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Effects of the KiVa Anti-Bullying Program on Affective and Cognitive Empathy in Children and Adolescents

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ABSTRACT

Objective: As empathy is an important predictor of both bullying and defending behavior, many anti-bullying interventions aim to increase empathy among students. However, little is known on whether these interventions enhance both affective and cognitive empathy, and whether some students are more responsive than others to empathy-raising efforts. This study examined the effects of the Finnish anti-bullying program KiVa on changes in self-reported affective and cognitive empathy and tested whether these effects varied depending on students' gender, initial levels of empathy, peer-reported bullying, and peer-perceived popularity, as well as school type (primary versus secondary school) and classroom bullying norms.

Method: Multilevel structural equation modeling analyses were conducted on pretest and posttest (1 year later) data from a sample of 15,403 children and adolescents ($M_{age} = 13.4$; 51.5% girls) in 399 control and 462 intervention classrooms from 140 schools participating in the evaluation of KiVa in 2007–2009.

Results: KiVa had a positive effect on affective empathy, but not cognitive empathy. The effects of the program on both types of empathy did not depend on students' gender, initial levels of empathy, bullying, or popularity, nor on school type or classroom bullying norms.

Conclusion: Findings suggest that KiVa can raise students' affective empathy regardless of students' gender, status, initial empathy, or levels of bullying, and regardless of school type or classroom bullying norms.

Empathy plays a key role in school bullying situations in at least two ways: A lack of empathy is associated with bullying behavior (Van Noorden et al., 2015; Zych et al., 2019) and increases in bullying over time (Stavrinides et al., 2010). Empathy also positively predicts defending victimized peers (Nickerson et al., 2015). Understandably, many school-based anti-bullying programs include components designed to increase empathy (e.g., Kärnä et al., 2011; Schonert-Reichl et al., 2012). However, tests of their effectiveness do not systematically investigate empathy, and when empathy is considered as an outcome, its multidimensional nature is not taken into account.

There is clear evidence that bullying perpetrators tend to be deficient in affective empathy (Van Noorden et al., 2015; Zych et al., 2019), defined as the ability to feel and share another person's emotions. However, findings on cognitive empathy, defined as the ability to understand another person's perspective, are less consistent. Although the association between bullying and cognitive empathy is generally found to be negative (e.g., Van

Noorden et al., 2015), some studies find no significant link (Gini et al., 2007; Jolliffe & Farrington, 2006, 2011; Stavrinides et al., 2010; see also Cheng et al., 2012) whereas other studies suggest that bullying perpetrators actually surpass their peers in cognitive empathy (Caravita et al., 2010; Sutton et al., 1999), which could facilitate their strategic, abusive behavior (Garandeau & Cillessen, 2006). Moreover, though defenders are high in both types of empathy (Van Noorden et al., 2015), the link between defending and empathy may be stronger for affective empathy (Van der Ploeg et al., 2017). These findings indicate that the ability to understand the emotions of victims may not be sufficient to inhibit bullying (or trigger defending), and therefore the effects of any intervention aimed at increasing empathy should be examined separately for affective and cognitive empathy.

Improving anti-bullying interventions requires better knowledge of the type of empathy that they successfully (or fail to) raise. Furthermore, there is a debate on whether students low in empathy would lack capacity for empathy, or whether empathy can be taught (e.g.,

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Zaki, 2014). It is therefore important to determine if some students are more (or less) sensitive to empathy-raising attempts. Children and adolescents might vary in the extent to which they display increases in empathy as a result of interventions, depending on their individual characteristics, such as being a bullying perpetrator, or the context, such as the normativeness of bullying in the class. The present study examined the effect of the Finnish anti-bullying program KiVa on changes in both affective and cognitive empathy, and tested whether these effects varied as a function of individual students' gender, initial levels of bullying, empathy, and popularity, as well as classroom type (primary versus secondary school classes) and classroom norms (the degree to which bullying is common or rewarded with popularity in the classroom).

Can Empathy Be Increased?

Given the importance of empathic skills in bullying-related behavior, teaching children to be more empathic appears as a sensible strategy to counteract school bullying. However, whether empathy can be taught remains a subject of debate among clinicians, researchers, and in society (Schonert-Reichl et al., 2012). It is sometimes assumed that empathy is an automatic response that cannot be learnt (Zaki, 2014). Heritability studies suggest that approximately one-third of the between-individual variation in empathy is due to genetic factors (Knafo & Uzefovsky, 2013). Heritability estimates for affective empathy in particular were found to be relatively high for adolescents and adults, ranging from 30% among high-school seniors (Davis et al., 1994) to 52–57% (Melchers et al., 2016) or even 68% (Rushton et al., 1986) among adults. Differences across studies are largely due to differences in the operationalization of empathy. Heritability estimates for cognitive empathy were found to be lower (27% in Melchers et al., 2016; 28% in Warrier et al., 2018). While these findings show that genes contribute to explaining differences in empathy, especially its affective component, they do not imply that empathy cannot be taught. First, these estimates indicate that environmental factors also influence empathic skills. Second, they are based on adult or adolescent samples, and studies conducted among toddlers yield lower estimates (Knafo et al., 2008; Volbrecht et al., 2007); this hints that the contribution of the environment to empathy development may be stronger in children.

Regarding anti-bullying programs in schools, there is some evidence that they can increase empathy. The Olweus Bullying Prevention Program (OBPP; Olweus & Limber, 2010), the first whole-

school bullying prevention program to be implemented, was recently tested in the United States (Limber et al., 2018). Empathy was measured by a single item asking students what they felt or thought when they saw a student their age being bullied. Significant increases in empathy for victimized peers were observed after 2 years of implementation for students in grades 3 to 9, and after 3 years for adolescents (grade 9 to 12). The Finnish program KiVa is one of the most well-known anti-bullying programs and the first to be implemented on a nationwide scale (Salmivalli et al., 2013). In a randomized-controlled trial (RCT) conducted in primary schools only (which is part of the data used in the present study), KiVa was found to be effective at increasing affective empathy for the victim after 5 months of implementation, using four items created specifically for evaluating KiVa (Kärnä et al., 2011; Saarento et al., 2015). Recently, a virtual reality-enhanced bullying prevention program implemented in middle school was shown to significantly increase empathy, assessed with five items capturing participants' ability to listen to, care for, and trust others (Ingram et al., 2019). None of these studies, however, considered both affective and cognitive empathy, nor examined potential variations in students' susceptibility for these empathy-raising efforts.

Do Empathy-Raising Efforts Work for All Students?

Though research shows that it is possible to increase children's and adolescents' empathic skills via school-based intervention programs, to our knowledge, no study has tested whether these increases apply equally to all students. Children high in callous-unemotional traits (i.e., low in empathy; Ciucci & Baroncelli, 2014) show impairments in functions required for the development of empathy, such as recognition of emotions of fear and sadness (e.g., Marsh & Blair, 2008). Moreover, individuals with such traits react differently from others at the neurological level (i.e., studies found evidence for dysfunctioning and reduced volumes of brain areas involved in processing emotional stimuli, such as the amygdala or the orbitofrontal cortex, in low-empathy individuals; Blair, 2013) and affective empathy is strongly influenced by genes (e.g., Melchers et al., 2016). Thus, it may seem that youth who bully or lack empathy may lack the capacity to develop affective empathy. They might therefore be more resistant to empathy training.

Nonetheless, experiments conducted with young bullies or children with psychopathic traits showed that such populations could respond positively to empathy-

inducing attempts. Van Baardewijk et al. (2009) asked 10–11-year-olds to play a computer-based competitive game against a virtual opponent and measured their aggression by assessing the intensity of the noise they chose to blast at their adversary. Children higher in psychopathic traits were more aggressive, except when they had access to the distress of the opponent via a message expressing their fear. An emotion recognition training was also found to increase affective empathy and decrease conduct problems in children high in callous-unemotional traits (Dadds et al., 2012). Consistent with these results, participating in an empathy-training program was found to increase empathy, assessed with a 20-item scale, in a sample of 38 bullying perpetrators in sixth grade (Sahin, 2012). Moreover, when teachers in KiVa schools held discussions with bullying perpetrators after a case of bullying had come to their attention, these perpetrators reported a stronger intention to change behavior if they perceived that the teacher had tried to arouse their empathy for the target (Garandeau et al., 2016). This indicates that even students high in bullying and low in empathy can be expected to increase in empathy in response to the KiVa program.

Furthermore, it is plausible that the social power (popularity) of the participants affects their responsiveness to empathy-raising efforts. A successful program such as KiVa was found to be less effective at reducing bullying among highly popular bullies compared to average or low popular bullies (Garandeau et al., 2014), which might indicate that popularity makes students less receptive to empathy-raising attempts. Though studies generally find no association between popularity and affective empathy among youth (Bower et al., 2015; Caravita et al., 2010), enjoying a position of power was found to decrease adults' capacity to take the perspective (Galinsky et al., 2006) and experience the suffering of others (Van Kleef et al., 2008). Therefore, being popular could make students less receptive to the endeavors of teachers at developing their empathic skills.

The effectiveness of empathy training may also depend on demographic characteristics. Gender differences in empathy, especially affective empathy, are well documented: Across ages, females score higher than males (e.g., Lam et al., 2012). These gender differences are present from early childhood and appear to be stable across the lifespan (e.g., Michalska et al., 2013). This stability may indicate that girls' superior empathic skills stem not exclusively from learning experiences but possibly reflect genetic and neurological differences between males and females that are present from birth and make it easier for girls to develop empathy. This could indicate that boys may be less well equipped than girls to respond to empathy-raising attempts.

Do Empathy-Raising Efforts Work for All Classrooms?

Most effective interventions focused on raising empathy, such as Roots of Empathy (Schonert-Reichl et al., 2012), the MindUp program (Schonert-Reichl & Lawlor, 2010) or the PATHS program (Domitrovich et al., 2007), were conducted with elementary school children. There is less evidence of empathy training's success with adolescents. Therefore, age group may be an important factor to consider when examining empathy and empathy-raising interventions (Malti et al., 2016). Both longitudinal and cross-sectional studies suggest that concern for others increases from middle childhood to early adolescence (e.g., Malti et al., 2013). Throughout adolescence however, the increase may be limited to cognitive empathy (or perspective-taking; Van der Graaff et al., 2014). Less is known about possible differences between children and adolescents in their responsiveness to empathy training. Environmental influences on the development of empathy seem to be larger in childhood and anti-bullying interventions are often more effective in primary than in secondary schools (Kärnä et al., 2013; Yeager et al., 2015), which could reflect a stronger responsiveness of younger children to empathy-raising efforts. The increase in cognitive empathy and stability in affective empathy observed throughout adolescence (Van der Graaff et al., 2014) might suggest that among adolescents, cognitive empathy is more likely than affective empathy to be impacted by interventions. To investigate whether the effect of an anti-bullying program on changes in empathy differs as a function of participants' developmental stage, this study examines school type (primary vs secondary school) as a contextual variable.

Though empathic competence is a personal characteristic, it can be influenced by the social context (Zaki, 2014). Classroom norms, and more specifically peer norms for bullying, may be relevant to consider as possible moderators of the effects of KiVa on changes in empathy (Peets et al., 2015). Traditionally, peer norms were operationalized as the average-perceived behavior of *all* individuals in a setting, or descriptive norms (Wright et al., 1986). However, a more recent norm salience perspective (Henry et al., 2000) argues that behaviors rewarded with status within the classroom may be particularly influential: Behaviors that correlate with popularity ("popularity norms") are likely to be positively evaluated by youth (Dijkstra et al., 2009), and may be seen as valuable tools to achieve popularity (Hartup, 1996). Social misfit theory (Wright et al., 1986), which can be applied to both descriptive and popularity norms, posits that adolescents are likely to conform to peer norms to avoid being a "social misfit." In line with this

reasoning, aggressive peer norms – particularly popularity norms – were found to enhance the extent to which aggressive individuals are liked by their peers (Dijkstra & Gest, 2015). When bullying is normative and adaptive (i.e., confers status), a lack of empathy for vulnerable others may also be socially valued and moral disengagement processes, such as blaming the victim, may be promoted (Caravita et al., 2014); such classrooms might be characterized by lower average empathy and could hinder the development of empathic skills. Therefore, the effects of an anti-bullying program on empathy may be mitigated in classes with stronger bullying descriptive norms and bullying popularity norms.

The KiVa Program: Empathy-Raising Components

The KiVa antibullying program was developed in 2006 and evaluated in Finland in a large RCT and during nationwide dissemination. It includes universal actions, targeted at all students, and indicated actions, targeted at children directly involved in bullying incidents. The universal actions comprise ten 2-h student lessons about bullying delivered throughout the school year and an online computer game, in addition to posters about bullying, and visible vests for recess supervisors. Several lesson contents were specifically designed to build empathy-related skills. The ability to draw inferences about others' emotions is enhanced in an exercise where students interpret subtle nonverbal cues of various emotions enacted by their peers. The skill of vicariously experiencing others' emotions is developed in an exercise where students build a bullying scenario using empty chairs, and then put themselves in the shoes of different individuals by sitting on the chairs of the victimized student, the bully, the bully reinforcer, the defender, and so forth, and reflect on the thoughts and feelings of each person. Finally, empathic concern for victims is built by watching and discussing filmed interviews of adults who used to be victimized at school, explaining how it felt and how the experience has affected their lives. The online game also includes empathy-related elements. The player has access to the thoughts and emotions of each character in the game, which should bolster their perspective-taking skills. These are examples of program elements assumed to increase affective and cognitive empathy; however, whether KiVa indeed increases students' affective and cognitive empathy for victimized peers has not yet been investigated.

The Present Study

The first objective of this study was to examine the effects of the KiVa program on affective and cognitive

empathy after 9 months of implementation, among primary school and secondary school students. Our sample included participants from middle childhood to middle adolescence, which is the developmental period when school bullying tends to be most prevalent (Finkelhor et al., 2015). We hypothesized that implementing KiVa would lead to increases in both types of empathy. The second objective was to investigate whether the effects of KiVa on changes in empathy – affective and cognitive – varied depending on individual characteristics of the participants and contextual characteristics. As it is sometimes assumed that children who bully and/or lack empathy lack the capacity to develop it, we tested whether the effects of KiVa differed according to participants' initial levels of empathy and bullying. Based on the literature on the effectiveness of empathy-training programs, we expected that KiVa would be effective at raising empathy even among bullying perpetrators and low-empathy children. We hypothesized, however, that the effects of KiVa on increases in empathy would be lower for popular students, for boys, in secondary school classrooms, and in classrooms where bullying was more normative.

Method

Sample

Data for this study were collected in primary schools (grades 3–5 at pretest and 4–6 at posttest) and in secondary schools (grades 7–8 at pretest and 8–9 at posttest) in Finland for the RCT evaluation of the KiVa program (see Kärnä et al., 2011). The schools were selected from all five provinces in mainland Finland, ensuring that the participants are representative of the Finnish population. The percentage of students with immigrant backgrounds was less than 2%. Pretest data were collected at the end of one academic year (2007 for primary schools; 2008 for secondary schools) and the posttest data used in the current study were collected one year later, after 9 months of program implementation.

At pretest (T1), our initial sample included 1,041 classrooms (563 intervention, 478 control; $N = 17,191$ participating students). Analyses were conducted on a sample of 15,403 participants in 861 classrooms (462 intervention, 399 control), after applying the following selection criteria (see Figure 1): As our analyses include class-level variables and peer-nomination measures collected within classrooms, we excluded classrooms with fewer than 10 students, classrooms with a participation rate lower than 60%, and classrooms with more than 20% change in student composition between the two time points (in Finnish schools, classmates typically

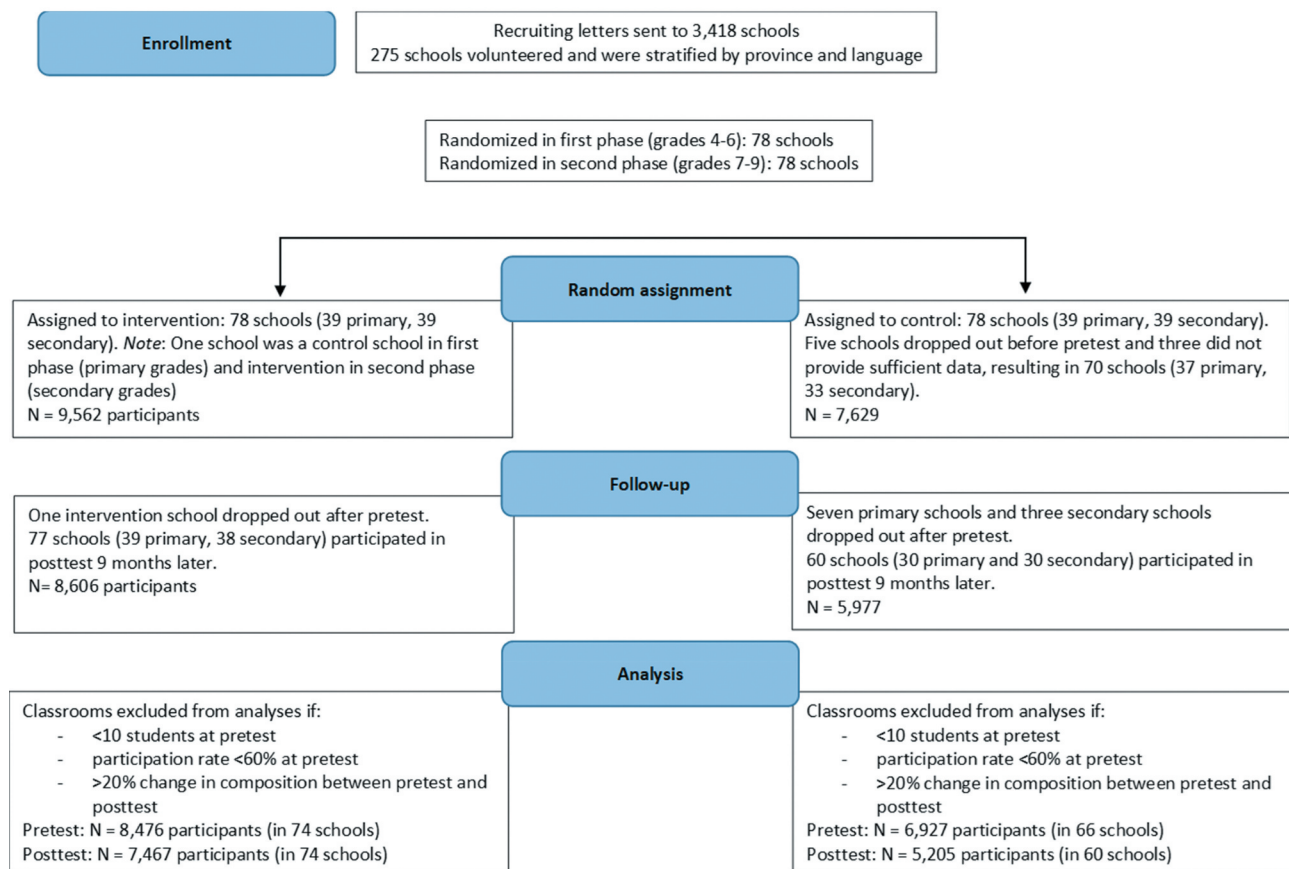


Figure 1. Flowchart of the recruitment and allocation of schools for grades 4–6 and grades 7–9 of the KiVa RCT.

remain together from 1 year to the next). The selected classrooms included 17,342 students, among which 88.8% agreed to participate at pretest. The 15,403 participants (51.5% girls; $M_{\text{age}} = 13.37$, $SD = 1.84$) belonged to 316 primary school classrooms (157 intervention, 159 control) and 545 secondary school classrooms (305 intervention, 240 control). Classroom size (based on both participants and non-participants) ranged from 10 to 32 ($M = 20.86$, $SD = 3.78$).

Classrooms excluded from analyses through our selection criteria did not significantly differ from those included in affective empathy ($t = 0.804$, $p = .422$ at T1; $t = 1.326$, $p = .186$ at T2) or cognitive empathy ($t = 0.726$, $p = .468$ at T1; $t = 0.844$, $p = .400$ at T2). They were not more likely to be intervention classrooms ($\chi^2 = 0.291$, $p = .621$) nor to be primary school classrooms ($\chi^2 = 3.475$, $p = .063$). However, they had significantly higher levels of bullying ($t = 5.581$, $p = <.001$ at T1; $t = 3.975$, $p = <.001$ at T2), possibly because schools might tend to place children with problem behaviors in smaller classrooms. At posttest (T2), $N = 12,672$ students (82.3% of the T1 sample) were still participating. Those who dropped out did not significantly differ from others in cognitive empathy ($t = 0.528$, $p = .597$), but had higher affective empathy

($t = 2.654$, $p = .008$) and higher levels of bullying ($t = 4.531$, $p = <.001$) at T1. They were more likely to be in control classrooms ($\chi^2 = 438.6$, $p = <.001$) and in primary school classrooms ($\chi^2 = 35.4$, $p = <.001$). At T1, the percentage of missing data was not higher than 1.7% for any of the variables. At T2, it rose to 21.4% for affective empathy and 19.8% for cognitive empathy. As the missingness was not at random (MNAR), using a Full Information Maximum Likelihood (FIML) estimation approach or standard imputation was not recommended. Missing data were handled via listwise deletion. According to Enders (2010) and McNeish (2017), with a sample size of 5000, a loss of 40% of observations has a minimal effect on one's power to detect true non-null effects; our sample size is above 15,000.

Procedure

To recruit the children, their parents were sent information letters including an active consent form. This form was first returned to the homeroom teachers, who, in turn, sent it to the KiVa staff responsible for recording parental permission. All students and their parents gave

written informed consent in accordance with the Declaration of Helsinki. At the time the KiVa research project started, neither institutional nor national guidelines required an ethics approval for noninvasive questionnaire studies. Nevertheless, this study was carried out in accordance with the recommendations of the Ethics Board of the University of Turku.

Data collection took place during regular teaching hours in the schools' computer labs. Students filled out Internet-based questionnaires under the supervision of teachers, who had received detailed instructions about the procedure beforehand. If needed, teachers could obtain additional support by phone or e-mail before and during data collection. Questionnaires and items were presented to the students in randomized order.

The data collection sessions began with a definition of bullying read out loud to the students. The definition included the three key characteristics of bullying: intention to harm, the repetition of aggressive acts, and the imbalance of power (e.g., Olweus, 2013). A shortened version of the definition was also shown on the upper part of the computer screens when the students were answering bullying-related questions.

Measures

Affective and Cognitive Empathy

A seven-item questionnaire, designed for the evaluation of the KiVa program, was used to assess two types of empathy toward the victim (see Kärnä et al., 2011). Affective empathy was measured with four items that capture the degree to which participants share the feelings of the victim: *When the bullied student starts to cry, I also feel bad*; *When someone is bullied, I start to get angry on his/her behalf*; *When the bullied student feels sad, I want to comfort him/her*; *When the bullied student is sad, I also feel sad*. Cognitive empathy was measured with three items that capture the degree to which participants understand the feelings of the victim: *I can understand how the bullied student must feel*; *I can imagine how the bullied student must feel, even if he/she would not tell*; *I can see how the bullied student is feeling bad*. Responses were provided on a 4-point Likert scale from 0 (*never true*) to 3 (*always true*). Exploratory factor analyzes on these seven items in Mplus indicated that a 2-factor model was preferred over a 1- or 3-factor model at both T1 [RMSEA = .023, CFI = .999, TLI = .997, SRMR = .004] and T2 [RMSEA = .035, CFI = .998, TLI = .995, SRMR = .005]. Geomin rotated loadings indicated that the four affective empathy items loaded on the one factor (factor loadings T1 \geq .650; T2 \geq .729), whereas the three cognitive empathy items loaded on the other (factor loadings T1 \geq .704, T2 \geq .822). Moreover,

results from the current and previous studies (e.g., Peets et al., 2015; Van Noorden et al., 2015) support the construct validity of these two empathy subscales; as expected, both subscales were negatively associated with bullying and positively associated with defending, and these associations were stronger for affective empathy. Consistent with other self-reported empathy measures, girls scored higher than boys, particularly for affective empathy. Therefore, the affective empathy items were averaged into one scale ($\alpha_{T1} = .88$; $\alpha_{T2} = .92$) and the cognitive empathy items into another ($\alpha_{T1} = .86$; $\alpha_{T2} = .91$).

Bullying

Our measure of bullying consisted of three items from the Participant Role Questionnaire (Salmivalli et al., 1996). Participants were shown a list of their classmates and instructed to nominate the ones who fitted the description for: 1) *starts bullying*; 2) *makes the others join in the bullying*; 3) *always finds new ways of harassing the victim*. For each item, proportion scores were calculated by dividing the number of received nominations by the number of nominators. These items were averaged into one scale ($\alpha = .92$ at both T1 and T2).

Perceived Popularity

Popularity was assessed with a single peer nomination item asking participants to nominate the classmates who are *the most* popular (see Cillessen & Marks, 2011). The popularity score of each student was a proportion score derived by dividing the number of nominations received by the number of participants.

Classroom-level Variables

Our main predictor of interest was the classroom intervention status, coded as 0 (control) and 1 (KiVa). School type was coded as 0 (primary school) and 1 (secondary school). The classroom bullying popularity norm was operationalized as the within-classroom correlation between bullying and perceived popularity. This operationalization was used in at least 11 other studies (e.g., Dijkstra & Gest, 2015; Garandeau et al., 2019; Laninga-Wijnen et al., 2018, 2020; Peets et al., 2015; Pouwels et al., 2019). The bullying descriptive norm was operationalized as the classroom average of individual scores in bullying. The proportion of boys was included as a covariate.

Analysis Plan

As our data had a hierarchical structure, with students nested in classrooms, we examined the effects of KiVa on posttest affective and cognitive empathy (controlling for pretest levels) via multilevel structural equation

modeling (MSEM). Our modeling approach accounts for the shared variance between the two types of empathy by including them both in the same model. Analyses were conducted in *Mplus 8.0* (Muthén & Muthén, 1998–2017). We used maximum likelihood estimations with robust standard errors (MLR; Byrne, 1998). Our model (see Figure 2) included individual-level predictor variables centered at the classroom mean: Gender, T1 affective empathy, T1 cognitive empathy, T1 bullying, and T1 perceived popularity. At the between-level, our model included class-level predictor variables centered at the grand mean: Intervention status (KiVa versus control), school type (primary versus secondary), bullying descriptive and popularity norms, and proportion of boys.

As our second objective was to examine whether the effects of KiVa differed according to contextual or individual characteristics, series of models were run that included interactions between intervention status and other variables. We first ran an empty model (without any student- or classroom-level covariates) to explore the degree to which affective and cognitive empathy

varied between classrooms. Second, we included main individual- and classroom-level variables in the model. Third, we included three interactions at the classroom-level (KiVa* school level, KiVa* bullying descriptive norms, and KiVa*popularity norms). Fourth, we tested random slopes for gender, T1 affective empathy, T1 cognitive empathy, T1 bullying, and T1 perceived popularity on a variable-by-variable basis (Hox, 2010). As a fifth step, only those slopes that were significant were added in a final model that included cross-level interactions to examine *between-classroom variability* in the associations between KiVa and each individual-level variable.

Results

Descriptive statistics and correlations for individual-level and classroom-level variables were computed separately for participants in intervention and control classrooms (see Table 1). Mean levels of individual affective empathy did not differ between the two groups at T1 but were significantly higher for participants in KiVa

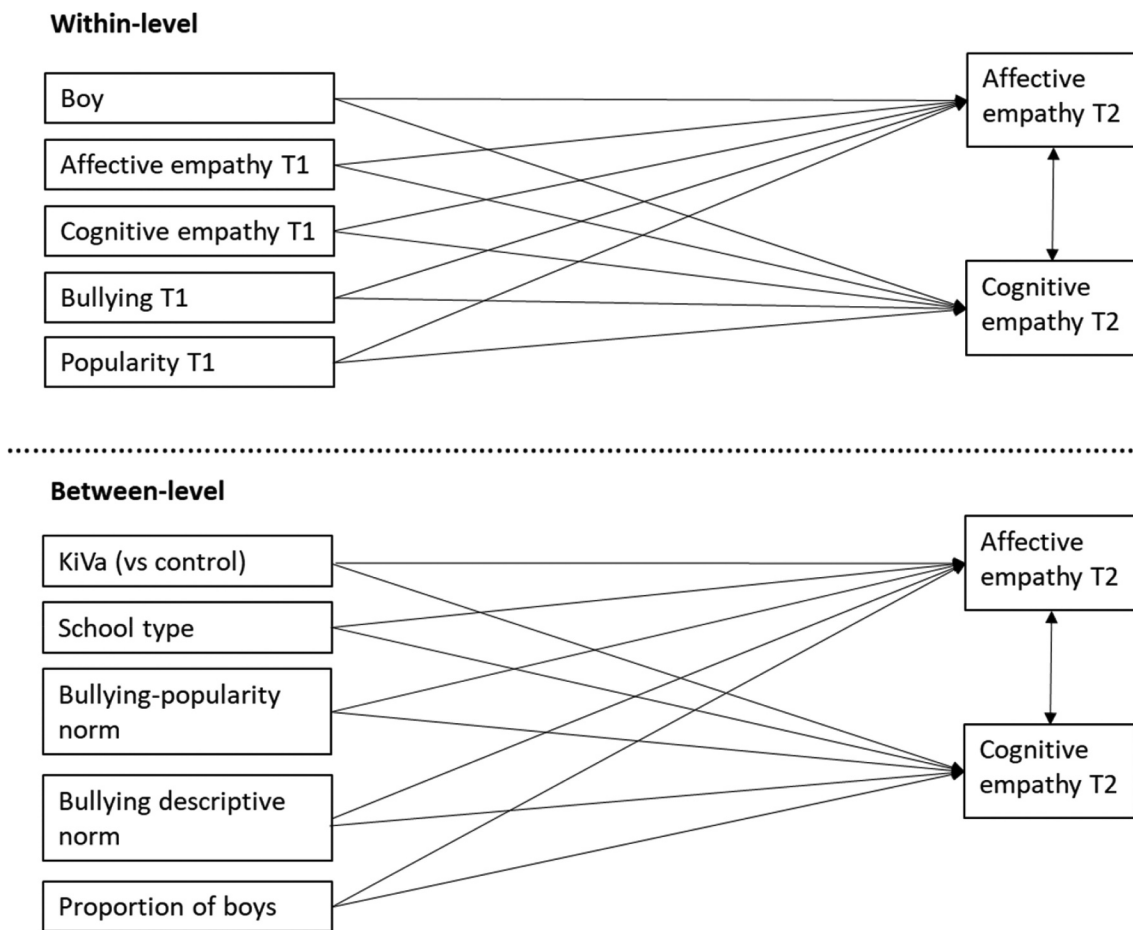


Figure 2. Theoretical model for the main effects of individual-level and classroom-level predictors of the two types of empathy at T2.

Table 1. Means (standard deviations) and correlations among (uncentered) study variables for KiVa and control classrooms (N = 15,403).

	KiVa M (SD)	Control M (SD)	t	Cohen's d	1.	2.	3.	4.	5.	6.	7.
1. Age	13.46 (1.81)	13.27 (1.86)	6.443***	0.104	-	-.39***	-.37***	-.18***	-.23***	-.05***	-.08***
2. Affective empathy T1	1.43 (0.80)	1.44 (0.79)	1.032	0.013	-.39***	-	.67***	.50***	.42***	-.16***	.06***
3. Cognitive empathy T1	1.89 (0.79)	1.90 (0.79)	0.673	0.013	-.36***	.68***	-	.36***	.43***	-.10***	.03*
4. Affective empathy T2	1.33 (0.82)	1.27 (0.82)	3.741***	0.073	-.20***	.50***	.36***	-	.74***	-.17***	.02
5. Cognitive empathy T2	1.62 (0.86)	1.62 (0.87)	0.397	0.007	-.24***	.42***	.44***	.75***	-	-.17***	-.01
6. Bullying	0.06 (0.10)	0.06 (0.11)	1.253	0.021	-.06***	-.15***	-.11***	-.14***	-.14***	-	.21***
7. Popularity	0.13 (0.18)	0.14 (0.18)	2.636**	0.043	-.07***	.01	-.01	.01	-.02	.25***	-
Class-level (n = 861)											
1. Bul. popularity norm	0.28 (0.30)	0.25 (0.32)	1.704	0.116	-	-.30***	-.25***	-.29***	-.27***	-.09	-.03
2. Affective empathy T1	1.40 (0.40)	1.43 (0.40)	1.056	0.072	-.35***	-	.86***	.63***	.63***	.04	-.05
3. Cognitive empathy T1	1.86 (0.36)	1.88 (0.37)	0.761	0.052	-.30***	.87***	-	.48***	.61***	.12*	.02
4. Affective empathy T2	1.30 (0.32)	1.26 (0.30)	1.717	0.124	-.24***	.69***	.61***	-	.82***	-.01	-.19**
5. Cognitive empathy T2	1.60 (0.34)	1.60 (0.35)	0.086	0.006	-.23***	.65***	.68***	.82***	-	.07	-.11
6. Bul. descriptive norm	0.06 (0.03)	0.06 (0.04)	0.918	0.063	.10*	.03	.14**	-.03	.02	-	.07
7. Proportion of boys	0.50 (0.11)	0.49 (0.11)	1.185	0.082	.03	-.21***	-.16*	-.25***	-.22***	.12**	-

Correlations for control sample are above the diagonal, for intervention sample below the diagonal. * $p < .05$, ** $p < .01$, *** $p < .001$.

classrooms at T2. However, the effect size was very small (Cohen's $d = 0.073$). No significant difference between the two groups was observed for T2 cognitive empathy.

Main Effects of KiVa on Changes in Affective and Cognitive Empathy

The empty model indicated that within- and between-level variance estimates were .612 and .053 for affective empathy and .679 and .070 for cognitive empathy, respectively (all significant with $p < .001$). Intraclass correlations indicated that 8% of the variance in T2 affective empathy and 9.3% of the variance in T2 cognitive empathy was due to between-classroom differences. Next, we included individual- and classroom-level covariates as predictors of changes in affective and cognitive empathy (see Table 2).

Affective Empathy

At the individual level, being a girl, having higher levels of T1 affective and cognitive empathy, higher T1 popularity, and lower levels of T1 bullying predicted higher affective empathy at T2. In total, 22.4% of the individual-level variance in affective empathy was explained by these individual-level predictors.

At the classroom-level, there was a positive effect of KiVa, which supported our hypothesis. Affective empathy at T2 was lower in secondary schools than in primary schools, in classrooms with higher bullying popularity norms and descriptive norms, and in classrooms with a higher proportion of boys. This model explained 50.2% of the between-classroom variance in affective empathy. Testing each class-level predictor separately showed that school type explained most of this variance (37.9%), followed by bullying popularity

norms (10.5%), proportion of boys (7.5%), KiVa intervention (1%), and descriptive norms (0.5%)

Cognitive Empathy

Being a girl, having higher levels of T1 affective and cognitive empathy, and lower levels of T1 bullying predicted higher cognitive empathy at T2. There was no significant effect of T1 popularity. In total, 17.7% of the individual-level variance in cognitive empathy was explained by these individual-level predictors.

Contrary to our hypothesis, there was no significant effect of the KiVa intervention on changes in cognitive empathy. However, similar to affective empathy, T2 cognitive empathy was lower in secondary schools compared to primary schools, in classrooms with higher bullying popularity norms, and in classrooms with a higher proportion of boys. There was no significant effect of bullying descriptive norms at T1 on cognitive empathy at T2. In total, 55.4% of the classroom-level variance in cognitive empathy was explained by these class-level predictors. Testing each class-level predictor separately showed that school type explained most of this variance (50.8%), followed by bullying popularity norms (10%), proportion of boys (3.6%), descriptive norms (0.3%), and KiVa (0%).

Do Contextual and Individual Characteristics Make a Difference?

Contextual Characteristics

We tested three interactions at the classroom level (between KiVa and school type, KiVa and bullying-popularity norms, and KiVa and bullying descriptive norms). These were non-significant for either type of empathy (results available upon request). Therefore,

Table 2. Main effects of individual and contextual T1 predictors on T2 affective and cognitive empathy (N = 12,162).

	Affective empathy T2			Cognitive empathy T2		
	γ (SE)	CI	p	γ (SE)	CI	p
Intercept	1.280 (.009)	1.263; 1.298	<.001	1.596 (.010)	1.577; 1.615	<.001
Within-level predictors						
Boy	-.217 (.015)	-.246; -.189	<.001	-.178 (.016)	-.211; -.146	<.001
Affective empathy T1	.424 (.013)	.399;.449	<.001	.177 (.014)	.150;.204	<.001
Cognitive empathy T1	.046 (.012)	.023;.069	.001	.293 (.013)	.267;.319	<.001
Bullying T1	-.353 (.087)	-.523; -.184	<.001	-.597 (.097)	-.787; -.407	<.001
Popularity T1	.080 (.037)	.008;.141	.030	-.040 (.039)	-.117;.036	.302
Between-level predictors						
KiVa	.051 (.018)	.016;.087	.004	.008 (.019)	-.029;.046	.664
School level	-.317 (.021)	-.358; -.277	<.001	-.406 (.022)	-.448; -.363	<.001
Bullying popularity norm	-.102 (.031)	-.163; -.041	.001	-.084 (.033)	-.147; -.020	.010
Bullying descriptive norm	-.1.150 (.274)	-1.687; -.614	<.001	-.534 (.306)	-1.105;.036	.066
Proportion of boys	-.587 (.084)	-.752; -.422	<.001	-.458 (.090)	-.634; -.282	<.001
Residual var. _{within}	.470 (.008)	.453;.486	<.001	.553 (.009)	.535;.570	<.001
Residual var. _{between}	.030 (.003)	.024;.037	<.001	.034 (.003)	.027;.041	<.001

* $p < .05$, ** $p < .01$, *** $p < .001$. CI = 95% Confidence Interval.

there was no support for the hypothesis that KiVa would be more effective at increasing empathy in primary schools than in secondary schools. Although levels of affective and cognitive empathy were lower in classrooms where bullying was the popularity norm, our hypothesis that KiVa would be less effective at increasing empathy in those classrooms was not supported. Therefore, we excluded these non-significant interaction terms from our model, and as a next step, started testing random slopes of individual characteristics.

Individual Characteristics

Only two random slopes (T1 affective empathy on T2 affective empathy and T1 bullying on T2 cognitive empathy) varied significantly between classrooms ($Var = .007$, $p = .001$ and $Var = .289$, $p = .025$, respectively). Therefore, we tested a model where KiVa explained differences between classrooms in the association between T1 and T2 affective empathy and between T1 bullying and T2 cognitive empathy. Only the first cross-level interaction was significant and led to a slightly better model fit ($\Delta BIC = -2.15$ and $\Delta AIC = -16.96$). However, the cross-level interaction explained 0.0% of the variance in the random slope, thus this could not be considered a meaningful effect.

Other random slopes did not vary significantly across classrooms, which means that our analyses did not provide evidence that KiVa would be less effective at increasing affective or cognitive empathy among students higher in bullying, which is consistent with our hypothesis. However, contrary to our hypotheses, there was no evidence that the positive effects of KiVa on changes in empathy would be lower for students higher in popularity or among boys.

Finally, we conducted additional analyses to examine whether the positive effects of KiVa on affective empathy resulted in a decrease in bullying by testing the indirect

effect of KiVa on T2 bullying via affective empathy. This indirect effect was only marginally significant [$B = -.003$, $SE = .001$, $p = .055$]. The indirect effect of KiVa on T2 bullying via cognitive empathy was also tested in the same model, but, as expected, was non-significant [$B = .000$, $SE = .001$, $p = .709$].

Discussion

The key role of empathy in bullying perpetration and in defending victimized peers (e.g., Van Noorden et al., 2015) makes it essential for developers of anti-bullying programs to include some form of empathy-training. Although a few studies have shown that anti-bullying programs could improve empathy for the targets of bullying (e.g., Limber et al., 2018), our knowledge on the effectiveness of such programs at raising children and adolescents' empathy for victimized peers is limited in several ways. First, no distinction was made between types of empathy, even though affective empathy is the only type consistently found to be negatively linked with bullying (e.g., Jolliffe & Farrington, 2011; Stavrinides et al., 2010) and cognitive empathy might be relatively high in some "cold-blooded" yet intelligent bullying perpetrators (Caravita et al., 2010; Sutton et al., 1999). Second, whether the effects of school-based interventions on empathy varied depending on individual characteristics of the participants or features of the classroom had never been investigated. Third, the effect of the KiVa program on empathy was only examined among primary school children (Kärnä et al., 2011; Saarento et al., 2015). Knowing whether some students remain unresponsive to empathy-raising efforts – and who these students are – and identifying social environments that may hinder participants' sensitivity to these efforts, is of critical importance for developing tailored anti-bullying interventions.

Using data collected in primary and secondary schools for the evaluation of the anti-bullying program KiVa, our study showed that, after 9 months of implementation, KiVa had a positive effect on affective empathy but had no significant effect on cognitive empathy. There was also some indication that this positive effect may translate into a decrease in bullying. Furthermore, both types of empathy at posttest were found to be lower in boys, students higher in bullying, students lower in pretest empathy, in secondary schools compared to primary schools, in classrooms with a higher proportion of boys, and in classrooms where bullying was rewarded with higher popularity (bullying popularity norm); affective empathy was also lower in classrooms with higher mean levels of bullying (descriptive norm). The effects of KiVa on either affective or cognitive empathy were independent of individual and contextual factors, suggesting that anti-bullying programs may succeed at raising empathic concern for victimized peers even among bullying perpetrators or popular children, among adolescents, and in classrooms where bullying is valued and rewarded.

Two important things should be kept in mind when interpreting these findings: First, mean levels of both types of empathy went down between the two time points in both control and intervention classrooms. Therefore, the positive effect of KiVa on affective empathy is due to levels of affective empathy decreasing significantly less in KiVa classrooms compared to control classrooms. Second, the size of this effect is small, suggesting that the clinical significance of this finding is limited. This small effect size might reflect the fact that empathy for victimized peers is an individual characteristic that may be highly dependent on numerous factors (e.g., genes, parental practices, peer norms) and is difficult for school-based programs to raise, especially if the program is not solely designed to target empathy. It is also an indication that innovative ways of increasing empathy for victimized children should be developed and incorporated into anti-bullying interventions.

Main and Interactive Effects of KiVa on Affective and Cognitive Empathy

As affective empathy may be more strongly related to both lower bullying (Jolliffe & Farrington, 2011) and higher defending (Van der Ploeg et al., 2017) than cognitive empathy, the finding that KiVa positively influenced affective empathy only is not particularly concerning from an intervention perspective. It should be noted that average levels of cognitive empathy for victimized children were initially higher than average levels of affective empathy, which could imply that cognitive empathy was less likely to benefit from an intervention. Our findings may indicate

that all the elements of KiVa designed to increase empathy, such as stories of past victimization by adults or access to others' perspectives in the online game, particularly promote affective concern for victimized classmates, rather than foster a better understanding of what bullied classmates experience. One possibility is that KiVa increased compassion – the feeling that arises in witnessing another's pain and motivates one to aid the victim, but that does not require the vicarious experience of another's emotions (Goetz et al., 2010). Future studies should examine the program's effects on these related but distinct constructs. Alternately, these findings could indicate that only some of the program components of KiVa work and it will be important for future research to test their effectiveness separately.

The differential effects of the program on the two types of empathy are consistent with research showing that the capacity to empathize is independent from the capacity to mentalize, behaviorally and neurally (Kanske et al., 2016). Accordingly, focusing intervention efforts on enhancing students' perspective-taking skills with the assumption that it will in turn increase empathic concern for the victim may be misguided for program developers. Nonetheless, in our sample, bullying was negatively associated with both affective and cognitive empathy for victimized children. This implies that those who bullied showed a lack of understanding for victims that the program could not modify. New technologies offer a promising avenue for further improving empathy-raising capacities of anti-bullying programs. Virtual reality allows immersion in a realistic environment where participants can be the target of bullying and has been shown to be more effective at increasing empathy and prosocial behavior than simply imagining what it is like to be in someone else's shoes (Herrera et al., 2018), possibly because the participant's subjective feeling of being inside another environment decreases psychological distance to the victimization situation (Ingram et al., 2019) and allows a deeper understanding of perspectives other than one's own. However, as the experience of peer abuse can increase feelings of anxiety, the use of virtual reality techniques is not recommended for youth who are already vulnerable. Other strategies may help increase empathy and decrease bullying when incorporated into anti-bullying interventions, including mindfulness training (Bertrand et al., 2018) or cooperative learning – an instructional approach facilitating positive interdependence among students via group work where individuals can attain their goals only if other group members reach theirs (Van Ryzin & Roseth, 2019).

Our analyses did not detect a lower responsiveness to the empathy-raising elements of the program from

students who tend to bully others or lack empathic competence, supporting previous findings that bullying perpetrators and low-empathy children are not necessarily resistant to attempts at arousing their empathy for targets for abuse (e.g., Van Baardewijk et al., 2009). These findings are encouraging, as they do not support the view that these children would lack the capacity to develop empathy skills. Although the popularity of bullying perpetrators was shown to be problematic, as it can motivate their behavior (Caravita & Cillessen, 2012) and decrease their susceptibility to anti-bullying interventions (Garandeau et al., 2014), we did not find any indication that high popularity hindered KiVa effects on empathy. There was also no evidence that boys would be less receptive than girls, which is consistent with findings that the effects of anti-bullying interventions on bullying do not vary by gender (Yanagida et al., 2016). Moreover, using a sample of both primary and secondary school students, our study did not find that adolescents would be less responsive than children to KiVa's empathy-raising efforts. However, the correlation between age and both types of empathy was negative, suggesting that understanding and compassion for targets of bullying decreased with age. It is therefore especially important that interventions aimed at raising empathy are not restricted to younger children. Overall, our results do not point to the necessity for anti-bullying interventions to tailor their empathy-raising components to specific categories of children.

The correlates of empathy often examined are individual or relational (e.g., in-group member, friend, etc.), but little is known about the effect of context on average levels of empathy. Our results showed that both affective and cognitive empathy for victimized classmates were lower in classrooms where bullying was more rewarded with popularity, even after controlling for the classroom prevalence of bullying. The understanding and compassion that children have for victimized peers is therefore affected by classroom norms, possibly because strong bullying popularity norms promote collective moral disengagement (Menesini et al., 2015). Bullying researchers have long known that the rewarding nature of bullying is a major cause for concern, because this encourages aggressors to maintain their conduct. The negative impact of such norms might extend to empathy for victims; new intervention strategies to enhance empathy should ideally take into account its susceptibility to classroom bullying norms. The present study did not find any moderating effect of these norms on KiVa effects on empathy, which is encouraging; it suggests that students can be receptive to empathy-raising efforts even in classrooms where bullying is the popularity norm. Other

contextual factors may be relevant to examine in future research: Consistent with the idea of a healthy context paradox (Garandeau & Salmivalli, 2019), in classrooms with few victimized students, the victims might appear as more deserving of their plight and elicit less empathic concern from peers. The program might therefore increase empathy less for the remaining victims when it is successful at decreasing bullying. Teachers modeling prosocial behavior through their interactions with students might help lower the status of bullies in their classroom. Also, teaching practices supporting collaborative interactions and discouraging prejudices help increase affective empathy (Van Ryzin & Roseth, 2019) and could also moderate the effects of the program on empathy.

Limitations

A main strength of this study was to consider how both personal and contextual characteristics may influence individuals' responsiveness to attempts at raising empathy for bullied students. However, the effects of the target's characteristics or the participant's relationship to the target were not investigated, though empathic processes are context-dependent (Zaki, 2014). Research on empathy and bullying involvement showed that between-individual variations in empathy may be due to target differences: bullies and victims show less empathy for each other than for non-involved peers, and girls report more empathy for girls than for boys (Van Noorden et al., 2017). Our survey asked participants about their empathy for any target, whereas in real-life situations, their empathy for the victimized classmate may depend on whether the classmate is a friend, someone who already bullied them, or a child they have no link to. Future research should examine whether the effects of interventions on changes in empathy depend on the participants' relationship to the target.

Furthermore, our measurement of empathy for victimized children was not the most sensitive or objective. As data were collected as part of the evaluation of KiVa, participants had to fill out numerous questionnaires; for this reason, empathy could only be assessed with a short scale of 7 items. These self-reported items tapped into participants' self-reflection about their feelings and understanding of the plight of victimized classmates. They might be biased by social desirability, not necessarily reflecting how one truly feels or thinks but rather one's beliefs about how other people expect them to feel. In addition to using more thorough empathy scales, future studies should consider examining physiological reactions, such as changes in heart rate or skin conductance, neuroimaging, electroencephalogram (EEG), facial electromyographic activity

(EMG), when exposed to distressing stories of victimization for a more objective assessment of empathy.

Our measurement of peer-reported bullying was also limited as it did not distinguish between physical, verbal, relational, and cyber-bullying. While all forms tend to be negatively associated with both types of empathy, there is indication that the relation between indirect or relational bullying and cognitive empathy may be especially weak (Kaukiainen et al., 1999; Van Noorden et al., 2015). Further, the data for the present study were collected more than 10 years ago; therefore, the bullying nowadays being enacted via electronic means may have been underestimated. New research should investigate whether empathy for victims depends on the form of abuse they are subjected to and examine the impact of empathy-raising interventions on different types of bullying. Finally, our analyses were based on a large sample, representative of all main provinces of Finland, which is a relatively homogeneous country ethnically and economically. Thus, the external validity (generalizability) of the results may be limited.

Conclusions

The anti-bullying program KiVa was found to have a positive influence on affective empathy, but not cognitive empathy, for bullied peers, after 9 months of program implementation. We also found some indication that this positive effect may translate into decreases in bullying behavior. However, the smallness of the effect size remains a source of concern.

Two conclusions can be drawn from these findings. First, it is essential to find new ways to improve the effectiveness of anti-bullying programs in promoting empathy for victims. Immersing children who behave as though they were not sensitive to the suffering of victimized classmates, (e.g., those who bully, support the bullying, or remain passive bystanders) in situations where they would be exposed themselves to peer abuse, via virtual reality techniques, might arouse emotions that are similar to the ones felt by actual victimized children. Second, one should keep in mind that, despite the strong role of affective empathy in predicting bullying-related behaviors, intervention efforts cannot rely solely on empathy increase for resolving bullying problems. Anti-bullying interventions should also focus on promoting the factors that must be combined with empathy to prevent bullying (or facilitate defending), such as decreasing moral disengagement processes, diminishing the status rewards that perpetrators reap for their behavior or increasing self-efficacy for defending.

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