullying, norm salience of bullying, popularity hierarchy, class size), and teacher-level (gender, teaching experience) factors associated with teachers' attunement to bullies and victims. Using a sample of students in 5th-grade classrooms, we analyzed the likelihood of teachers being attuned to 267 bullies (76.8% boys) nested in 112 classrooms and 343 victims (55.1% boys) nested in 120 classrooms using multilevel mixed-effects generalized linear models. Results indicated that teachers were more likely to be attuned to boy bullies and victims but less likely

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to be attuned to bullies and victims with higher popularity status. No classroom or teacher level factors related significantly to the likelihood of teachers' attunement. Implications for social dynamics management and bullying intervention efforts are discussed.

#### KEYWORDS

bullies, popularity, teacher and classroom factors, teacher attunement, victims

## 1 | INTRODUCTION

As the primary adult figure in the classroom, teachers play a critical role in managing the peer social dynamic processes that are essential to their students' successful adjustment at school (Farmer et al., 2011, 2019; Gest et al., 2014). A central feature of social dynamics is understanding which students are involved in peer victimization, particularly who is bullied and who bullies their peers (Farmer et al., 2018). Given the prevalence of peer victimization—one in three youth report being victimized at least once a month (UNESCO, 2019)—and the negative consequences of involvement including internalizing problems, later violence, and substance use (e.g., Moore et al., 2017; Reijntjes et al., 2010; Ttofi et al., 2012), there is a pressing need to identify ways the classroom teacher can prevent and intervene in bullying (e.g., Yoon & Bauman, 2014). One key aspect that influences teachers' ability to address bullying in their classroom is their attunement to (i.e., accurate knowledge of) students' involvement (Hamm et al., 2011; Norwalk et al., 2016). Teachers' attunement to bullies and victims in their classrooms is a critical first step for intervention and prevention efforts to reduce bullying and support victims (e.g., Farmer et al., 2011).

Research on teacher attunement reveals that students benefit when their teachers are more attuned to their peer experiences (Ahn & Rodkin, 2014; Hamm et al., 2011; Norwalk et al., 2016). For instance, one study found that higher teacher attunement to victims was associated with students perceiving more supportive peer norms against bullying which, in turn, was related to higher feelings of school belonging (Norwalk et al., 2016). Given these promising findings, there is increased interest in identifying factors associated with greater attunement (e.g., Dawes et al., 2017; Marucci et al., 2018, 2021; Peceguina et al., 2022). To better reflect the complexity of the classroom context, student, classroom, and teacher factors should be considered simultaneously, which few studies have done. As such, this current study fills a gap in the literature by examining whether student (gender, popularity), classroom (classroom bullying norms, popularity hierarchy, class size), and teacher (gender, experience) factors are associated with teachers' attunement to bullies and victims. Such information has implications for the implementation of interventions designed to bolster teachers' management of peer social dynamics as they strive to create inclusive classroom environments that support students' successful adjustment at school (e.g., Farmer et al., 2019).

### 1.1 | Teacher attunement

Teacher attunement, conceptualized as an aspect of teacher involvement by Hamm et al. (2011), reflects a teacher's understanding of students' peer experiences. Thus far, studies on teacher attunement have investigated the extent to which teachers are aware of students' peer groups (Hamm et al., 2011), students' behavioral reputation among peers (e.g., aggressive, risky behavior, prosocial behavior; Ahn & Rodkin, 2014; Dawes et al., 2017; Marucci et al., 2018, 2021), students' social status (i.e., liked, disliked; Marucci et al., 2018), and students' self-reported peer victimization

experiences (Ahn et al., 2013; Marucci et al., 2021; Norwalk et al., 2016; Oldenburg et al., 2016). Awareness of each of these dimensions of peer social dynamics is suggested to be critical to teachers' ability to make informed decisions about productive peer pairings or seating assignments (e.g., Gest & Rodkin, 2011; van den Berg et al., 2012), as teachers act as the invisible hand in managing their students' peer experiences (Farmer et al., 2011, 2019). For the current study, we deliberately focused on attunement to peer-nominated (as opposed to self-reported) bullies and victims given that teachers' awareness of students' reputation among peers in the classroom is considered to be essential to their ability to manage the classroom context successfully (e.g., Farmer et al., 2018, 2019, 2021). By investigating additional factors that may be related to teachers' attunement, the current study has the potential to inform implementation efforts aimed at improving teachers' awareness of peer social dynamics and subsequent classroom management practices.

## 1.2 | Student factors

We examined two student factors shown to be related to bullying and victimization: gender and popularity (e.g., de Bruyn et al., 2010; Olweus, 2003; Rodkin & Berger, 2008). Prior research suggests that most bullies tend to be boys (e.g., Smith et al., 2019). The frequency and salience of boys' bullying behavior (Cook et al., 2010; Craig et al., 2009; Olweus et al., 2019; Smith et al., 2019) likely become part of teachers' cognitive schemas for peer victimization such that they come to expect and are more aware of bullying from boys according to the social information processing model (e.g., Ahn et al., 2013; Crick & Dodge, 1994). Thus, it would be reasonable to expect teachers to be attuned to the bully status of boys more so than girls. Additionally, given that boys are more likely to be victimized by highly visible forms of bullying (e.g., physical; Casper & Card, 2017; Feijóo et al., 2021), it would be reasonable to expect teachers to be more attuned to the victim status of boys versus girls. However, the one study that specifically examined attunement to peer-nominated bullies and victims found that teachers were more attuned to peer-nominated bullies who were girls, and there were no gender differences in teachers' attunement to students' victim status among peers (Marucci et al., 2021). Despite this contradictory evidence, we anticipated that teachers would be more attuned to the bully and victim status of boys over girls.

We also examined whether students' popularity status was related to the likelihood of teacher attunement to peer victimization involvement. Popularity status is a critical feature of classroom social dynamics and is linked inexorably with peer victimization (e.g., de Bruyn et al., 2010). Popular youth possess social savvy (Adler & Adler, 1998), and popular bullies may be better able to hide their perpetration from teachers, decreasing the likelihood that teachers would be attuned to their status as peer-nominated bullies. Further, even though popular youth do not fit the traditional victim stereotype, some are still victimized by peers (see Dawes & Malamut, 2020 for review), yet teachers often question their victimization experiences because they do not fit the typical victim mold (Mishna et al., 2005). Such a cognitive bias may hinder teachers' ability to recognize popular youth's victimization experience, making them less likely to be attuned to popular victims. Altogether, we expected a negative association between popularity and attunement to bullies and victims such that as students' popularity increases, teachers' attunement would decrease.

## 1.3 | Classroom factors

Features of the classroom peer ecology may either highlight or obfuscate which students are involved in bullying. We assessed several key classroom features shown to be related to peer victimization including classroom norms for bullying (e.g., Salmivalli & Voeten, 2004), the classroom status hierarchy, and classroom size (e.g., Garandeau et al., 2014). Two types of classroom norms for bullying were investigated in the current study: descriptive norms and the norm salience of bullying. Descriptive norms for bullying describe the average level of bullying behavior within the classroom (Henry et al., 2000). When bullying frequently occurs (i.e., high descriptive norm), it can increase the opportunity for teachers to observe bullying and therefore be attuned to bullies and victims. However, the one study

investigating these links found no significant association between classroom aggressive norms and attunement to aggression (Ahn & Rodkin, 2014). Nevertheless, based on behaviorist principles which suggest that the opportunity to observe a behavior increases the more the behavior occurs, we expected a positive association between descriptive norms for bullying and teacher attunement such that the likelihood of attunement to bullies and victims would increase as the bullying rate increases.

Beyond descriptive norms, recent research highlights the utility of assessing the norm salience for different classroom behaviors (Dijkstra et al., 2008; Henry et al., 2000). Norm salience captures the fact that popular youth can serve as role models and shape norms in the classroom (Bandura, 1977) such that acting like the popular students (e.g., being aggressive) may confer rewards for youth in the form of peer regard or status (Cialdini et al., 1991). Assessed as the correlation between peer-nominated popularity and behavior (e.g., Dijkstra & Gest, 2015), this norm may be particularly meaningful to capture during the early adolescent developmental period as popularity becomes increasingly important to youth (Adler & Adler, 1998; LaFontana & Cillessen, 2010). When popular students engage in high levels of bullying behavior according to their peers (i.e., high bullying norm salience), how might this be related to teacher attunement? Popular youth who bully may be particularly adept at hiding their bullying behavior from teachers (Adler & Adler, 1998), limiting the likelihood that teachers would be attuned to the bullies in that classroom and their victims. As such, we expected a negative association between bullying norm salience and likelihood of teacher attunement to bullies and victims.

In addition to assessing classroom bullying norms, we also examined how the classroom status hierarchy was related to teacher attunement. Status hierarchies can have an egalitarian or hierarchical organization (e.g., Garandeau et al., 2011, 2014). A hierarchical organization means that power is concentrated among a few members (i.e., high variation in status or unequal distribution of status among peers) whereas an egalitarian structure indicates that power is more evenly dispersed among the members of the group (i.e., low variation in status; Garandeau et al., 2014). Available evidence suggests that greater variation in status is associated with higher rates of bullying over time (Garandeau et al., 2014), presumably because when popularity is concentrated in a few key peers (i.e., hierarchical organization), this creates the opportunity for power differentials that can lead to negative peer experiences including bullying and victimization (Garandeau et al., 2014; Wolke et al., 2009). Classrooms with a hierarchical organization may magnify power differences between students in ways that make it easier for teachers to be aware of stereotypical victims (i.e., low status) and the bullies who target those victims. Thus, we expected a positive association between status hierarchy and attunement such that as variation in status increases, attunement to bullies and victims would likewise increase.

Last, class size may be important for understanding whether or not teachers are attuned to their students' bullying involvement. Larger class sizes mean keeping track of more students and their various social experiences and characteristics which may be challenging for teachers (e.g., Finn et al., 2003). Indeed, studies have shown attunement to decrease as class size increases (Ahn et al., 2013; Marucci et al., 2018) but one study found no association between class size and attunement to bullies or victims (Marucci et al., 2021). In light of this mixed empirical evidence, we continued to base our expectation for a negative association between class size and attunement on the assumption that larger sizes can make it more difficult for teachers to monitor students' social experiences (e.g., Finn et al., 2003). Based on this evidence, we expected a negative association between class size and attunement such that as class size increases, teachers' attunement to bullies and victims should decrease.

## 1.4 | Teacher factors

Existing evidence reveals that teachers' perceptions of students are related to their degree of attunement (e.g., Dawes et al., 2017; Marucci et al., 2021) yet evidence of how teacher attributes are related to their degree of attunement is limited (see Ahn et al., 2013; Marucci et al., 2018 for exceptions). We sought to add to the limited evidence base by investigating relevant teacher factors including their gender and teaching experience. Research suggests that female teachers may be more attuned to bullies and victims in their classrooms. Female teachers are more likely to rate

bullying as more severe (Green et al., 2008), to consider victims' hurt feelings (Naylor et al., 2006), and to consider more forms of behavior, especially verbal, to be bullying compared to male teachers (Maunder et al., 2010; Naylor et al., 2006). Altogether, this suggests that female teachers may be more attuned to peer victimization experiences of their students. However, the research literature is mixed: one study found teacher gender to be unrelated to attunement to bullies and victims (Marucci et al., 2021), whereas another study by the same authors found that female teachers had lower attunement (Marucci et al., 2018). However, the authors emphasized the need for caution in interpreting this difference given the small percentage of male teachers in the sample (four out of 57 teachers; Marucci et al., 2018). Therefore, we based our expectations on evidence of gender differences in perceptions of bullying and victimization, leading us to expect that females would have higher attunement to bullies and victims in spite of the contradictory evidence in Marucci et al. (2018).

We also examined the association between teachers' experience and attunement. Research indicates that as experience increases, teachers become more adept and skillful in a number of teaching aspects (e.g., Palmer et al., 2005), one of which may be their level of attunement. However, the limited existing research is mixed. Ahn et al. (2013) found no association between teachers' total years of teaching and attunement to bully-victim dyads. In contrast, Marucci et al. (2018) found that general attunement to multiple aspects of students' social lives (i.e., likeability, dislikeability, prosociality, aggression, risk behavior) increased with teaching experience. With acknowledgment for these conflicting findings, we continued to expect a positive association between experience and attunement under the assumption that teachers' skills improve with experience (e.g., Palmer et al., 2005). However, the association may be more nuanced than a linear relationship and may in fact resemble a curvilinear relationship. Relations between teaching experience and attitudes towards bullying suggest that teachers tend to become more tolerant of misbehavior (including bullying; Borg & Falzon, 1990) and have more negative attitudes toward victims as teaching experience increases (Boulton, 1997). These tendencies can interfere with teachers' ability to recognize incidents of bullying in the first place (e.g., Troop-Gordon & Ladd, 2015), thereby hindering their attunement to bullies and victims. This combined evidence led us to expect a curvilinear relationship between teaching experience and attunement such that attunement increases as experience increases before declining in advanced years of service. No study to date has examined this association in this way; as such, this study will fill a gap in our understanding of nuances in the relation between teaching experience and attunement to bullies and victims.

## 2 | CURRENT STUDY

The goal of this study was to assess the relations between student, classroom, and teacher factors and teacher attunement to bullies and victims. We focused on students in 5th-grade classrooms for two specific reasons. First, it afforded the opportunity to test these dynamics in youth entering the early adolescent developmental period when peer concerns become increasingly important (e.g., Adler & Adler, 1998), and the need to disrupt bullying and victimization involvement before patterns become entrenched is paramount (Cillessen & Lansu, 2015; Rueger et al., 2011). Second, given our interest in classroom-level variables, assessing these processes in self-contained classrooms where students spend all day with the same teacher and peers negated possible confounds that may exist for students who interact with several teachers and a larger network of peers in middle school contexts. Attunement was defined as the congruence between teachers' reports and peer-nominations of bullies and victims (e.g., Marucci et al., 2021). We expected the likelihood of attunement to be higher for boy bullies and victims and lower for students with high popularity status. In terms of classroom features, we hypothesized that the likelihood of attunement would increase as the average level of bullying in the classroom and the variation in popularity (i.e., hierarchical organization of the classroom status hierarchy) increased. In contrast, we predicted a negative association between attunement and bullying norm salience and class size, such that the likelihood of attunement was expected to be lower as the degree to which popular youth bully and class size increased. As for teacher variables, we expected female teachers to have

higher levels of attunement to bullies and victims compared to male teachers, and we expected early- and late-career teachers to have lower attunement levels compared to mid-career teachers.

### 3 | METHOD

Participating students were recruited from a sample of 50 schools across the United States as part of a larger longitudinal study (Project REAL; Rural Early Adolescent Learning; Hamm et al., 2014) using a cluster randomized trial design to assess the impact of a teacher intervention on students at risk for poor adjustment at school. Information on school selection and recruitment procedures can be found in Hamm et al. (2014). Data for the current study come from the baseline time point (pre-intervention) collected in the spring semester of students' 5th-grade year. Data were collected between 2005 and 2008. The majority of the schools (70%) were located in fringe, distant, or remote rural areas (locale codes 41, 42, 43; National Center for Education Statistics, 2006), and the other 30% of schools were located in distant or remote towns (locales 32 or 33). The average school size was 307 students (range 49–628). Boys accounted for 51.8% ( $SD = 4.0$ ) of the students across all schools and students from minority racial/ethnic backgrounds accounted for 27.4% ( $SD = 35.5$ ) of the students across all schools. Approximately 64% of students were eligible for free- or reduced-price lunch.

#### 3.1 | Student participants

Participants were recruited from all regular 5th-grade classrooms. Classroom participation rates varied and for the purposes of the current study which used several peer nominations variables, only students in classrooms with 50% or more participation rates were included in analyses. This is consistent with previous procedures and recommendations for acceptable participation rates (e.g., Marks et al., 2013). The average participation rate across classrooms was 68.3% (range 50%–100%).

#### 3.2 | Teacher participants

All 5th-grade teachers were invited to participate and the majority consented (participation rate 97%). Most teachers were women (81.1%) and White (61.1%) followed by 31.7% Black, 4.8% Hispanic/Latino, and 2.4% Asian/Pacific Islander. Almost half of the teachers earned a master's degree (48%), 39.4% completed some graduate work, 11.8% earned degrees from 4-year colleges, and only a few (0.8%) earned a doctoral degree. Most teachers were certified (96%) and certified to teach specifically in their area (95.2%). The largest percentage of teachers were over the age of 45 (41.7%) followed by 27.6% who were 26–35 years old, 22% who were 36–45 years old, and only 8.7% who were 22–25 years old.

#### 3.3 | Procedure

With approval from the Institutional Review Board, students and teachers were recruited from all participating schools. Parental informed consent was required for youth who wished to participate. Data from students were collected during group-administered survey sessions in which a trained research assistant read aloud all questions to participants. Other trained research assistants were available to answer questions and monitor the room. Participants were assured of confidentiality and told they could stop participating at any time. Those who participated were given a school supply item.



All teachers of participating students were likewise invited to participate. Those who consented to participate completed packets of surveys about their students participating in the study. Surveys included individual assessments of their students' competence in the academic, behavioral, and social domains. Teachers were compensated financially for their participation. Student and teacher data were collected on a similar schedule during the spring semester (last semester of the grade).

### 3.4 | Measures

#### 3.4.1 | Teacher attunement

Attunement to bullies and victims was calculated using an established procedure to capture teachers' awareness of students whom peers see as bullies and victims (Dawes et al., 2017; Gest et al., 2014; Marucci et al., 2018, 2021; Norwalk et al., 2016; Sardiouk et al., 2013). Calculating attunement involved identifying bullies and victims from peer nominations and teacher reports, then identifying congruence between reporters with peers serving as the experts against which teachers' perspectives were compared (Cairns & Cairns, 1994; Gest, 2006).

First, peer reports of bullies and victims were collected using standard peer nomination procedures wherein students were asked to nominate from free recall classmates who best fit certain descriptors (e.g., Estell et al., 2007). The total number of nominations each student received was tallied and divided by the number of potential nominators to create a proportion score which was multiplied by a constant of 1000 to clarify differences (e.g., Rodkin et al., 2000). Proportion scores were then standardized by classroom to reflect the voting population of self-contained 5th-grade classrooms (e.g., Cillessen & Marks, 2011; Poulin & Dishion, 2008). Peers nominated students who best fit the description of a bully ("*This person bullies others. This person is always hurting or picking on others*") and a victim who is picked on ("*This person is picked on by others*"). Consistent with prior research, participants whose standardized scores were above the classroom average ( $>.5$  SD) were coded as 1 and those scores less than the cutoff were coded as 0 (Dawes et al., 2017; Marucci et al., 2021).

Second, teachers rated each participating student using a 7-point scale from 1 (*never*) to 7 (*frequently*) on the degree to which they were bullied ("*frequently bullied by peers*") and the degree to which they bullied others ("*frequently bullies peers*"; Estell et al., 2007; Norwalk et al., 2016). We then dichotomized these scores consistent with previous research (e.g., Dawes et al., 2017; Marucci et al., 2021; Norwalk et al., 2016). Students who received a rating from 4 (*sometimes*) to 7 (*frequently*) were coded as 1 (bully or victim) whereas those whose ratings were less than 4 were coded as 0 (not a bully, not a victim).

Last, we created the attunement variable by combining peer nominations and teacher reports. Those who were seen by peers as a bully or victim (peer-report value = 1) and who were rated by teachers as a bully or victim (teacher-report value = 1) had an attunement code of 1 (*attuned*). Those who were seen by peers as a bully or victim (peer-report value = 1) but who were not seen by teachers as a bully or victim (teacher-report value = 0) were coded as 0 (*not attuned*). Following this procedure, 283 students were identified as bullies, and 375 students were identified as victims according to peers. However, some peer-identified bullies ( $n = 8$ ) and peer-identified victims ( $n = 18$ ) were missing teacher ratings, yielding 275 bullies with attunement data and 357 victims with attunement data. Those missing data did not differ from those with complete teacher reports on gender or racial/ethnic status,  $\chi^2s < 1.053$ ,  $ps > .305$ .

#### 3.4.2 | Student variables

Students' level of popularity was determined by peer nominations for *popular*. Nominations were standardized within classroom consistent with established peer nomination procedures (Estell et al., 2007; Rodkin et al., 2000). Student gender (0 = girls, 1 = boys) and race information were collected from school record data.



### 3.4.3 | Classroom variables

Classroom *descriptive norms for bullying* were measured as the average peer nomination proportion score across all students in the classroom for bullying ( $M = 28.75$ ,  $SD = 20.87$ , range = 3.05–98.77). *Norm salience* was calculated as the within-classroom correlation between peer-nominated popularity and bullying (Dijkstra & Gest, 2015). Popularity was identified using the same peer nomination procedure as aforementioned wherein students nominated peers who were *popular*. Classroom *status hierarchy* was assessed as the within-classroom standard deviation of popularity nominations with a smaller standard deviation reflecting an egalitarian distribution of status and a larger standard deviation reflecting a hierarchical organization (Garandean et al., 2011). Both our descriptive norm ranges and status hierarchy ranges are similar to prior research (Dijkstra & Gest, 2015; Garandean et al., 2011). The number of students in each class was summed to capture *class size* ( $M = 21.82$ ,  $SD = 7.00$ ).

### 3.4.4 | Teacher variables

Teachers self-reported their gender and their years of teaching experience. Teacher *gender* was collected via self-report. Approximately 80% ( $n = 63$ ) of teachers were female and 20% ( $n = 16$ ) were male. Teachers reported how many years of *teaching experience* they had. Response options included: 1–3 years of experience, 4–5 years, 6–10 years, 11–20 years, 21–30 years, and 31 years or more of experience. These categories were collapsed into three groups to enable us to compare early-career, mid-career, and late-career teachers: (1) those with 1–5 years of experience ( $n = 21$ , 26.6%), (2) 6–30 years of experience ( $n = 48$ , 60.7%), and (3) 31 years of experience ( $n = 10$ , 12.7%). These categories map onto Huberman's (1989) model of the life cycle of teachers with those in the second group (6–30 years of experience) characterizing teachers who have gone through a period of stabilization and are now in their mid-career years. The last group of those with 31 years or more experience coincides with the period of disengagement from Huberman's (1989) model which can be marked by bitterness and/or disappointment.

## 3.5 | Analytic plan and final samples

To test our hypotheses for student-, classroom-, and teacher-level associations with teacher attunement, we analyzed the data using multilevel mixed-effects generalized linear models for Bernoulli distributions to account for the nested nature of the data and the dichotomous outcomes score (0 = not attuned, 1 = attuned). Analyses were run using Stata with full maximum likelihood estimation. We estimated two-level models: Level 1 represented students and Level 2 represented the classroom and teacher level. We calculated ICCs for the two dependent variables (attunement to bullies, attunement to victims) to separate within-classroom variance (Level 1) and between-classroom variance (Level 2). The unconditional models yielded an ICC of .40 for attunement to bullies and .05 for attunement to victims, indicating between 5% and 40% of the variance in attunement was between classrooms. We then ran a series of models to test for student-level effects only (Model 1), student- and classroom-level effects (Model 2), student- and teacher-level effects (Model 3), and a final model with student-, classroom-, and teacher-level effects combined (Model 4).

Of the 275 bullies and 357 victims with attunement data, some were excluded from the analyses. A few students were missing racial/ethnic information, yielding a final sample of  $n = 267$  bullies (23.2% girls) nested in 112 classrooms and  $n = 343$  victims (44.9% girls) nested in 120 classrooms included in Model 1 analyses testing student-level effects. There were no gender differences in those included versus excluded due to missing racial/ethnic information,  $\chi^2_s < 1.453$ ,  $ps > .228$ . The racial/ethnic background of participants included in analyses for attunement to bullies was 53.6% White, 34.8% Black, 7.1% Hispanic, 3.7% Native American, and .8% Asian or other. The majority of the participants included in Model 1 for victim attunement were White (65.4%) followed by 24.8% Black, 6.1% Native American,

2.6% Hispanic, and 1.2% multiracial or other. Teachers were attuned to 73.4% ( $n = 196$ ) of the 267 bullies and 57.4% ( $n = 197$ ) of the 343 victims.

For Model 2 testing student- and classroom-level effects, additional students were excluded from the analyses if they were the only student identified as a victim or bully in their classroom ( $n = 1$  Level 1 observation per Level 2 classroom unit). To avoid confounding the Level 1 and 2 variances, these students ( $n = 33$  bullies in 33 classrooms,  $n = 23$  victims in 23 classrooms) were removed from the analyses. Thus, a total of 234 peer-identified bullies nested in 79 classrooms (23.1% girls; 51.7% White, 35.9% Black, 8.1% Hispanic, 3.4% Native American, 0.8% Asian or other) and 320 peer-identified victims nested in 97 classrooms (44.7% girls; 65% White, 24.7% Black, 6.6% Native American, 2.5% Hispanic, 1.2% multiracial or other) were included in the analyses for Model 2. Chi-square analyses revealed no significant gender or ethnic differences in those excluded versus included in analyses ( $\chi^2s < 5.326$ ,  $ps > .377$ ). No significant difference in popularity emerged for those excluded versus included in the analyses for attunement to bullies ( $Ms = 0.15$  vs.  $0.43$  respectively,  $t = 1.397$ ,  $p = .212$ ). However, those excluded from Model 2 were significantly less popular than those included in the analyses examining attunement to victims ( $Ms = -.60$  vs.  $-.24$ , respectively,  $t = 5.128$ ,  $p < .001$ ). Teachers were attuned to 72.8% ( $n = 171$ ) of the 235 bullies and 55.3% ( $n = 177$ ) of the 320 victims.

For Models 3 and 4, the Levels 1 and 2 sample sizes were reduced as only a subset of teachers provided sufficient data on the variables of interest to be included in the analyses, yielding a final sample of  $n = 136$  bullies (27.2% girls; 33.8% White, 51.5% Black, 14% Hispanic, 0.7% Native American) nested in 50 classrooms and  $n = 190$  victims (46.3% girls; 54.2% White, 38.9% Black, 4.2% Hispanic, 1.6% multiracial, 1.1% Native American) nested in 58 classrooms. Comparing participants included in the analyses for Model 2 versus Models 3 and 4 revealed no significant gender differences ( $\chi^2s < 3.119$ ,  $ps > .077$ ) but significant racial/ethnic differences ( $\chi^2s > 65.336$ ,  $ps < .001$ ). Students with racial minority backgrounds (e.g., Black, Hispanic) were more likely to be included in Models 3 and 4 whereas White students were more likely to be excluded. There was no significant difference in popularity between those excluded versus included in the models testing attunement to bullies ( $Ms = .27$  vs.  $.54$ , respectively,  $t = 1.632$ ,  $p = .104$ ). However, those excluded from the analyses examining attunement to victims were significantly less popular than those included ( $Ms = -.36$  vs.  $-.16$ , respectively,  $t = 2.489$ ,  $p = .013$ ). Of those included in the analyses, teachers were attuned to 72.1% ( $n = 98$ ) of 136 bullies and 54.7% ( $n = 104$ ) of the 190 victims.

In all models, we entered the following student-level variables at Level 1: gender (0 = girls, 1 = boys), racial/ethnic status (0 = White, 1 = racial/ethnic minorities; Black, Hispanic, Native American, Asian, multiracial, other race/ethnicity), and popularity status. Level 2 classroom variables included: descriptive bullying norm, bullying norm salience, status hierarchy, and class size. Level 2 teacher variables included: teacher gender and teaching experience. For all models, we report odds ratios (OR) and confidence intervals (CI) which are interpreted thusly: odds ratios above 1 indicate that the variable is associated with higher odds of teacher attunement (Szumilas, 2010). The dataset and analysis code are not publicly available but are available from the corresponding author on reasonable request.

## 4 | RESULTS

### 4.1 | Descriptives

Boys represented the majority of bullies (76.8%) and victims (55.1%) identified by peers. The average popularity status of bullies was  $.39$  ( $SD = 1.20$ ) and ranged from  $-1.13$  to  $4.30$ . For victims, their average popularity status was  $-.26$  ( $SD = .74$ ) and ranged from  $-1.21$  to  $3.49$ . The average norm salience of bullying (i.e., the within-classroom association between popularity and bullying as measured by Pearson's  $r$ ) across classrooms included in the analyses for attunement to bullies was  $r = .13$  ( $SD = .26$ , range  $-.31$  to  $.70$ ) and  $r = .11$  ( $SD = .29$ , range  $-.33$  to  $.89$ ) for attunement to victims. The negative correlation means that in some classes, the popular students did not engage in bullying. In contrast, the positive correlation indicates that students who were nominated as popular also were nominated by peers as bullies or victims.

The average descriptive norm for bullying across all classrooms included in bully attunement analyses ( $M = 27.44$ ,  $SD = 19.71$ , range 3.49–75) was similar to the rates found in classrooms included in the victim attunement analyses ( $M = 29.05$ ,  $SD = 21.34$ , range 3.06–98.77). The status hierarchy distribution in classrooms included in the analyses ranged from 4.09 to 175.73 and 221.20 (bully and victim attunement respectively). As a reminder, peer nomination proportion scores used to calculate the descriptive norm and status hierarchy were multiplied by 1000 to magnify differences.

## 4.2 | Teacher attunement to bullies

Table 1 presents the ORs and 95% CIs from the hierarchical generalized linear modeling analyses. As shown from the results for Model 1, the odds were higher that teachers would be attuned to bullies who were boys ( $OR = 2.865$ ,  $p = .017$ ) versus girls. There was no significant association between racial/ethnic status and the odds of teacher attunement to bullies ( $OR = 0.988$ ,  $p = .978$ ). Popularity was associated with lower odds for teacher attunement to bullying ( $OR = 0.668$ ,  $p = .010$ ) meaning teachers were less likely to be attuned to bullying behavior the higher the bully's popularity status.

Results presented in Model 2 revealed that the odds of teacher attunement to bullies was not related significantly to any classroom variable: descriptive norm of bully ( $OR = 1.017$ ,  $p = .481$ ), norm salience ( $OR = 1.983$ ,  $p = .549$ ), hierarchy ( $OR = 0.987$ ,  $p = .225$ ), nor class size ( $OR = 0.964$ ,  $p = .315$ ). From the model examining teacher variables (Model 3), we found no association between teacher gender and likelihood of attunement ( $OR = 4.543$ ,  $p = .235$ ) nor between teaching experience and likelihood of attunement ( $ORs = 5.876$ ,  $.124$ ,  $ps > .162$ ).

In the full model testing student, classroom, and teacher variables simultaneously, student gender ( $OR = 5.883$ ,  $p = .027$ ) remained associated significantly with attunement to bullies but student popularity no longer was related significantly to attunement ( $OR = .553$ ,  $p = .062$ ). Thus, controlling for classroom and teacher variables, being a boy was related to higher odds of teacher attunement. No classroom variables ( $ps > .220$ ) nor teacher variables ( $ps > .085$ ) were associated significantly with the likelihood of attunement to bullies.

## 4.3 | Teacher attunement to victims

The results for teacher attunement to victims are presented in Table 2. As shown in Model 1, being a boy ( $OR = 1.646$ ,  $p = .043$ ) or a student from a racial/ethnic minority background ( $OR = 1.900$ ,  $p = .025$ ) was associated with higher odds for teacher attunement to victimization. Similar to the results for bullies, the likelihood that teachers would be attuned to victims decreased as students' popularity increased ( $OR = .391$ ,  $p < .001$ ).

Contrary to our expectations, no classroom variables were associated significantly with attunement to victims (Model 2). The descriptive norm of bully ( $OR = .988$ ,  $p = .286$ ), norm salience ( $OR = 1.141$ ,  $p = .788$ ), hierarchy ( $OR = 1.003$ ,  $p = .586$ ), and class size ( $OR = 1.002$ ,  $p = .907$ ) were not associated with attunement to victimization. We also found that teacher variables were not related significantly to victimization attunement (Model 3). Teacher gender was not associated significantly with attunement ( $OR = 1.329$ ,  $p = .537$ ) nor was teacher experience ( $ORs = .671$ ,  $1.926$ ,  $ps > .308$ ).

In the combined model assessing student, classroom, and teacher factors, only two factors emerged as significantly related to attunement: student gender ( $OR = 3.241$ ,  $p < .001$ ) and students' popularity status ( $OR = .461$ ,  $p = .002$ ). Thus, controlling for classroom and teacher variables, being a boy was related significantly to higher odds of teacher attunement to victims, and being popular was associated with lower odds of teacher attunement to victims.

**TABLE 1** Predicting teacher attunement to bullies from student, classroom, and teacher variables: odds ratios (OR) and confidence intervals (CI) from the multilevel mixed-effects generalized linear regression models

Variables	Model 1		Model 2		Model 3		Model 4	
	OR	CI	OR	CI	OR	CI	OR	CI
Level 1: Student								
Ethnic status	.988	.421–2.319	.449	.150–1.341	.210	.030–1.473	.126 <sup>†</sup>	.014–1.146
Gender	2.865*	1.208–6.795	2.383	.924–6.145	6.829*	1.375–33.92	5.883*	1.226–28.23
Popularity	.668*	.491–.909	.666*	.467–0.951	.603	.339–1.074	.553 <sup>†</sup>	.298–1.030
Level 2: Class and teacher								
Descriptive norm			1.017	.971–1.065			1.012	.932–1.099
Norm salience			1.983	.212–18.58			1188	.195–724.7
Status hierarchy			.987	.966–1.008			.990	.950–1.032
Class size			.964	.897–1.036			.843	.642–1.107
Teacher gender					4.543	.374–55.21	4.972	.399–61.93
Teaching exp 1–5 years					5.876	.490–70.45	4.076	.378–43.92
Teaching exp 31+ years					.124	.006–2.448	.067 <sup>†</sup>	.003–1.459

Note: Exp = experience. Ethnic status reference group = girls, Teacher gender reference group = females. Model 1 Level 1 (students)  $n = 267$ , Level 2 (classroom)  $n = 112$ . Model 2 Level 1  $n = 234$ , Level 2  $n = 79$ . Models 3 & 4 Level 1  $n = 136$ , Level 2  $n = 50$ .

<sup>†</sup> $p < .10$ .

\* $p < .05$ .

\*\* $p < .01$ .

**TABLE 2** Predicting teacher attunement to victims from student, classroom, and teacher variables: odds ratios (OR) and confidence intervals (CI) from the multilevel mixed-effects generalized linear regression models

Variables	Model 1		Model 2		Model 3		Model 4	
	OR	CI	OR	CI	OR	CI	OR	CI
Level 1: Student								
Ethnic status	1.900*	1.083–3.332	1.887†	1.001–3.555	1.813	.868–3.788	1.821	.854–3.886
Gender	1.646*	1.016–2.666	1.761*	1.074–2.900	3.167**	1.640–6.118	3.241***	1.698–6.186
Popularity	.391***	.254–.604	.402***	.258–.625	.428**	.251–.730	.461**	.279–.760
Level 2: Class and teacher								
Descriptive norm			.988	.966–1.010			.984	.958–1.011
Norm salience			1.141	.436–2.984			.558	.189–1.647
Status hierarchy			1.003	.992–1.013			1.006	.993–1.018
Class size			1.002	.968–1.037			1.056	.968–1.153
Teacher gender					1.329	.538–3.283	1.170	.485–2.820
Teaching exp 1–5 years					.671	.312–1.445	.596	.281–1.261
Teaching exp 31+ years					1.926	.396–9.373	2.442	.498–11.98

Note: Exp = experience. Ethnic status reference group = White. Gender reference group = girls. Teacher gender reference group = females. Model 1 Level 1 (students)  $n = 343$ , Level 2 (classroom)  $n = 120$ . Model 2 Level 1  $n = 320$ , Level 2  $n = 97$ . Models 3 & 4 Level 1  $n = 190$ , Level 2  $n = 58$ .

† $p < .10$ .

\* $p < .05$ .

\*\* $p < .01$ .

\*\*\* $p < .001$ .

## 4.4 | Sensitivity analyses

We conducted sensitivity analyses to assess the robustness of our findings. Some students were identified as bully-victims, meaning peers nominated them as both a victim and a bully. Bully-victims ( $n = 53$ ) represented 19.9% of the 267 bullies included in Model 1 and 15.5% of the 343 victims included in Model 1. We re-ran analyses excluding bully-victims and compared the results to the original models. In the analysis excluding bully-victims, gender was no longer related significantly to the odds of teacher attunement to bullies ( $OR = 2.157, p = .107$ ), but popularity still was related significantly to attunement ( $OR = .648, p = .011$ ).

Excluding bully-victims also did not change the results for classroom variables in Model 2 ( $ps > .139$ ), nor the results for teacher variables in Model 3 ( $ps > .236$ ). However, a few different results emerged in the combined model excluding bully-victims (Model 4) that differed from the original analysis. Gender was no longer associated significantly with odds for attunement to bullies ( $OR = 4.762, p = .086$ ). Class size was related significantly to the odds of teacher attunement to bullies ( $OR = .674, p = .030$ ) indicating that the likelihood a teacher would be attuned to bullies in their classroom was lower as class size increased. Additionally, the variable for teaching experience of 31 years or more was associated significantly with the odds of teacher attunement to bullies ( $OR = .043, p = .037$ ). Thus, compared to teachers at the mid-career level (experience between 6 and 30 years), having more than 31 years of experience was associated with lower odds for teacher attunement to bullies.

A similar pattern emerged for attunement to victims: removing bully-victims from the analyses did not change the pattern of results for Models 1–4. For instance, gender, ethnic status, and popularity remained associated significantly with the odds of teacher attunement in the student-only model, consistent with the original analyses ( $ps < .042$ ). Also consistent was the finding that no classroom or teacher factors were related significantly to the odds of teacher attunement to victims ( $ps > .102$ ) in Models 2–4. The same student-level factors that were significant in the original combined model (Model 4) were still significant after excluding bully-victims: being a boy was associated with higher odds ( $OR = 3.129, p = .002$ ), and being popular was associated with lower odds for teacher attunement to victims ( $OR = .474, p = .025$ ).

## 5 | DISCUSSION

Knowing which students are viewed as bullies and victims by peers is essential information teachers need in order to enact classroom management strategies that reduce the occurrence of bullying in the classroom and support victims. Because of the foundational importance of attunement to subsequent management practices and decisions, there was a critical need to add to the growing evidence of variables related to teachers' attunement (e.g., Dawes et al., 2017; Marucci et al., 2021). Such analysis provides much needed insight that can be applied to intervention efforts designed to increase teachers' likelihood of attunement to their students' social lives. Previously, no study had examined student-, classroom-, and teacher-level variables in combination and as such, this study makes an important contribution to the literature. We found that student gender and popularity status were key factors related to the extent to which teachers were attuned. Expectations for the association between classroom and teacher variables with the odds for teacher attunement were not supported with the exception of significant associations between class size and teaching experience and attunement to bullies found in the sensitivity analyses excluding bully-victims.

### 5.1 | Attunement to bullies and victims

It is promising to see that teachers were attuned to approximately three out of four bullies (73.4%), a rate higher than previous studies (e.g., 48.8% attunement to bullies; Marucci et al., 2021). In contrast, the rate of attunement to victims

was lower (57.4%) which suggests that a little less than half of victims were unnoticed by teachers and likely not getting the support they needed. As for the 53 bully-victims in our sample, only 52.8% of them were seen by teachers as bully-victims. The remaining bully-victims were rated by teachers as either victims only (7.5%), bullies only (28.3%), or neither (11.3%). These rates suggest more work is needed to help teachers identify which students are involved in bullying and victimization.

## 5.2 | Student variables associated with attunement to bullies and victims

Across almost all models, we found that teachers were more attuned to boy bullies and victims. We expected this finding based on evidence that boys more often are involved in bullying as perpetrators and victims (e.g., Nansel et al., 2001; Smith et al., 2019), and they may be involved in more visible forms like physical bullying and victimization that make it easier for teachers to identify (Nansel et al., 2001; Putallaz et al., 2007). The results of our analyses suggest that being aware of bullying behavior, particularly by boys, may be important to teachers' management practices to reduce bullying in the classroom, specifically the extent to which bullying is rewarded with social status (Ahn & Rodkin, 2014). It is worth considering whether attunement to boys was driven primarily by their gender or teachers' greater awareness of overt forms of bullying and victimization that are more prevalent among boys (e.g., Putallaz et al., 2007). Future work is needed to disentangle the unique effects of these factors on teachers' attunement.

The other student factor consistently associated with the odds of teachers' attunement was students' popularity. As expected, we found that the more popular bullies and victims were, the less likely teachers were to be attuned to their bullying involvement. Popular bullies may be able to hide their perpetration from teachers given their elevated levels of social savvy and keen ability to pick on targets successfully (Adler & Adler, 1998). Though anticipated, it is still concerning that teachers were not attuned to these popular bullies because popular youth have the power to establish probullying norms among peers and set up a class climate that is risky for victims (e.g., Adler & Adler, 1998; Bandura, 1977; Dijkstra & Gest, 2015).

This finding is contrary to a previous study (Marucci et al., 2021) which found a positive association between popularity and attunement to peer-nominated bullies. One possible explanation for the difference in these two findings is how popularity was measured in Marucci et al. (2021) and this current one. They utilized teacher-rated popularity in their analyses which means that the more popular bullies were according to *teachers*, the more likely teachers were attuned to bullies (Marucci et al., 2021). In contrast, we used popularity measured via peer nominations in this current study, meaning the more popular bullies were according to *peers*, the less likely teachers were to be aware of their bullying behavior. An important next step will be to assess whether the same positive association between teacher-rated popularity and attunement to bullies exists in this current sample, which could help disentangle whether the contradictory results between these two studies can be attributed to different measurement approaches or to different degrees of knowledge about popularity and bullying dynamics (i.e., teachers' awareness that some bullies are popular, some are not). A second logical follow-up question is whether teachers and peers see the same students as popular (i.e., teacher attunement to popularity). One study examining attunement to popular students found an average within-classroom correlation between teacher- and student-reports of popularity to be  $r_{\text{Mean}} = .59$  with a range from .11 to .87, suggesting moderate, but not perfect, agreement (Ahn & Rodkin, 2014). Additional research is needed to add to our understanding of teachers' attunement to multiple peer social dynamic processes.

In line with our expectations, we also found that teachers were less likely to be attuned to victims with higher popularity status. Despite the fact that they do not fit the typical victim mold (e.g., weak, low-status youth), some popular students are victims (e.g., Malamut et al., 2020, 2021; Prinstein & Cillessen, 2003). Indeed, examination of the descriptive statistics for popularity of peer-identified victims included in our analyses revealed that even though victims overall tended to have low levels of popularity ( $M = -0.26$ ), the range of popularity scores went as high as 3.49, demonstrating that some victims were exceptionally popular among their peers. What is striking about this finding is that these popular victims were identified via peer nominations which typically are thought to capture lower status



victims (see Dawes & Malamut, 2020 for discussion). This evidence captures the heterogeneity in victims' status (e.g., popularity, Malamut et al., 2020, 2021; Rodkin et al., 2000) which directly impacts the identification of victims and subsequent efforts to support them. Altogether, the results across all models indicate that it is important not only to be aware of who is popular, but also recognize that those popular students can both bully and be victimized by their peers.

### 5.3 | Associations (or lack thereof) between classroom variables and attunement

A surprising finding was the lack of association between most classroom variables and teacher attunement to bullies and victims. Despite strong rationale for expecting these classroom context variables to be related to teacher attunement, we found no evidence that norms for bullying, or the status hierarchy structure were related to attunement. These classroom features have been shown to be important for student behavior and adjustment (e.g., Pouwels et al., 2019; Pozzoli et al., 2012), but the results of this study suggest these variables do not explain differences in teachers' attunement to bullies or victims (as identified by peers) in their classrooms. We offer a few explanations for these findings.

First, the low ICC in attunement to victims across classrooms (ICC 5%) suggests that there was little variability in this variable across teachers, constraining the likelihood that our Level 2 classroom predictors could explain differences in this variable. In contrast, the large ICC in attunement to bullies across classrooms (40%) suggests considerable heterogeneity in this variable across classrooms: some teachers were highly attuned to bullies whereas others were not. This suggests that other classroom variables could explain differences in attunement (e.g., emotional support; Cappella et al., 2012; class climate, student-teacher relationship quality; Thornberg et al., 2018) that were not included in this study and should be the focus of future research.

Second, it is possible that these classroom variables are still relevant for more global measures of attunement. In this study, our attunement measure was narrow in focus: we were interested in understanding factors that explain whether teachers would be attuned to specific bullies and victims in their classrooms. As such, our measure does not capture the overall correlation between teacher and peer reports (with high correlation coefficients indicating greater attunement; Ahn & Rodkin, 2014), nor does it reflect attunement to other indicators of students' social positioning as other researchers have done (e.g., popularity, likeability; Marucci et al., 2018). Each approach has merit depending on the research aim in question. However, because there are consequences for specific victims and bullies "falling through the cracks" (e.g., Armitage, 2021), we were driven in this study to understand the degree to which teachers were aware of bullies and victims in their classrooms.

Third, it may be that classroom dynamics according to be peers' perspectives (e.g., descriptive norm based on peer nominations) may be less influential to attunement than classroom dynamics according to teachers' perspectives (i.e., descriptive norm based on teacher report). As we demonstrated in the creation of the attunement variable itself, teachers are not always privy to and do not always see these peer processes. If they are not perceptually aware of these classroom norms, then it makes sense that such contextual variables created from peer-reports would be less influential for teachers' degree of attunement. A logical next step would be to assess teachers' perceptions of the classroom and examine how those perceptions relate to their attunement. Prior research has demonstrated the predictive power of teachers' perceptions of individual youth's characteristics (Dawes et al., 2017) and teachers' perceptions of youth's group mates (Marucci et al., 2021) for teacher attunement. Thus, to understand attunement (or lack thereof), assessing classroom descriptive norms, norm salience, and the status hierarchy based on teacher-reports may be a fruitful future direction.

As for class size, we failed to find evidence that class size was related to teachers' attunement to victims. Class size was related significantly to the odds of teacher attunement to "pure" bullies in the sensitivity analyses excluding bully-victims. As class size increased, the odds that teachers would be attuned to bullies decreased after controlling for all other variables. It may be harder for teachers to keep track of their students' social experiences in larger class sizes

(e.g., Finn et al., 2003), and our results suggest this may be the case specifically for bullies who are more likely to be popular and socially competent enough to hide their bullying from teachers (e.g., Guy et al., 2019; Sutton et al., 1999a, 1999b; Yang & Salmivalli, 2013). To our knowledge, only two studies have examined relations between class size and attunement: one finding a negative association between class size and attunement to bully-victim dyads (Ahn et al., 2013) and the other finding no association between class size and attunement to bullies and victims (Marucci et al., 2021). The mixed evidence from the limited work in this area necessitates further study.

## 5.4 | Teacher variables associated with attunement to bullies and victims

We found no support for our hypotheses regarding associations between teacher factors and attunement to victims and bullies in the main analyses. For instance, contrary to our expectations, teacher gender was not related significantly to attunement. We initially predicted that female teachers would have higher levels of attunement compared to male teachers given the extant literature demonstrating greater concern about bullying by female teachers (e.g., Green et al., 2008; Naylor et al., 2006), but our results did not support this expectation. Only two other studies investigated associations between attunement and teacher gender, and the results were mixed: one found no association (Marucci et al., 2021) and one found that females had lower attunement to a combination of students' social status and behavior (Marucci et al., 2018). One productive direction to clarify these mixed results would be to test the underlying assumptions driving gender predictions. For instance, gender effects may not be driven by gender per se, but rather by other correlated factors such as beliefs about peer victimization (Troop-Gordon & Ladd, 2015) or attitudes toward bullying (Veenstra et al., 2014). Considering the results of the current study in combination with existing evidence, the question of whether attunement differs based on gender remains inconclusive; hence, we recommend researchers continue to examine this factor in future investigations. Further, it may be prudent to assess relevant perceptions from teachers which may offer insight into the role of gender versus attitudes toward bullying.

We expected there to be a curvilinear relationship between teaching experience and attunement but did not find support for this expectation in the main analyses. However, in the sensitivity analyses which excluded bully-victims, teachers with more than 31 years of experience were less likely to be attuned to "pure" bullies in their classrooms compared to teachers with 6–30 years of experience. Teachers with advanced years of experience are posited to be more disengaged (Huberman, 1989) and disengaged teachers may be unaware of bullies, particularly socially savvy ones with high social status (e.g., Guy et al., 2019; Sutton et al., 1999a, 1999b). This finding provides tentative evidence of a curvilinear association between experience and attunement, which is counter to prior research finding either no association between experience and attunement (Ahn et al., 2013) or a linear association between experience and attunement (Marucci et al., 2018). These conflicting findings may reflect measurement differences in the attunement variables in each study (e.g., attunement to bully-victim dyads, Ahn et al., 2013; attunement to well-liked, disliked, prosocial, aggressive, and risk-taking students, Marucci et al., 2018; attunement to bullies, current study). Future work should continue to examine teaching experience to ascertain whether these results can be replicated in different studies and explore both linear and curvilinear associations.

## 5.5 | Strengths, limitations, and future directions

This study had a number of strengths. To our knowledge, this is the first study to examine simultaneously if and how factors across multiple ecological levels are associated with teacher attunement to bullies and victims. By including student-, classroom-, and teacher-level factors in our analytic models, our findings provide a more comprehensive and ecologically valid picture of teacher attunement that reflects the complexity of the classroom setting than previously provided in the research literature. Consequently, these findings have important implications for teacher professional development and intervention efforts designed to address classroom bullying. Most notably, efforts to

increase teachers' attunement should focus on students who may go unnoticed as bullies and victims, including girls and popular students. Additionally, the relatively large sample size increased the power of our statistical analyses, allowing for a multi-level examination of the associations between attunement and multiple students, classroom, and teacher factors. Further, this study benefitted from a multi-method, multi-informant research design, thereby reducing shared method variance and allowing us to compare peer nominations and teacher reports of bullies and victims to assess attunement. Last, the fact that our sensitivity analyses excluding bully-victims yielded similar results to the original models increases our confidence in the robustness of results.

Strengths aside, some limitations warrant acknowledgement. Most notable is the correlational nature of the study which precludes us from interpreting the directionality of the relationship between these factors and attunement. For example, the degree of teacher attunement may impact the overall level of bullying in the classroom such that highly attuned teachers may utilize management practices (e.g., Braun et al., 2019; Kilday et al., 2022; Norwalk et al., 2020) that subsequently decrease the average level of bullying in the classroom. Future research might address this issue by using longitudinal designs to ascertain how attunement relates to specific management strategies and how those strategies impact the degree of bullying among students over time. However, this initial attempt to understand pertinent factors associated with attunement provides an important basis for future investigations.

A second set of issues involves the predominantly rural population from which this sample was drawn. The rurality of the sample was purposeful for the larger project but prevents us from generalizing the results of this study to other urban areas. Future research should examine attunement in various locales to understand the role of the larger socio-ecological context on attunement to bullying dynamics.

A third limitation is that our study does not consider bullying forms, and we cannot conclude whether teachers were more attuned to different forms of bullying. Forms of bullying can be physical (e.g., hitting, pushing), verbal (e.g., name calling), social (e.g., rumor spreading), relational (e.g., social exclusion), or cyber (e.g., bullying using technology like social media or phone messages) in nature. It would be reasonable to expect that overt forms of bullying (e.g., physical) may be easier for teachers to identify, thereby increasing the likelihood of attunement. Further, teachers tend to view physical forms as more serious (e.g., Yoon & Kerber, 2003) which may bias their cognitive processes (e.g., attention) to attunement to physical acts. In contrast, covert or indirect forms of bullying like social exclusion or rumors can be difficult for teachers to keep track of, thereby decreasing the likelihood that they would be attuned to this form of bullying. The current study does not offer this degree of specificity and it is imperative that future research ascertain whether attunement differs depending on the form of bullying to discover which bullies and victims may be going unnoticed, and therefore unsupported, by teachers.

A final limitation is that this study does not address cases in which teachers view youth as bullies or victims, but those same students are not nominated as bullies or victims by their peers. What does it mean for a student's adjustment when their teacher views them and treats them like a bully or victim? Based on the idea of teachers as social referents (Walden & Ogan, 1988), it is possible that peers will pick up on cues from the teacher, thereby influencing how peers then view and treat the student. Support for this phenomenon has been found for teacher and peer liking: teachers' behavior toward students was related to peers' perceptions of teacher dislike for those students which was subsequently related to peers' own dislike of students (Hendrickx et al., 2017). It seems logical that a similar process would unfold between teacher- and peer-reports of bullying and victimization over time but this has not been examined yet. Future research should investigate the extent to which teachers serve as social referents for this dimension of peer social dynamics which has implications for students' adjustment and teaching practices.

## 6 | CONCLUSION

In order for teachers to manage peer social dynamics effectively and reduce bullying in their classrooms, they need to be attuned to their students' victimization involvement. Teachers' attunement to the social lives of their students is a critical component of their management of peer dynamics specifically (Braun et al., 2019;

Farmer et al., 2011, 2019) and has been shown in recent studies to contribute to positive peer experiences (e.g., students treat each other with respect; Kilday et al., 2022). Given the importance of attunement, this study sought to add to the literature by investigating whether key student, classroom, and teacher variables related to the likelihood that teachers would be attuned to the bullies or victims within their classrooms. The results indicate that student-level variables primarily explained attunement likelihood. Teachers were more likely to be attuned to bullies and victims who were boys but less likely to be attuned to bullies and victims who were popular. Our findings suggest that teachers need support identifying who is involved in bullying. In particular, challenging stereotypes about bully and victim characteristics may help teachers recognize students involved who do not fit the typical role (e.g., popular victims). This insight is important for our efforts to train and support teachers as they endeavor to reduce victimization, manage peer social dynamic processes, and encourage positive adjustment for all their students.

## ACKNOWLEDGMENTS

This research was supported by grants from the Institute of Education Sciences (R305A04056, R305A140434, R305A160398) to Thomas W. Farmer and Jill V. Hamm. The views expressed in this paper are those of the authors' and do not reflect the view of the granting agency.

## CONFLICT OF INTEREST

The authors declare that they have no conflict of interest.

## DATA AVAILABILITY STATEMENT

The dataset analyzed during the current study are not publicly available but are available from the corresponding author on reasonable request.

## ETHICAL APPROVAL

All procedures performed in the current study were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

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**How to cite this article:** Dawes, M., Starrett, A., Norwalk, K., Hamm, J., & Farmer, T. (2023). Student, classroom, and teacher factors associated with teachers' attunement to bullies and victims. *Social Development*, 32, 922–943. <https://doi.org/10.1111/sode.12669>