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Effects of Cooperative Learning on Peer Relations, Empathy, and Bullying in Middle School

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Abstract

Although researchers have developed prevention programs to reduce bullying, the results are mixed, and this may be due to a degree of uncertainty in their theoretical foundation. In particular, these programs share an emphasis on *empathy* as a personal attribute that can be enhanced among students through the application of specific curricula that will, in turn, contribute to a reduction in bullying behavior. However, the link between empathy and bullying is unclear, as is the ability of bullying prevention programs to actually impact student empathy. In this study, we used a cluster randomized trial ($N = 15$ middle schools, 1,890 students, 47.1% female, 75.2% White) to evaluate the impact of cooperative learning on bullying, and evaluated whether these effects were mediated by empathy and peer relatedness. Our results indicated that cooperative learning can significantly reduce bullying, and that some of this effect is transmitted via enhancements to affective empathy. Cooperative learning also demonstrated significant positive effects on cognitive empathy, but this did not have an effect on bullying. We also found that the effects of cooperative learning on cognitive and affective empathy were mediated by improvements in peer relatedness. These findings add a degree of clarity to the literature, which to date has found mixed results when evaluating links between empathy and bullying. Our results also represent the first time, as far as we are aware, that an anti-bullying program has been found to have significant effects on both cognitive and affective empathy.

Keywords

bullying; empathy; relatedness; cooperative learning; middle school

Anywhere from a quarter to a third of all students are bullied by peers at some point during their school years (Craig et al., 2009; World Health Organization, 2012). This experience is often highly stressful, particularly for adolescents, who are undergoing specific cognitive and social changes that render them uniquely vulnerable to bullying. For example, children begin to exhibit a physiological stress response in early adolescence (Stroud et al., 2009), and adolescents also experience a developmental deficit in self-regulatory capability (Casey,

Geidd, & Thomas, 2000). As a result, bullying has been linked to a variety of emotional and behavioral problems in later adolescence and early adulthood, including an increased likelihood of violent behavior, drug use, and suicide (Gini & Pozzoli, 2009; Ttofi, Farrington, & Lösel, 2012; Ttofi et al., 2016; Van Geel, Vedder, & Tanilon, 2014). Unfortunately, the transition to middle school is often accompanied by a surge in bullying and aggressive behavior (Robers, Kemp, & Truman, 2013), suggesting the need for effective bullying prevention programs for this age group.

Although researchers have developed prevention programs to reduce bullying, the results are mixed (Ttofi, Farrington, & Baldry, 2008). Meta-analyses of whole-school anti-bullying programs have found significant but small effects, and effects have tended to reflect positive changes in knowledge, attitudes, and perceptions rather than change in actual behavior (Ferguson, Miguel, Kilburn, & Sanchez, 2007; Merrell, Gueldner, Ross, & Isava, 2008). A more recent meta-analysis reached similar conclusions, finding that effects were statistically significant but small (Ttofi & Farrington, 2011). Bullying prevention programs have also been found to be more effective outside of the United States as compared to within the U.S. (Evans, Fraser, & Cotter, 2014). In addition, effects of bullying prevention programs tend to be weaker when study designs are more stringent (i.e., randomized trials; Langford et al., 2015). Finally, effects of anti-bullying programs have been found to be stronger in elementary school than in middle and high school, with a precipitous drop in effectiveness starting around 7th grade (Yeager et al., 2015); the authors speculated that this reflected programmatic curricula that was perceived as directive and controlling, which goes against the adolescent drive for increased autonomy.

The uneven results for bullying prevention programs to date may indeed be due to a mis-fit between adolescent needs and existing anti-bullying curricula. Thus, one of the primary goals of this study is to extend earlier research on a different (i.e., non-curricular) approach to bullying prevention. At the same time, however, we also wish to bring a greater degree of clarity to the theoretical foundation for bullying prevention. In particular, existing prevention programs share an emphasis on *empathy* as a personal attribute that can be enhanced among students through the application of specific curricula that will, in turn, contribute to a reduction in bullying behavior. Unfortunately, the empirical literature is far from clear on the merits of this theoretical formulation. Some research has found a significant negative relationship between empathy and various types of aggressive behavior, including bullying (Jolliffe & Farrington, 2004; Mitsopoulou & Giovazolias, 2015; Van Langen, Wissink, Van Vugt, Van der Stouwe, & Stams, 2014; Zych, Ttofi, & Farrington, 2019), and most of this research has implicated *affective* empathy (i.e., empathetic concern, or *experiencing* the emotions of another) as having a significant negative relationship with bullying, whereas *cognitive* empathy (i.e., perspective-taking, or *understanding* the emotions of another) has been found, in many studies, to have little to no influence on bullying (Gini, Albiero, Benelli, & Altoè, 2007; Jolliffe & Farrington, 2006a; Jolliffe & Farrington, 2011; Stavrinides, Georgiou, & Theofanous, 2010). According to theory, students with high affective empathy will be better able to experience the negative emotional reaction of a bullied classmate and will thus be less inclined to continue bullying or to bully others in the future. Cognitive empathy, on the other hand, only suggests the ability to understand

another's emotions, but not to experience them vicariously, and thus may be insufficient to inhibit bullying behavior.

Although the theory is credible, other research finds that cognitive empathy is, in fact, significantly related to bullying, either negatively (Kokkinos & Kipritsi, 2012; Mitsopoulou & Giovazolias, 2015; van Noorden, Haselager, Cillessen, & Bukowski, 2015) or, in some cases, positively (Caravita, Di Blasio, & Salmivalli, 2009). This variance in findings may be because much of the research is cross-sectional and/or observational, and thus reflects correlational rather than causal links. Research that links empathy to bullying within an experimental framework (i.e., in the context of a randomized trial) would be more conclusive, but no research to date has evaluated the relationship between bullying and empathy in this manner.

At the same time, little research to date has evaluated the potential for enhancing empathy among adolescents. A recent meta-analysis found that most research on empathy training has been conducted with college or adult populations, and the few studies involving adolescents did not demonstrate a significant overall effect (Teding van Berkhout & Malouff, 2016). Another recent review examined the effects of social-emotional learning (SEL) programs on empathy and found very few studies with adolescent samples, and even fewer that used a randomized design (Malti, Chaparro, Zuffianò, & Colasante, 2016; see Table 2). In addition, bullying prevention programs have rarely been evaluated for their effects on empathy among adolescents, and the limited research that does exist demonstrates null effects (Kärnä et al., 2013). Thus, not only is the relationship between empathy and bullying unclear, but it is also unclear whether school-based programs can enhance empathy in adolescent populations.

Bullying and Cooperative Learning

In previous research, an instructional approach known as *cooperative learning* has been found to reduce bullying and victimization among marginalized students and to promote higher levels of peer relatedness (i.e., perceived acceptance from peers), with moderate-to-large effect sizes (Van Ryzin & Roseth, 2018a). In contrast to didactic approaches to instruction, cooperative learning uses carefully structured group-based learning activities. Interpersonal contact during cooperative learning is guided by Contact Theory (Allport, 1954; Pettigrew, 1998), which specifies the conditions under which social contact can lead to the reduction of biases and prejudices. These conditions include: (a) individuals are brought together as equals, with differences in social status being explicitly minimized; (b) pairs or groups of individuals must be given a common goal to direct their interactions, and must be incented to work together to achieve their goal (i.e., *positive interdependence*); (c) the social contact must involve an extended amount of face-to-face interaction time, preferably including mutual disclosure to assist in discovering areas of commonality; and (d) those in positions of authority (i.e., teachers) must explicitly encourage and support positive, collaborative interactions and discourage any hints of ingroup vs. outgroup bias or prejudice.

Research on Contact Theory not only demonstrates that this sort of structured interpersonal contact can reduce bias and prejudice (Pettigrew & Tropp, 2006), but also finds that

enhancements to empathy can mediate these effects (Pettigrew & Tropp, 2008). The structured interpersonal contact specified by Contact Theory is also central to cooperative learning, suggesting that well-designed cooperative learning lessons could have a significant impact on student empathy. To date, however, cooperative learning has not been tested for its ability to enhance adolescent empathy.

Contact Theory researchers have hypothesized that interpersonal contact, when structured as specified above, enhances empathy by improving interpersonal relationships (Pettigrew & Tropp, 2008). Specifically, structured contact is hypothesized to increase self-disclosure, which enhances interpersonal affect while providing insight into the concerns and perspectives of others. Similarly, research on cooperative learning finds strong positive effects on peer relations (Roseth, Johnson, & Johnson, 2008). Students in cooperative groups tend to interact in ways that promote goal attainment, such as helping each other and sharing information and resources (Johnson, Johnson, & Maruyama, 1983; Johnson, Johnson, Roseth, & Shin, 2014). The positive feelings that arise from these collaborative, supportive interactions tend to be transferred to the group members who promote one's success, resulting in a "benign spiral" that further increases positive social interactions (Deutsch, 1949, 1962). In addition, when using cooperative learning, teachers are trained to reinforce the use of positive social skills by observing student interactions during learning activities and recording the number of times students exhibit particular kinds of positive, helpful behavior (Johnson et al., 2013). Finally, after the lesson is complete, students are instructed to find something specific and positive to say about each person's contribution to the group's performance, further cementing the positive relations that arose during the lesson. We propose that this focus on social contact and the development of social skills enables cooperative learning to promote positive peer relations, which supports the development of empathy in students and, in turn, reduces bullying.

The Present Study

Using a small-scale cluster randomized trial of the Johnsons' approach to cooperative learning (Johnson et al., 2013), we will evaluate the following hypotheses:

1. Cooperative learning will significantly reduce bullying over a two-year period;

2. The effects of cooperative learning on bullying will be mediated by gains in student empathy; and,

3. The effects of cooperative learning on empathy will be mediated by the development of more positive peer relations.

The theoretical model is shown in Figure 1. We included both cognitive and affective empathy in our model, but given the uncertain nature of the literature, we had no a priori hypotheses regarding which aspect of empathy may serve as a mediator of effects on bullying. Finally, given sex differences in the link between empathy and bullying (Caravita et al., 2009; Jolliffe & Farrington, 2006a), we evaluated sex differences in our models.

Method

All aspects of this study were approved by the Institutional Review Board (IRB) at the Oregon Research Institute. This study was registered as trial NCT03119415 in ClinicalTrials.gov under Section 801 of the Food and Drug Administration Amendments Act.

Sample

The sample was derived from a small-scale randomized trial of cooperative learning in 15 rural middle schools in the Pacific Northwest. Schools were matched based upon size and demographics (e.g., free/reduced lunch percentage) and randomized to condition (i.e., intervention vs. waitlist control). We were concerned about the likelihood of losing schools assigned as controls, so we randomized an extra school to this condition (i.e., 8 waitlist-control vs. 7 intervention schools).

Our analytic sample included $N = 1,890$ students who enrolled in the project during the 2016–2017 or 2017–2018 school years. We achieved greater than 80% student participation at each data collection point by using a passive consent procedure and providing research staff to oversee the data collection. We also offered compensation to the schools for participating in the project, and enrolled participating students in a prize raffle. Student demographics by school are reported in Table 1. Overall, the sample was 47.1% female ($N = 890$) and 75.2% White ($N = 1,421$). Other racial/ethnic groups included Hispanic/Latino (13.2%, $N = 249$), multi-racial (5.3%, $N = 100$), and American Indian/Alaska Native (3.1%, $N = 58$); our sample included less than 1% Asian, African-American, and Native Hawaiian/ Pacific Islander. Overall, 13.9% ($N = 262$) were reported as having Special Ed status, 78.6% ($N = 1486$) did not have Special Ed status, and 7.5% ($N = 142$) were missing this designation. Free-and-reduced-price lunch (FRPL) status was not made available by the schools, although school-level FRPL figures (obtained from state records) are reported in Table 1.

Procedure

Training for intervention school staff began in the fall of 2016 and continued throughout the 2016–2017 school year, consisting of 3 half-day in-person sessions, periodic check-ins via videoconference, and access to resources (e.g., newsletters). The three in-person training sessions per school were conducted in (1) late September and early October, (2) late October through early December, and (3) late January through late March. Training sessions were conducted by D. W. and R. T. Johnson, supported by the authors, and utilized *Cooperation in the Classroom, 9th Edition* by Johnson, Johnson, and Holubec (2013); each staff member was given a copy of the book. Due to the geographic dispersal of the schools, each school received training individually according to their own schedule for professional development. Finally, we conducted a one-day administrator training during the summer of 2017, and a half-day follow-up training in the second year.

Under the Johnson's approach, cooperative learning can include reciprocal teaching (e.g., Jigsaw), peer tutoring, collaborative reading, and other methods in which peers help each

other learn in small groups under conditions of positive interdependence. The Johnsons' approach also emphasizes individual accountability, explicit coaching in collaborative social skills, a high degree of face-to-face interaction, and guided processing of group performance. Cooperative learning is viewed as a conceptual framework within which teachers can apply the basic concepts to design their own group-based activities using existing curricula.

Measures

Student data collection was conducted in September/October and March/April of the 2016– 2017 and 2017–2018 school years (4 waves in total) using on-line surveys (i.e., Qualtrics; https://www.qualtrics.com/). To assess fidelity of implementation, we also conducted teacher observations. A Certificate of Confidentiality was obtained for these data from NIAAA (#CC-AA-17–011). To shrink the overall number of items and reduce participant burden, existing data from other studies were used to select the highest-loading items from each scale below (additional information available from the first author).

Peer relatedness—We used 4 items from the Relatedness Scale, which has been used in previous research as a predictor of positive school adjustment in adolescents (Furrer & Skinner, 2003). Items included "When I'm with my classmates, I feel accepted" and "When I'm with my classmates, I feel unimportant" (reverse scored). Students responded on a 4-point scale from 1 (*Not at all true*) to 4 (*Very true*). Items were averaged to arrive at the scale score. Alpha reliability was .71 at wave 1 and .79 at wave 2.

Empathy—We assessed empathy using a subset of items from the Basic Empathy Scale (Jolliffe & Farrington, 2006b). Cognitive empathy was assessed using 3 items, including "I can usually realize quickly when a friend is angry" and "I can often understand how people are feeling even before they tell me". Affective empathy was assessed using 3 items, including "After being with a friend who is sad about something, I usually feel sad" and "I can often understand how people are feeling even before they tell me". Students responded on a 5-point scale from 0 (*Never*) to 4 (*7 or more times*) and items were averaged to arrive at the final scores. Alpha reliability was between .69 and .78 for Waves 1–3.

Bullying—We assessed bullying using a subscale from the University of Illinois Bully Scale (Espelage & Holt, 2001). We used 5 items, including "I teased other students while we were in a group" and "I spread rumors about other students". Students responded on a 5-point scale from 0 (*Never*) to 4 (*7 or more times*) and items were averaged to arrive at the final scores. Alpha reliability was .74 to .83 for Waves 1–4.

Demographics—Sex was collected from school records and coded as *Male* (0) vs. *Female* (1).

Observed intervention fidelity—Research staff blind to intervention assignment observed teaching practices in intervention and control schools. We trained our observers to adequate reliability using simulated data before they were permitted to conduct observations in actual classrooms, and we used an established observation protocol for key aspects of

cooperative learning (e.g., positive interdependence; Krol, Sleegers, Veenman, & Voeten, 2008; Veenman et al., 2002). Observations were conducted once in the late fall/early winter and again in the spring. Observers remained in a classroom for an entire class period.

Analysis Plan

A test of mediation traditionally includes an initial direct-effects model that tests the path between the predictor and outcome (commonly referred to as "path c"), followed by a mediation model in which the following paths are tested: the predictor to the presumed mediator ("path a"), the mediator to the outcome ("path b"), and the combined indirect effect of the predictor on the outcome via the mediator, while controlling for the direct effect (commonly referred to as "path c'", or "path c-prime"; Judd, Kenny, & McClelland, 2001; MacKinnon & Dwyer, 1993).

Thus, we initially tested a direct-effects model for bullying (referred to in the Results section as "Model 1"). We used all four waves of measurement in a latent growth curve and evaluated intervention effects on the linear slope (i.e., the change in bullying during the project). Next, we evaluated cognitive and affective empathy as mediators of these effects using linear growth curve terms that included the first three waves of measurement (i.e., Model 2). We calculated the indirect effects of the intervention on bullying by means of both forms of empathy. Finally, we added peer relatedness to the model as a mediator of intervention effects on empathy, and tested the indirect pathway to both forms of empathy (i.e., Model 3). We used peer relatedness from wave 2, controlling for wave 1 levels, to represent change, as two time points are not sufficient to create a latent growth curve. The full model (i.e., Model 3) is represented in Figure 1. At each step, we tested for sex differences. All linear growth curve slopes were regressed on the corresponding intercept terms, and intercept terms were allowed to correlate with each other.

We fit these models using Mplus 7.4 (Muthén & Muthén, 1998–2012) and Maximum Likelihood (ML) estimation with robust standard errors, which can provide unbiased estimates in the presence of missing data and/or non-normal distributions (Enders & Bandalos, 2001). Mplus also enabled us to account for the nesting in the data and calculate appropriate standard errors; however, sample size limitations prevented us from including random effects in the model, so all effects were fixed. For each model, standard measures of fit are reported, including the chi-square (χ^2), comparative fit index (CFI), nonnormed or Tucker-Lewis index (TLI), and root mean square error of approximation (RMSEA). CFI values greater than .95, TLI values greater than .90, and RMSEA values less than .05 indicate good fit (Bentler, 1990; Bentler & Bonett, 1980; Hu & Bentler, 1999).

Results

Descriptive data for all variables and correlations are presented in Table 2. Female students reported lower levels of relatedness ($r = -.05$ to $-.11$) and bullying ($r = -.06$ to $-.08$, with some correlations being non-significant), and higher levels of cognitive ($r = .10$ to .11) and affective ($r = .24$ to .29) empathy. ANOVA models indicated that students in intervention and control schools did not differ in terms of baseline levels of bullying [$F_{(1,1451)} = 1.99$, ns], cognitive empathy [$F_{(1,1447)} = 3.38$, ns], or peer relatedness [$F_{(1,1445)} = .04$, ns]. Control

schools were slightly higher in terms of affective empathy at baseline, $M = 3.43$ vs. 3.33 [$F(1,1445) = 4.10$, $p < .05$], but this effect was very small, $R^2 < .01$. With regards to fidelity observations, ANOVA indicated significantly higher levels of observed positive interdependence in intervention schools as compared to control schools, $F(1,98) = 10.79$, $p < .01$, $R^2 = .10$.

We first evaluated the direct effects of cooperative learning on bullying. Model fit was adequate, $\chi^2(8) = 5.38$, ns; CFI = 1.00; TLI = 1.00; RMSEA = .000 (90% C.I.: .000-.020). Results are provided in Table 3 (see Model 1). Intervention effects were significant and moderate. Sex differences were not significant, $\chi^2(1) = .66$, ns.

We next evaluated intervention effects with the mediators (i.e., cognitive and affective empathy) included. Model fit was adequate, $\chi^2(32) = 137.16$, $p < .001$; CFI = .96; TLI = .93; RMSEA = .042 (90% C.I.: .035-.049). Results are provided in Table 3 (see Model 2). The effects of cooperative learning on both cognitive and affective empathy were significant and moderate, but only affective empathy demonstrated a significant relationship to bullying. Consequently, the indirect effect of cooperative learning on bullying by means of affective empathy was significant (standardized effect = −.10, $p < .05$), whereas the indirect effect by means of cognitive empathy was not (standardized effect < .01, ns). Interestingly, the direct effect of cooperative learning on bullying remained significant even with the inclusion of cognitive and affective empathy in the model. Sex differences were not significant, $\chi^2(5) = 2.67$, ns.

Finally, we added peer relatedness to the model as a mediator of effects on empathy. Model fit was adequate, $\chi^2(43) = 173.58$, $p < .001$; CFI = .95; TLI = .92; RMSEA = .040 (90% C.I.: .034-.046). Results are provided in Table 3 (see Model 3). Cooperative learning predicted significant growth in peer relatedness, which in turn significantly predicted growth in both cognitive and affective empathy; indirect effects were significant (standardized effects = .12 and .06, respectively, both $p < .05$).

Cooperative learning continued to have a significant direct effect on both cognitive and affective empathy, even with peer relatedness in the model. In addition, peer relatedness had a significant direct effect on bullying, and the indirect effect of cooperative learning on bullying by means of peer relatedness was significant (standardized effect = −.04, $p < .05$). Finally, the indirect effect of cooperative learning on bullying by means of peer relatedness *and* affective empathy was significant (standardized effect = −.02, $p < .05$).

Discussion

In this study, we demonstrated that cooperative learning can significantly reduce bullying across 7th and 8th grade. This finding is noteworthy given the weakness in current bullying prevention research, which demonstrates a decrease in effectiveness starting around 7th grade (Yeager et al., 2015). Cooperative learning presents a strong contrast to curricular approaches to bullying prevention, which may be perceived by students as directive and controlling; cooperative learning is a more active, empowered, student-centered form of learning, and preliminary research finds that cooperative learning can, in fact, promote

students' sense of autonomy (Hänze & Berger, 2007). Future research should explore this issue in more detail.

We also found that a portion of the effect of cooperative learning on bullying is transmitted via enhancements to affective empathy. Cooperative learning demonstrated significant positive effects on cognitive empathy, but this did not have an effect on bullying. Our findings add a degree of clarity to the theoretical foundation for bullying prevention, as the research to date has found mixed results when evaluating links between empathy and bullying. Our results also represent the first time, as far as we are aware, that an anti-bullying program has been found to have significant effects on both cognitive and affective empathy among adolescents.

We also found that the effects of cooperative learning on cognitive and affective empathy were mediated by growth in peer relatedness. These results suggest that the social nature of cooperative learning, and the emphasis on group work and collaboration, can enhance student interpersonal relations, and these improved relations and the concomitant experiential skill building in learning groups can contribute to a more profound understanding of the cognitive and emotional states of others. The improvement in social relationships may also support a greater degree of concern among students for the emotional state of their peers.

Interestingly, the indirect effect of cooperative learning on bullying via peer relatedness alone was significant, suggesting that other aspects of positive peer relations (besides their ability to encourage the development of empathy) may influence bullying behavior. For example, more positive peer relations may alter the social climate of the school, which may be able to reduce bullying (Thapa et al., 2013). Similarly, the impact of cooperative learning on bullying remained significant even with cognitive and affective empathy and peer relatedness in the model, suggesting that there may be other means outside the realm of peer relations by which cooperative learning influences bullying. Future research should explore alternative mechanisms of mediation, such as changes to class- or school-level behavioral norms or improvements in teacher-student relationships.

In contrast to some previous research, we found no significant effects of cognitive empathy on bullying. As noted above, findings for the link between cognitive empathy and bullying are mixed, with some research finding negative links, some research finding null links, and some finding positive links. This may be due to the correlational nature of much of the previous research, or may be related to the instability of empathy in children and adolescents (Roberts & DelVecchio, 2000). Our findings on cognitive empathy and bullying should be replicated in additional experimental research before they can be considered conclusive.

Limitations and Conclusion

Although this research has many strengths, including a cluster randomized design and longitudinal data, it is limited in several ways. First, it is based upon a relatively homogeneous sample of rural students that was about three-quarters White, which limits the external validity (generalizability) of the results. Second, all student measures were self-report, which limits internal validity. Future research should consider additional data

sources, such as teachers and/or parents, and more diverse populations. Third, we did not consider issues such as defending in this paper, as our focus was on reducing bullying per se, not changing student response to bullying. And fourth, the small number of schools in our sample (i.e., 15) limited the complexity of the models that we were able to fit to the data and may have prevented us from finding significant effects in some cases.

In sum, this study contributes significantly to bullying prevention research. First, our results extend previous findings that cooperative can be an effective anti-bullying strategy in middle school; this stands in contrast to existing programs, which may be effective for elementary school children but can lose effectiveness starting in middle school (Yeager et al., 2015). Second, our results suggest that adolescent empathy can be enhanced, and not through the application of a specific curriculum, but rather through a series of positive group-based learning experiences, combined with an explicit focus on the development of group collaborative skills. Finally, we found that the enhancement to student empathy can significantly reduce self-reported bullying, at least with regards to affective empathy. Given that cooperative learning has already been demonstrated to have far-reaching effects (i.e., it can enhance academic motivation and achievement, and can reduce adolescent alcohol and tobacco use; Johnson, Johnson, Roseth, & Shin, 2014; Roseth, Johnson, & Johnson, 2008; Van Ryzin & Roseth, 2018b, 2018c), we argue for an increased emphasis on cooperative learning as a school-wide prevention program that can have positive effects on a wide range of student behavior.

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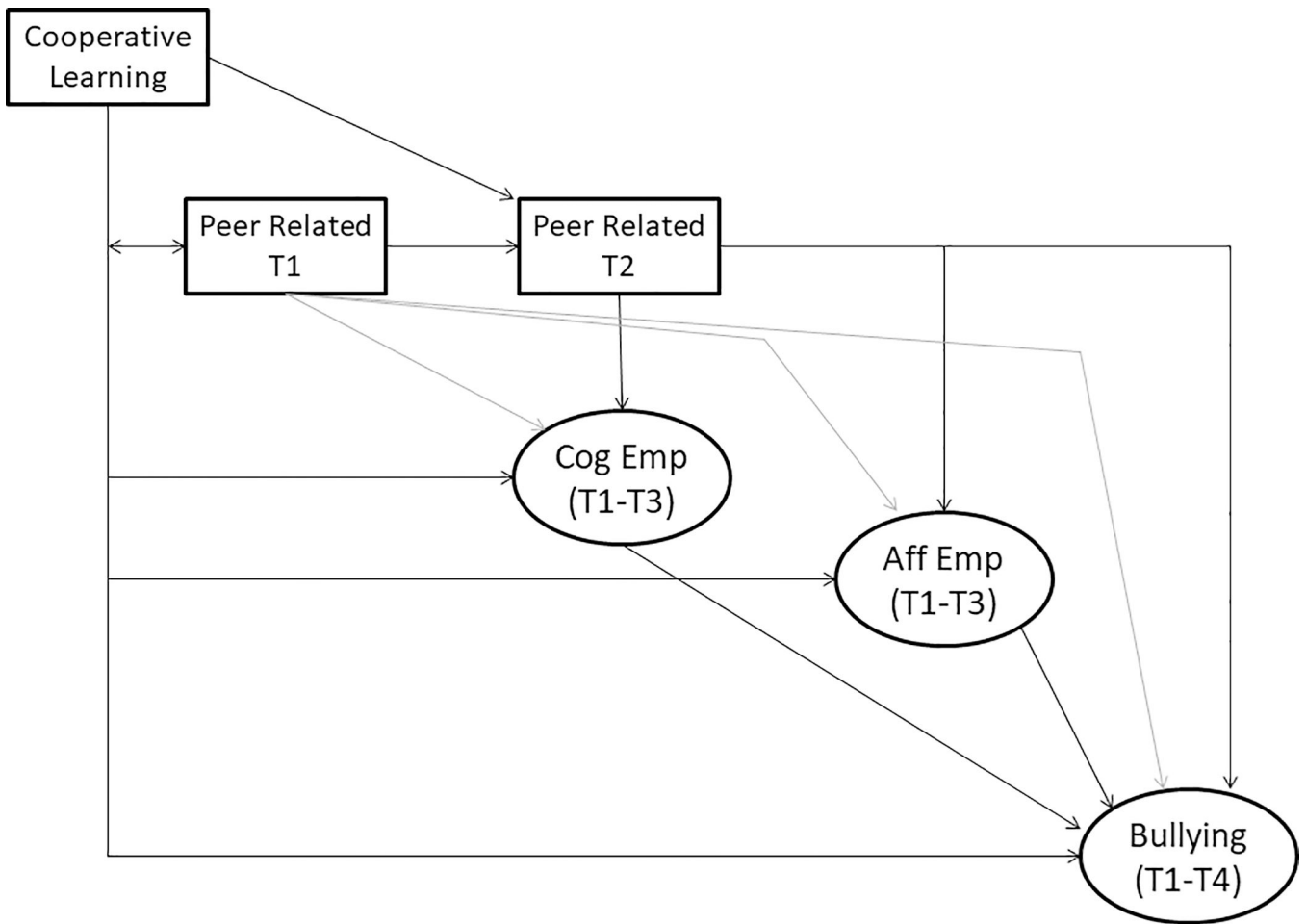
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Figure 1.
Full model. Peer Related = Peer Relatedness. Cog Emp = Cognitive Empathy. Aff Emp = Affective Empathy. Latent constructs are linear growth curve slopes; models also included intercept terms (not pictured).

Table 1.

Descriptive data by school

School	Intervention	N	% female	% White	% Special Ed	% FRPL[a]
1	Yes	282	47.9	73.0	11.7	53
2	Yes	61	52.5	75.4	16.4	66
3	Yes	110	40.0	60.9	n/a	62
4	No	114	47.4	93.0	24.6	65
5	Yes	112	50.0	83.0	15.2	72
6	Yes	121	47.1	90.1	19.8	71
7	No	53	41.5	92.5	18.9	33
8	Yes	105	46.7	78.1	10.5	57
9	No	71	45.1	81.7	19.7	45
10	Yes	84	33.3	72.6	4.8	95
11	No	183	44.8	65.0	17.5	61
12	No	239	51.0	48.5	13.0	84
13	No	197	49.2	90.4	11.7	66
14	No	50	48.0	88.0	16.0	39
15	No	108	51.9	80.6	15.7	46

[a]State records.

Note. One school did not provide Special Ed status.

Table 2.

Correlations and descriptive data (Level 1)

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Peer Relatedness (W1)	—												
2. Peer Relatedness (W2)	.50***	—											
3. Cognitive Empathy (W1)	.02	.00	—										
4. Cognitive Empathy (W2)	.01	.15***	.30***	—									
5. Cognitive Empathy (W3)	.02	.01	.26***	.30***	—								
6. Affective Empathy (W1)	−.06*	−.06*	.21***	.16***	.16***	—							
7. Affective Empathy (W2)	.02	.11***	.19***	.33***	.22***	.47***	—						
8. Affective Empathy (W3)	.04	.01	.09**	.20***	.41***	.38***	.47***	—					
9. Bullying (W1)	−.17***	−.07*	−.07*	−.11***	−.07*	−.07*	−.09**	−.13***	—				
10. Bullying (W2)	−.07*	−.21***	−.07*	−.26***	−.07*	−.04	−.15***	−.11***	.43***	—			
11. Bullying (W3)	−.06	−.03	.01	−.09**	−.22***	−.10**	−.11***	−.27***	.39***	.44***	—		
12. Bullying (W4)	−.04	−.02	−.02	−.11***	−.14***	−.04	−.08*	−.19***	.32***	.37***	.49***	—	
13. Sex	−.05*	−.11***	.11***	.10***	.11***	.24***	.29***	.26***	−.06	−.04	−.04	−.08**	—
N	1447	1513	1449	1532	1565	1449	1531	1566	1453	1533	1568	1476	1856
M	3.07	2.97	4.07	3.99	3.92	3.38	3.40	3.37	.26	.31	.34	.39	.48
SD	.68	.76	.84	.94	.94	.93	.96	.97	.50	.53	.60	.65	-

***
$p < .001$.

Table 3.

Model effects

Model path	β	Sig	Males	Females
Model 1				
Cooperative learning → Bullying (Slope)	−.30	$p < .001$	-	-
Model 2				
Cooperative learning → Bullying (Slope)	−.18	$p = .002$	-	-
Cooperative learning → Cog Emp (Slope)	.45	$p = .001$	-	-
Cooperative learning → Aff Emp (Slope)	.26	$p = .045$	-	-
Cog Emp (Slope) → Bullying (Slope)	.00	$p = .988$	-	-
Aff Emp (Slope) → Bullying (Slope)	−.39	$p = .008$	-	-
Model 3				
Cooperative learning → Bullying (Slope)	−.14	$p = .003$	-	-
Cooperative learning → Cog Emp (Slope)	.33	$p = .008$	-	-
Cooperative learning → Aff Emp (Slope)	.20	$p = .077$	-	-
Cog Emp (Slope) → Bullying (Slope)	−.03	$p = .733$	-	-
Aff Emp (Slope) → Bullying (Slope)	−.31	$p = .014$	-	-
Cooperative learning → Peer Related (T2)	.18	$p < .001$	-	-
Peer Related (T1) → Peer Related (T2)	.43	$p < .001$	-	-
Peer Related (T2) → Bullying (Slope)	−.24	$p = .005$	-	-
Peer Related (T2) → Cog Emp (Slope)	.66	$p < .001$	-	-
Peer Related (T2) →Aff Emp (Slope)	.34	$p < .001$	-	-