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Longitudinal Relationships Between Empathy and Bullying Among Boys and Girls: A Random Intercept Cross-Lagged Panel Model Study

Charlie Devleeschouwer[1] | Benoît Galand[1] | Chloé Tolmatcheff[2] | Christina Salmivalli[3]

[1]Psychological Sciences Research Institute, UCLouvain, Louvain-la-Neuve, Belgium | [2]Department of Development Psychology, Behavioral Science Institute, Radboud University, Nijmegen, The Netherlands | [3]Department of Psychology and Speech-Language Pathology, INVEST Research Flagship Centre, University of Turku, Turku, Finland

Correspondence: Chloé Tolmatcheff (chloe.tolmatcheff@ru.nl)

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ABSTRACT

For decades, empathy has been hypothesized as a protective factor against bullying. However, this hypothesis is mainly supported by cross-sectional studies, while longitudinal research on bullying and empathy is still scarce. The present study aimed to fill this gap by conducting random-intercept cross-lagged panel models of the relations between cognitive and affective empathy and bullying behaviors across three-time points each separated by 5 months, separately for boys and girls. Results from 1228 elementary school students (52.92% boys; *M*age = 10.19, SD = 1.13) indicated that the associations between bullying and empathy are different for boys and girls. For boys, cognitive and affective empathy are negatively associated with bullying at the between level. At the within level, the only significant cross-lagged path indicated that a positive deviation from the expected score of cognitive empathy at baseline predicted a positive deviation from the expected score in bullying behavior 5 months later. For girls, there were no associations between empathy and bullying at either the within- or between-level. This study calls for further clarification of the direction of the relation between bullying and empathy before incorporating it into prevention programs.

Empathy, defined as the ability to understand and experience another person's feelings (Cuff et al. 2016; Davis 1983), has been considered a protective factor against bullying perpetration for over two decades (Endresen and Olweus 2001; Warden and MacKinnon 2003). Furthermore, numerous anti-bullying programs have integrated lessons aimed at increasing students' empathy (Gaffney et al. 2021). Empathy is most commonly conceptualized as a multidimensional construct encompassing two dimensions: cognitive and affective. Understanding others' emotions refers to cognitive empathy, whereas experiencing them refers to affective empathy (Cuff et al. 2016; Yu and Chou 2018). Many studies have found a negative association between both dimensions of empathy and bullying (Mitsopoulou and Giovazolias 2015; Zych, Ttofi et al. 2019), but most of them relied on a cross-sectional design that did not provide any information on the direction of the effects (Jolliffe and Farrington 2011; Zych, Ttofi et al. 2019). Longitudinal studies are still scarce and have yielded inconsistent results (Farrell et al. 2020; Stavrinides et al. 2010). Moreover, previous longitudinal studies on empathy and bullying used a two-wave longitudinal design, limiting inferences about the direction of the associations between variables. In addition, almost no studies have included a random intercept (RI) in their model, overlooking stable individual differences (Hamaker et al. 2015)

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and possibly producing incorrect estimations of cross-lagged effects (Lucas 2023). Finally, no studies have been conducted separately for boys and girls, while the associations between cognitive and affective empathy and bullying could vary depending on students' gender (Jolliffe and Farrington 2011; Mitsopoulou and Giovazolias 2015). This study aims to address these limitations by testing the direction of the link between the two most studied dimensions of empathy (i.e., cognitive and affective) and bullying behaviors using a random intercept cross-lagged panel model (RI-CLPM) with three measurement waves.

1 | Cross-Sectional Associations Between Empathy and Bullying Behaviors

The role of cognitive empathy in bullying behaviors is still debated (van Noorden et al. 2015). Some researchers have suggested that bullies have a limited capacity to comprehend the emotional states of others (e.g., Espelage et al. 2018; Kokkinos and Kipritsi 2012). This low level of cognitive empathy would make them less aware of the suffering they cause to their victims, leading them to maintain their negative behaviors. In line with this, some meta-analyses reported a negative association between cognitive empathy and bullying (Mitsopoulou and Giovazolias 2015; Zych, Ttofi et al. 2019).

However, this association may vary depending on the characteristics of the bullies. For instance, bullying was associated with lower cognitive empathy among boys but not among girls in one study (Jolliffe and Farrington 2011). In a meta-analysis, being younger and being a girl were both related to weaker negative associations between cognitive empathy and bullying (Mitsopoulou and Giovazolias 2015). Other studies did not find any significant association between cognitive empathy and bullying (Jolliffe and Farrington 2006a; van Noorden et al. 2017). In one study with secondary school students, a *positive* association was found (Caravita et al. 2009). Some research explained these inconsistencies by suggesting that theory of mind skills (i.e., competencies to understand others' mental states) can be used for both prosocial and antisocial purposes (Lonigro et al. 2014; Smith 2017). ToM abilities could be of two types. Nice ToM abilities refer to skills used by students to better cooperate or comfort others, whereas nasty ToM abilities are used to lie, cheat, or tease others (Ronald et al. 2005). This is aligned with the idea that some bullies could have high cognitive empathy and are able to manipulate others to reach their goals, such as gaining popularity in the peer group (Peeters et al. 2010; van Noorden et al. 2017).

The results on the relation between bullying and affective empathy are more consistent. Most studies found a negative association, suggesting that bullies are less able to feel others' emotions (van Noorden et al. 2015; Zych, Ttofi et al. 2019), even when controlling for gender (Ciucci and Baroncelli 2014; Del Rey et al. 2016) and age (Del Rey et al. 2016; Mitsopoulou and Giovazolias 2015). However, the magnitude of the negative association seems stronger for boys (Mitsopoulou and Giovazolias 2015). When integrating both affective and cognitive empathy in the same analysis to capture the unique contribution of each dimension of empathy on bullying, some studies found that both dimensions were significantly and negatively associated with bullying (e.g., Del Rey et al. 2016). Other studies found that only cognitive empathy remained negatively associated with bullying (e.g., Graf et al. 2019). Interestingly, when conducting analyses separately for boys and girls in a sample of students between 11 and 14 years old, affective empathy was only negatively associated with bullying for boys (Caravita et al. 2009). In contrast, empathy was positively associated with bullying for both genders. For students between 8 and 10 years old, no association between affective or cognitive and bullying was found, regardless of their gender (Caravita et al. 2009). Overall, these results suggest that both dimensions, even if they are largely correlated, are differently linked to bullying. Nevertheless, important inconsistencies remain across studies, and additional research is needed to clarify the associations between cognitive and affective empathy and bullying behaviors. Moreover, most studies have relied on cross-sectional data, leaving the question of the direction of effects open (van Noorden et al. 2015). Finally, results have rarely been analyzed separately for boys and girls despite consistent findings indicating that gender influences the associations between bullying and empathy (Jolliffe and Farrington 2011; Mitsopoulou and Giovazolias 2015). One study found that boys' bullying behaviors tend to be more negatively associated with socioemotional skills such as empathy than girls' (Jolliffe and Farrington 2011). In addition, aggression is more normative for boys, and they tend to show more aggressive behavior than girls despite similar levels of anger (Archer 2004). It is possible that empathy is more important for boys as a resource to counter stereotypes and gender role expectations, whereas girls may need less empathy skills to refrain from aggressive behavior.

2 | Longitudinal Associations Between Empathy and Bullying

Longitudinal studies on empathy and bullying are rare and provide only partial information about the direction of the association between these variables. A study with 38 bullies found that empathy lessons reduced self-reported bullying (Şahin 2012). In addition, several effective anti-bullying programs have been shown to also increase empathy toward victimized students (Garandeau et al. 2021; Limber et al. 2018). However, these studies did not test the hypothesis that a change in empathy predicts subsequent changes in bullying.

Some studies have measured empathy and analyzed the association with bullying after a period of time while controlling for the baseline level. Using this methodology, a study found that cognitive empathy negatively predicted bullying 1 year later (Williford et al. 2016). However, in other studies including both affective and cognitive empathy, only affective empathy negatively and significantly affected subsequent cyberbullying (Schultze-Krumbholz and Scheithauer 2013) and traditional bullying (Stavrinides et al. 2010). One study found that cooperative learning lessons lead to higher affective empathy and reduced bullying (Van Ryzin and Roseth 2019), with some analyses suggesting that a change in affective empathy partially mediates the change in bullying. However, when controlling for other correlates of bullying (e.g., impulsivity, attitudes toward

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bullying, or narcissistic traits), other studies found that affective empathy did not predict subsequent bullying (Farrell et al. 2020; Walters and Espelage 2018). A study even found a positive association between online affective empathy and cyberbullying 1 year later when controlling for moral disengagement through technology (Marín-López et al. 2020).

Bullying has also been assumed to hinder the development of empathy (van Noorden et al. 2015). One study found a bidirectional negative relation between bullying and affective (but not cognitive) empathy over 6 months (Stavrinides et al. 2010). Another study found that engaging in bullying activates moral disengagement mechanisms that prevent students from understanding and feeling others' emotions when committing such behaviors (Falla et al. 2021). This suggests that students may reduce their empathy to protect themselves from feeling psychological discomfort caused by engaging in bullying.

Overall, the results of longitudinal studies have been inconclusive, and whether empathy (either affective or cognitive) predicts future bullying behaviors remains unclear. These rare studies also present several limitations. First, the few existing studies that examined the reciprocal relations between these variables have only used two waves of data, which provide limited information. Second, gender differences have rarely been considered, although they have been found to affect the association between bullying and empathy (Mitsopoulou and Giovazolias 2015). It has been suggested that boys' bullying behaviors tend to be more negatively associated with socioemotional skills such as empathy than girls' (Jolliffe and Farrington 2011). Another explanation lies in the idea that boys tend to use more physical forms of bullying, while girls tend to use more indirect forms (e.g., teasing and rumors spreading; Carbone-Lopez et al. 2010). It could be assumed that empathy is more strongly and negatively associated with more direct forms of bullying, given that the consequences of such behavior are more apparent. Third, previous studies have rarely integrated victimization scores (i.e., being bullied) when analyzing relations between empathy and bullying. Many studies have found a positive association between bullying and victimization and that students who simultaneously exhibit bullying and victimization behaviors (i.e., bully victims) show a different profile in terms of psychosocial competence from nonvictimized bullies (Zych et al. 2015). Therefore, it is important to control for victimization to assess the unique relationship between empathy and bullying behavior, which is not confounded by victimization.

Finally, even if longitudinal studies give valuable information, to our knowledge, no studies have used cross-lagged panel modeling (CLPM) to disentangle the direction of effects. However, some limitations of CLPM have been highlighted. Notably, these models assume that stable differences between subjects do not influence the studied variables (Hamaker et al. 2015), which seems unrealistic for bullying and empathy (see Cuff et al. 2016; Zych, Farrington et al. 2019). In addition, CLPM could be a source of spurious cross-lagged effects due to the nonconsideration of unobserved time-invariant variables (Lucas 2023; Usami et al. 2019). To overcome the limitations of CLPM, some authors have proposed adding RI to account for between-person differences while analyzing within-person differences (Hamaker et al. 2015; Usami et al. 2019). Given that the relations between affective and cognitive empathy and bullying are still unclear, a RI-CLPM with three measurement points seems relevant to disentangle the direction of effects between these variables.

3 | The Present Study

This study aimed to provide further insights into the direction of the association between cognitive and affective empathy and bullying behaviors across three-time points (each separated by 5 months) using a RI-CLPM separately for boys and girls. Beyond considering the differences both within and between students, we controlled for students' grades and victimization at each time point. We conducted our analyses in a sample of 4–6 graders during 1 year because this period is particularly sensitive for the development of empathy (Bensalah et al. 2016) and bullying behaviors (Chow et al. 2023), notably because of the increasing social experiences (Malti et al. 2016). When repeated measures of the same variable are combined into one latent variable at the between level (i.e., RI), we expected negative associations between bullying and both cognitive and affective empathy (Hypothesis 1). At the within level, we first assumed that both cognitive and affective empathy negatively predict subsequent bullying at each wave (Hypotheses 2a and 2b, respectively). Second, we expected bullying to negatively predict future cognitive and affective empathy at each wave (i.e., at the within level; Hypotheses 3a and 3b, respectively). We expected these relations to be stronger for boys than for girls at the between-level and the within-level (Hypothesis 4).

4 | Methods

4.1 | Procedure

Data were collected in May 2022, October 2022, and May 2023 from 4th, 5th, and 6th graders in 8 elementary schools (49 classrooms) in the French-speaking part of Belgium. The schools varied in size, geographical location, and socioeconomic level. Because two schools had multigrade classrooms for 3rd and 4th graders, these 3rd graders ($N = 94$) were integrated into our analysis. At each wave, students were asked to complete a paper and pencil questionnaire during school hours. A research team member was present to explain the study procedure, guarantee confidentiality, and answer questions. The researchers read the questionnaire aloud in every class except for sixth graders, who completed the questionnaire independently after receiving general instructions. This survey was part of a larger research project and included other measures that were not utilized in the present study. This study and its procedure obtained the approval of the Ethics Committee of UCLouvain.

4.2 | Participants

Our questionnaire was sent out to 1644 students as part of a larger research project. We sent letters to parents to give them the opportunity to withdraw their child from the research

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process. We received 30 parental rebuttals at T1, automatically excluding these students from all waves. Sixth graders at T1 were excluded because they could only participate in the first wave of data collection ($N = 351$). We kept 4th graders at T2 in our analysis to increase the sample size and avoid convergence issues ($N = 388$). Students who did not indicate their gender were excluded from the analyses ($N = 35$). The final sample, used for all analyses, involved 1228 students: 634 at T1 (336 boys and 298 girls; *M*age = 10.30; SD = 1.26), 885 at T2 (473 boys and 412 girls; *M*age = 9.92; SD = 1.04), and 896 at T3 (478 boys and 418 girls; *M*age = 10.36; SD = 1.09). From this sample, 426 students responded at one wave, 417 at two, and 385 at all waves, making 65.3% of students responded to at least two waves.

4.3 | Measures

4.3.1 | Bullying Perpetration

We used a 10-item bullying perpetration scale for French-speaking elementary school students (Galand et al. 2014; Tolmatcheff et al. 2022), including direct (three items: insulting, hitting, scratching, or pulling hair), indirect (four items: mocking or teasing, gossiping, excluding, hiding or damaging personal things) and cyber (three items: calling or texting, sending offensive or threatening messages through the Internet, publishing images or videos) bullying. Students were asked to report how often they had engaged in each behavior toward another student since the beginning of the school year (for T2) or since last Christmas holidays (for T1 and T3) on a 5-point Likert scale (from "*0 times*" to "*4 times or more*"). We computed McDonald's ω to assess the reliability of our scales (Hayes and Coutts 2020). We also conducted bifactor confirmatory factor analysis (CFA) to assess the fit of our scales using the χ^2 test, the comparative fit index (CFI), the Tucker–Lewis Index (TLI), the root mean square error of approximation (RMSEA), and the standardized root mean square residual (SRMR). The bifactor CFA results indicated a good fit for each measurement wave and satisfying internal consistency (see Table 1).

4.3.2 | Bullying Victimization

We used a 10-item bullying victimization scale for French-speaking elementary school students (Galand et al. 2014), including the same direct, indirect, and cyber forms of bullying behaviors as in the bullying perpetration scale. Students were asked to report how often they had undergone each behavior (e.g., "Other students have teased me") since the beginning of the school year (for T2) or last Christmas holidays (for T1 and T3) on a 5-point Likert scale. The bifactor CFA results indicated a good fit for each measurement wave and McDonald's ω indicated satisfying internal consistency (see Table 1).

4.3.3 | Cognitive and Affective Empathy

We used the French adaptation of the Basic Empathy Scale for Children to assess cognitive and affective empathy (Bensalah et al. 2016; Jolliffe and Farrington 2006b). Five items measured affective empathy (e.g., "*When others feel happy, I feel happy too*"). Four items measured cognitive empathy (e.g., "*I can often understand how people are feeling even before they tell me*"). Students were asked whether they agreed with the sentences on a 5-point Likert scale (from 0 = *totally disagree* to 4 = *totally agree*). We added a correlation between the residual errors of two items because of parallel wording ("*I can usually tell when my friends are happy*" and "*I can usually tell when my friends are angry*"). The second order CFA results indicated an acceptable fit for each measurement wave (see Table 1). McDonald's ω indicated satisfying internal consistency for each measurement wave, except for cognitive empathy at T1 (McDonald's $\omega = 0.61$).

TABLE 1 | Fit and reliability indices for all scales.

Measures	χ^2 (*df*)	CFI	TLI	RMSEA	RMSEA 90% CI	SRMR	McDonald's ω
Bullying T1	44.190 (29)	0.96	0.93	0.028	[0.008–0.044]	0.048	0.75
Bullying T2	84.620 (29)	0.95	0.92	0.045	[0.034–0.057]	0.061	0.79
Bullying T3	82.252 (29)	0.92	0.88	0.044	[0.033–0.056]	0.055	0.78
Empathy T1	100.840 (25)	0.89	0.86	0.068	[0.055–0.082]	0.051	Affective = 0.69
							Cognitive = 0.61
Empathy T2	115.951 (25)	0.92	0.89	0.063	[0.052–0.075]	0.046	Affective = 0.70
							Cognitive = 0.68
Empathy T3	127.235 (25)	0.93	0.90	0.066	[0.055–0.078]	0.045	Affective = 0.73
							Cognitive = 0.76
Victimization T1	45.037 (29)	0.98	0.97	0.029	[0.009–0.045]	0.030	0.83
Victimization T2	72.727 (29)	0.97	0.95	0.040	[0.029–0.052]	0.038	0.83
Victimization T3	88.218 (29)	0.95	0.93	0.047	[0.036–0.058]	0.037	0.83

Note: We modeled empathy as a second-order construct, where cognitive and affective empathy represent subdimensions of the general concept of empathy, to compute the fit indices. However, we calculated McDonald's ω for each subdimension separately.
Abbreviations: χ^2 = Chi-square test of model fit associated with robust maximum likelihood estimator, *df* = degrees of freedom, CFI = comparative fit index, RMSEA = root mean square error of approximation, SRMR = standardized root mean square residual, TLI = Tucker–Lewis Index.

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4.4 | Analytic Plan

We first extracted factor scores from CFA for each scale, which were used in all subsequent analyses. We then used SPSS version 28 to perform bivariate correlations and descriptive analyses separately for boys and girls. Next, we ran a missing completely at random (MCAR) test to examine the pattern of our missing data. The test indicated that our data were not MCAR ($\chi^2 = 114.97$, $df = 70$, $p < 0.001$). Therefore, we used full information maximum likelihood estimation (FIML) to manage missing data (Enders 2022; Newman 2014). All our models were conducted on Mplus 8.4 and used a robust Maximum Likelihood estimator to deal with the nonnormality of some data.

Using a step-by-step approach, we started with regular CLPM to facilitate comparison with previous studies. To do so, we modeled covariances between all variables at the same measurement time, autoregressive and cross-lagged paths between observed factors. Then, we performed a RI-CLMP, following the guidelines of Hamaker et al. (2015), to model time-invariant individual differences between students (i.e., RI) in bullying and empathy as well as time-variant deviation from these stable "traits." Each observed variable (factor score) was set to load on two latent factors, one common to each measurement point (RI) and one specific to each measurement point. All loadings were constrained to be equal to 1. At the between-level, we modeled covariances between all variables. At the within-level, we modeled covariances between all variables at the same measurement time, as well as autoregressive and cross-lagged paths between latent factors. Next, we constrained all our autoregressive and cross-lagged paths to be equal across time. Then, we compared this model to another that only constrained the autoregressive paths to be equal across time. Finally, we removed all constrained paths and compared this model to the previous one to see if it was better adapted to our data. We compared these models by using the Satorra–Bentler Scaled χ^2 test (Satorra and Bentler 2010). Finally, we tested if the model was similar for boys and girls by conducting a multigroup analysis (Mulder and Hamaker 2021). For all our models, we controlled for the effect of grade level and bullying victimization on the observed variable at each time point (see Figure 1).

5 | Results

5.1 | Preliminary Analysis

Table 2 presents the means, standard deviations, and correlations between all variables of the study, separately for boys and girls. All bullying measures were positively and moderately correlated across time ($r > |0.42|$). All affective empathy measures were also positively and strongly ($r > |0.52|$) correlated across time. Cognitive empathy measures were positively and moderately ($r > |0.38|$) correlated across time. Cognitive and affective empathy were positively intercorrelated at each time point: *r*s ranging from moderate ($r > |0.30|$) to strong ($r > |0.59|$). For boys and girls, all correlations between bullying and affective or cognitive empathy were negative and

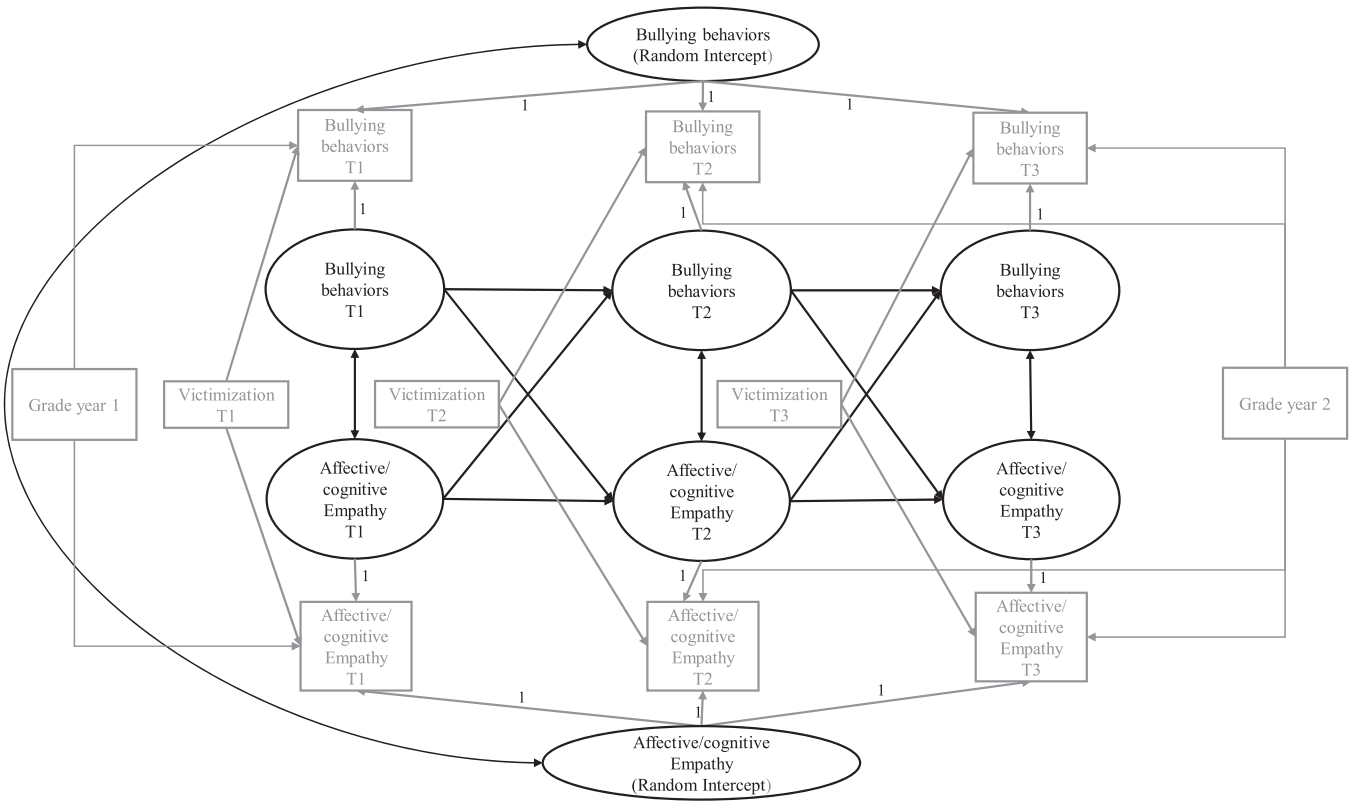


FIGURE 1 | Conceptual random intercept cross-lagged panel model of cognitive and affective empathy and bullying with control variables. Affective and cognitive empathy are presented together, albeit analyzed as separate variables for the sake of clarity. The models were identical for boys and girls.

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TABLE 2 | Descriptive statistics and correlation matrix for boys and girls.

Variables	Boys *M*	SD	Girls *M*	SD	*t*	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Bullying T1	0.46	0.57	0.37	0.42	−2.50*	–	−0.01	−0.04	0.43**	0.63**	−0.13	−0.09	0.33**	0.50**	−0.06	−0.06	0.33**	0.14*	0.13
2. Affective Empathy T1	1.76	0.90	2.28	0.90	7.34**	−0.15**	–	0.60**	−0.06	−0.13	0.59**	0.45**	−0.06	−0.13	0.57**	0.42**	−0.07	0.02	0.01
3. Cognitive Empathy T1	2.86	0.85	3.06	0.71	3.25**	−0.08	0.61**	–	0.03	−0.07	0.33**	0.46**	0.03	−0.06	0.32**	0.47**	0.05	0.02	−0.02
4. Victimization T1	0.89	0.76	0.83	0.76	−0.95	0.47**	−0.04	−0.02	–	0.16*	−0.06	0.01	0.57**	0.17*	0.01	0.07	0.47**	0.12*	0.14*
5. Bullying T2	0.43	0.54	0.31	0.42	−3.80**	0.66**	−0.19**	−0.11	0.29**	–	−0.09	−0.09	0.46**	0.51**	−0.05	−0.02	0.36**	0.06	0.01
6. Affective Empathy T2	1.77	0.91	2.34	0.91	9.46**	−0.15*	0.56**	0.36**	−0.01	0.01	–	0.81**	−0.04	−0.01	0.61**	0.42**	−0.04	−0.10	0.01
7. Cognitive Empathy T2	2.86	0.86	2.97	0.89	1.82	−0.15*	0.39**	0.42**	0.02	−0.06	0.73**	–	−0.01	−0.04	0.53**	0.54**	0.01	−0.11	0.02
8. Victimization T2	0.77	0.74	0.69	0.69	−1.68	0.34**	−0.14*	−0.06	0.58**	0.50**	0.07	0.02	–	0.38**	−0.01	0.06	0.67**	−0.07	0.07
9. Bullying T3	0.47	0.56	0.37	0.44	−3.14**	0.58**	−0.07	−0.14*	0.34**	0.63**	0.01	−0.09	0.35**	–	−0.02	−0.02	0.48**	−0.03	−0.02
10. Affective Empathy T3	1.70	0.94	2.28	0.93	9.30**	−0.13*	0.53**	0.32**	0.02	−0.02	0.53**	0.42**	−0.01	0.03	–	0.73**	0.02	−0.13*	−0.06
11. Cognitive Empathy T3	2.83	0.93	3.09	0.81	4.56**	−0.18**	0.31**	0.39**	0.01	−0.09	0.38**	0.44**	−0.02	−0.08	0.72**	–	0.04	−0.12	−0.01
12. Victimization T3	0.86	0.75	0.77	0.69	−1.73	0.35**	0.01	0.01	0.55**	0.40**	0.13*	0.06	0.63**	0.48**	0.08	0.02	–	−0.06	−0.07
13. Grade Year 1	4.43	0.61	4.37	0.60	—	0.01	−0.09	−0.10	−0.04	0.03	−0.09	−0.09	−0.02	0.05	−0.13*	−0.09	−0.01	–	0.99**
14. Grade Year 2	4.94	0.92	4.92	0.88	—	0.01	−0.09	−0.12	−0.01	0.01	−0.19**	−0.19**	−0.10*	−0.02	−0.12**	−0.12**	−0.14**	0.99**	–

Note. Results for girls are displayed above the diagonal. *t*-tests report the mean difference between boys and girls. *N* at T1 = 634 (336 boys and 298 girls); *N* at T2 = 885 (473 boys and 412 girls); *N* at T3 = 896 (478 boys and 418 girls).
*$p < 0.05$; **$p < 0.01$.

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weak ($r < |0.19|$). However, they were systematically stronger for boys than for girls.

Repeated measures ANOVA indicated that the average level of any of the variables did not change over time: for bullying $F(2, 828) = 0.004$, $p = 0.949$, $\eta^2 = 0.01$; for affective empathy $F(2, 818) = 0.095$, $p = 0.758$, $\eta^2 = 0.01$; for cognitive empathy $F(2, 818) = 0.076$, $p = 0.784$, $\eta^2 = 0.01$. We computed intraclass correlations for each variable to determine the amount of variance that could be explained by stable differences between persons versus within-person fluctuations (e.g., Trach et al. 2023). For bullying, 61% of the variance lay at the between-person level, while within-person changes accounted for 39% of the variance. For affective empathy, 59.6% of the variance lay at the between-level, leaving 40.4% of the variance at the within-level. For cognitive empathy, 48% of variance is situated at the between-level and 52% at the within-level.

5.2 | Cross-Lagged Panel Model

The CLPM fitted well the data (χ^2 [45, $N = 1263$] = 222.60, $p < 0.001$, CFI = 0.95, TLI = 0.90, RMSEA = 0.056, 90% CI: 0.049–0.63, and SRMR = 0.049). All autoregressive paths were significant, which means that all variables were stable within students across all measurement times. Within-time associations between cognitive and affective empathy were significant and large (r from 0.61 to 0.72). Bullying was cross-sectionally and negatively correlated with affective empathy only at T1 ($r = -0.09$). Regarding cross-lagged paths, affective empathy at T1 positively predicted cognitive empathy at T2 ($\beta = 0.26$, $p < 0.001$), which, in turn, negatively predicted bullying at T3 ($\beta = -0.10$, $p < 0.05$).

5.3 | Random Intercept Cross-Lagged Panel Model

According to the Satorra–Bentler Scaled χ^2 test, the RI-CLMP with autoregressive paths fitted better our data than the model with all constrained paths ($\Delta\chi^2 = 18.11$, $p < 0.01$). However, the model with all free parameters was not significantly better than the model with constrained autoregressive paths ($\Delta\chi^2 = 3.03$, $p = 0.38$). Therefore, we kept the model with constrained autoregressive paths, which was the most parsimonious and fitted the best our data (χ^2 [6] = 6.352, $p = 0.39$, CFI = 1, TLI = 0.99, RMSEA = 0.007, 90% CI: 0.000–0.038, and SRMR = 0.013). In addition, to test if the model was the same for girls and boys, we performed a multiple groups analysis (Mulder and Hamaker 2021). We compared a RI-CLPM model without any constraints between groups with a RI-CLPM model with lagged parameters constrained to be equal between groups. The Satorra–Bentler Scaled χ^2 test was significant ($\Delta\chi^2 = 49.37$, $p < 0.01$), meaning that the lagged effects are different for boys and girls. This model is presented in Figure 2.

At the between-level, we observed a significant and positive association between cognitive and affective empathy for boys and girls. On average, students with higher cognitive empathy reported higher affective empathy ($r_{boys} = 0.74$; $r_{girls} = 0.74$). Across all waves, boys with higher bullying scores reported less cognitive ($r = -0.43$) and affective empathy ($r = -0.20$). However, these associations were lower and nonsignificant for

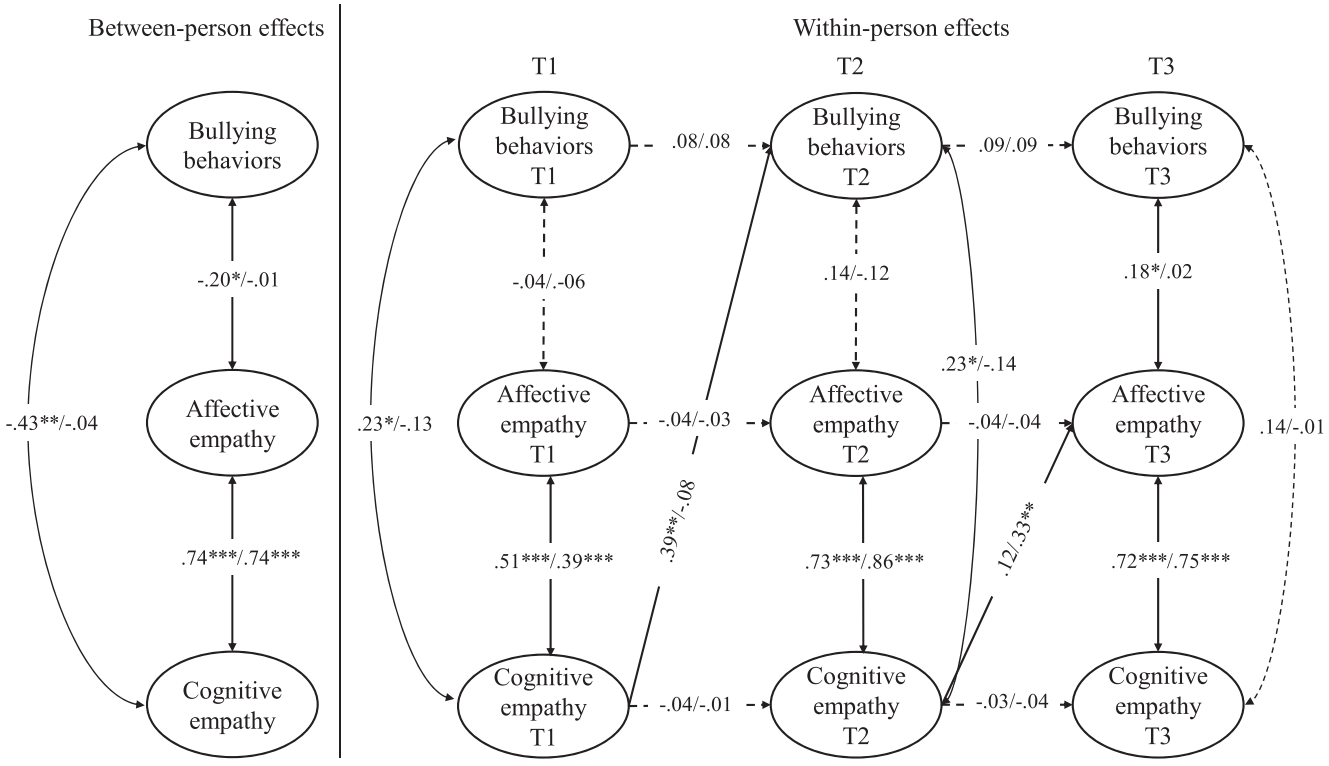


FIGURE 2 | Simplified random intercept cross-lagged panel model of cognitive empathy, affective empathy, and bullying. Only latent variables and standardized coefficient paths are shown. Parameters are presented as Boys/Girls (e.g., −0.23*/−0.10). Dotted lines are nonsignificant correlations and autoregressive paths for both boys and girls. Nonsignificant cross-lagged paths are not shown. ***$p < 0.001$; **$p < 0.01$; *$p < 0.05$.

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TABLE 3 | Effect sizes (R^2) for the within-person cross-lagged effects of the random intercept cross-lagged panel models for girls and boys.

	Effect sizes (R^2)	
Variables	**Girls**	**Boys**
Bullying T2	0.08	0.14
Bullying T3	0.03	0.02
Affective empathy T2	0.02	0.01
Affective empathy T3	0.09	0.05
Cognitive empathy T2	0.01	0.02
Cognitive empathy T3	0.03	0.05

Note: Effect sizes represent the variance explained for each variable by its predictors.

girls. At the within-level, no autoregressive paths were significant for boys, meaning that a deviation from the expected mean scores for any variables at one measurement point did not lead to a subsequent deviation from the expected score for this variable at the next measurement time.

Concerning within-time covariances, cognitive and affective empathy were associated at T1 ($r_{boys} = 0.51$; $r_{girls} = 0.39$), T2 ($r_{boys} = 0.7$; $r_{girls} = 0.86$), and T3 ($r_{boys} = 0.72$; $r_{girls} = 0.75$). Significant within-time covariances between bullying and empathy were found for cognitive empathy at T1 and T2 only for boys ($rs = 0.23$). At the within-level, a positive deviation from their expected bullying scores at T1 and T2 is associated with a significant and positive deviation from their expected cognitive empathy scores at the same measurement time when controlling for stable traits. A significant and positive covariance was also found at the within-level for boys between affective empathy and bullying at T3 ($r = 0.18$). For boys, a deviation from the expected score of bullying at T3 is associated with a positive deviation of the expected score of affective empathy at the same measurement time when controlling for stable traits.

For boys, cross-lagged parameters indicated that bullying at T2 was positively predicted by cognitive empathy at T1 ($\beta = 0.39$, $p < 0.01$) at the within-level while controlling for students' stable differences. This pattern means that a positive deviation from boys' expected level of cognitive empathy at T1 was likely to be followed by a positive deviation from their expected level of bullying at T2. Finally, girls' cognitive empathy at T2 predicted positively affective empathy at T3 at the within-level ($\beta = 0.33$, $p < 0.01$). Therefore, a positive deviation within girls' expected cognitive empathy score at T2 was followed by a positive deviation in their expected score of affective empathy at T3. The R^2 are shown in Table 3 for both boys and girls. Almost all effect sizes were small, except for bullying at T2 and affective empathy at T3 for girls, which were medium, and bullying at T2 for boys, which was large (Orth et al. 2024).

6 | Discussion

It is generally accepted that improving empathy is a promising path to reduce bullying. However, most research has relied on cross-sectional data, which do not indicate the direction of effect (van Noorden et al. 2015). Moreover, the scarce longitudinal studies have yielded inconsistent results and rarely used more than two data waves (e.g., Saarento et al. 2015; Stavrinides et al. 2010). This study addressed these limitations by conducting a RI-CLMP on cognitive and affective empathy and bullying scores of 1263 primary students across three measurement times separately for boys and girls.

At the between-level, the results for boys showed that variations in cognitive and affective empathy were negatively associated with variations in bullying, partially supporting our first hypothesis and consistent with meta-analyses (Mitsopoulou and Giovazolias 2015; Zych, Ttofi et al. 2019). Nevertheless, bivariate correlations indicated that bullying and empathy were not consistently associated across all time points. This is in line with previous findings from cross-sectional studies that are sometimes inconsistent regarding these associations. Nevertheless, our study provides evidence for the assumption that boys who generally understand and feel the emotions of others show less bullying behaviors (van Noorden et al. 2015).

Unexpectedly, at the within-level, cognitive empathy at T1 was positively associated with bullying behaviors at T1 and T2 for boys, invalidating Hypothesis 2a. Boys who temporarily and positively deviated from their expected cognitive empathy mean score were prone to report bullying behaviors above their mean score, both concurrently and 5 months later. This finding echoes studies that have argued that bullying might require some social skills and aptitudes for understanding the emotions of others (Sutton et al. 1999; van Noorden et al. 2017). For example, understanding how to gain popularity in a group requires knowing what is expected in that group (Vaillancourt et al. 2003). In addition, this is consistent with the idea that some students used their ToM abilities to antisocial ends such as bullying (i.e., nasty ToM; Smith 2017). Furthermore, it is conceivable that self-reported cognitive empathy may also reflect students' favorable self-perception, which could be indicative of narcissism and may potentially contribute to an increase in bullying behaviors (Fanti and Henrich 2015). In addition, an increase in cognitive empathy may foster students' willingness to admit their bullying behaviors. However, to our knowledge, only one study has investigated this question and did not find any effect of empathy on the likelihood of admitting to bullying others (Garandeau et al. 2025). Nevertheless, this cross-lagged effect was not significant in the third wave or for girls. Replications of these results are needed to confirm this pattern and provide an explanation of these unexpected results.

Contrary to our Hypothesis 2b, we did not find evidence that a change in affective empathy led to a change in subsequent bullying at the within-level while considering stable individual differences in these constructs. This is consistent with previous studies that found no longitudinal effect of affective empathy on bullying several months later (Farrell et al. 2020; Saarento et al. 2015). Because all paths are significant at the between-level for boys, this could mean that empathy and bullying simultaneously change depending on a third variable (Usami et al. 2019). It could be hypothesized that both empathy and bullying are concurrently influenced by developmental stages rather than affecting each other.

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Students' bullying behaviors might also be more impacted by moral disengagement, impulsivity, or narcissism, than by empathy (Farrell et al. 2020). Affective empathy might also not be directly associated with bullying, but its effect could be mediated by other variables (e.g., attitude toward bullying; Walters and Espelage 2018). Testing such mediating paths when implementing anti-bullying programs would be insightful.

Contrary to our Hypotheses 3a and 3b, bullying did not predict change in any empathy dimension over time, regardless of gender. These results are inconsistent with previous studies suggesting that bullying hinders the development of empathy (Falla et al. 2021; Stavrinides et al. 2010). This might be due to differences in analytical strategies between studies. Beyond using RIs, we also considered the nonnormal distribution of our data and used three waves of measurement.

Our results are aligned with our Hypothesis 4, echoing previous studies that found that the association between empathy and bullying is stronger for boys than for girls (Caravita et al. 2009; Mitsopoulou and Giovazolias 2015). However, we did not expect bullying to be unrelated to empathy among girls both at the between-level and the within-level. This gender gap might explain inconsistent results across studies combining scores from boys and girls. Further studies are needed to better understand the possible different mechanisms at play between boys and girls in the bullying process (Jolliffe and Farrington 2011).

Compared to the RI-CLPM, the CLPM did not show any positive association over time between empathy and bullying. On the contrary, the results indicated that cognitive empathy at T2 is associated with less bullying at T3. This study illustrates the importance of selecting the most indicated model to explore longitudinal relations between variables (Usami et al. 2019). This could also explain the different results obtained in this study and other longitudinal research that found positive effects of affective empathy on future bullying behaviors (e.g., Stavrinides et al. 2010).

6.1 | Strength and Limitations

This study's main strength is the use of RIs with three waves of data, which enabled us to disentangle the stable relations between bullying and (cognitive and affective) empathy and their temporal relations over a year for boys and girls. Despite this strength, this study also has some limitations. First, we measured general empathy rather than empathy toward bullied students specifically, which could have reduced the associations between the variables. Future studies should replicate the present results by focusing on students' empathy toward victims specifically. However, since most studies have measured general empathy, this study can easily be compared with previous research.

Second, while our study helps to disentangle the directions of effects between bullying and empathy, we cannot draw any conclusions about causality. Some intervention studies have examined if empathy mediates the effects on bullying, but results have been inconsistent (Saarento et al. 2015; Van Ryzin and Roseth 2022). Future studies should examine whether anti-bullying programs impact cognitive and affective empathy differently and test their mediating roles in observed changes in bullying.

Third, the period that students were instructed to think about reporting their bullying behaviors was shorter at T2 compared to the two other data collections to ensure the same time interval between data collections. Future studies could investigate the development of associations between empathy and bullying using more waves over a longer period (e.g., six waves over 2 years) and with a consistent period of reporting (e.g., by systematically asking students to report their behavior over the past 3 months).

Fourth, because this study focused on empathy only, it did not include other correlates of bullying. For example, adding moral disengagement, callous-unemotional traits, narcissism, or anti-bullying attitudes to our model might be relevant in future studies (Zych, Farrington et al. 2019). Including these variables in a single model would provide further insights into the development of bullying.

Fifth, we disentangled the effect of empathy on bullying behavior while controlling for victimization but were not able to capture the effects of empathy on bullying behavior among bully victims and nonvictimized (pure) bullies separately. Future studies should use a person-oriented approach to investigate if empathy follows a different evolution and affects behavior differently among these two groups.

Finally, we only used self-reported scales, thus increasing common method variance between our variables. In addition, self-reported empathy may reflect students' self-perception of their understanding and feelings of others' emotions rather than their actual empathy. Future studies could use dyadic peer-reported nominations as a complementary measure of bullying or a behavioral measure of empathy to address these limitations (e.g., Strayer 1993).

6.2 | Implications for Interventions

This study joins many others by replicating that bullying is negatively associated with cognitive and affective empathy at the between-person level (Mitsopoulou and Giovazolias 2015; van Noorden et al. 2015; Zych, Ttofi et al. 2019) but for boys only. However, at the within-level, our results suggest that an increase in cognitive or affective empathy is not followed by a subsequent decrease in bullying for both genders. Given that these results echo several intervention studies (e.g., Saarento et al. 2015; Van Ryzin and Roseth 2022), it might suggest that increasing empathy is not the main mechanism that leads to bullying reduction. Although more research is needed to elucidate the complex relationship between bullying and empathy (e.g., through longer study periods and replication across diverse samples), other variables may warrant greater consideration in the development of prevention programs.

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For example, perceived norms or peer relatedness have more convincing evidence for predicting bullying and might be more helpful in preventing it (Tolmatcheff et al. 2022; Van Ryzin and Roseth 2022). In addition, increasing empathy may not be sufficient to decrease bullying if bullies' moral disengagement mechanisms (e.g., their perception of the victims or their responsibilities regarding the situations) remain unchanged. Finally, at the within-level, we did not find that engaging in bullying hinders future empathy development. This suggests that bullies may be similarly receptive to empathy-raising messages as other students (Garandeau et al. 2016; Johander et al. 2022).

To conclude, this study provided some insights into the complex links between empathy and bullying. This study found a consistent negative cross-sectional correlation at the between-level between empathy and bullying for boys but not for girls. However, longitudinally, an increase in empathy did not lead to a decrease in bullying at the within-level. It could be assumed that bullying and empathy mainly change concurrently across development rather than causing each other. Therefore, gaining a better understanding of the processes underlying bullying behavior is crucial. Additional longitudinal and intervention studies are necessary to clarify the direction of the effects between bullying and its cross-sectional correlates. Further research on these topics would help prevention policies and stakeholders in targeting the most effective variables to tackle bullying.

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Ethics Statement

This study and its procedure are in accordance with the Declaration of Helsinki and have obtained the approval of the Ethics Commission of the Institute for Research in the Psychological Sciences (UCLouvain, Belgium; Project 2021-51).

Consent

Written informed consent was obtained from the parents and legal guardians. All students consent to participate in the questionnaire.

Conflicts of Interest

The authors declare no conflicts of interest.

Data Availability Statement

The data and code could be available from the first author upon reasonable request.

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