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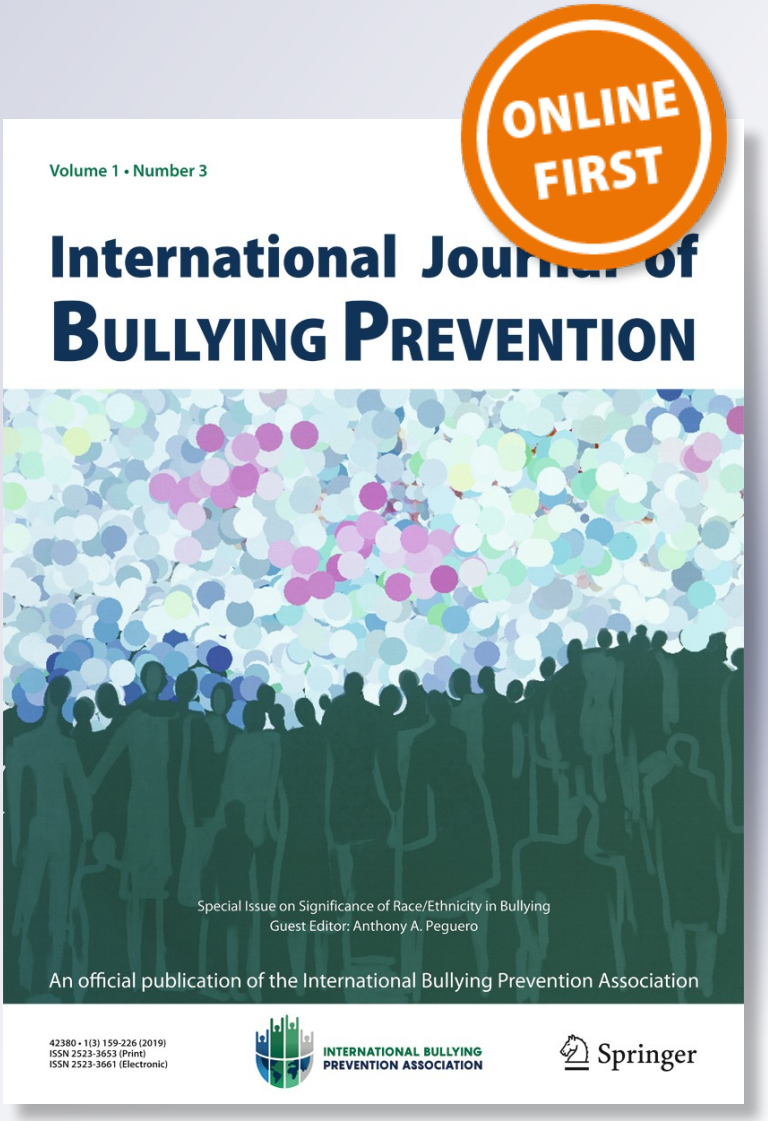

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ORIGINAL ARTICLE

An Evaluation of the KiVa Anti-bullying Program in New Zealand

Vanessa A. Green[1] · Lisa Woods[2] · Daniel Wegerhoff[1] · Susan Harcourt[1] · Sarah Tannahill[1]

Abstract
This paper describes the introduction of the KiVa anti-bullying program in New Zealand. KiVa is a whole-school program developed in Finland that includes both indicated and universal actions for children aged 7 to 15 years. The program focuses on the group context and seeks to alter the peer group culture by motivating bystanders to take action. There is a growing body of evidence that suggests it is successful in reducing bullying and victimization in a range of countries outside its country of origin. However, its impact in countries with a particularly heterogenous population such as New Zealand is yet to be determined. This paper presents data after one year of implementation in 7 New Zealand schools. The sample included 1175 students from Years 2–6 (~ 6 to 10 years). The students completed an anonymous online survey prior to the implementation of the program and again after one year. Significant reductions were reported after KiVa implementation in self-reported rates of bullying and victimization as well as a reduction in experiences of being bullied via the internet. These reductions however varied by gender and year level in that KiVa had a more significant effect on most girls and young boys. In addition, there was a significant increase in the number of children feeling safer at school. Given the heterogeneity of the sample, these early results are promising, but the gender differences also highlight the need for further evaluations and investigations regarding the implementation of KiVa in New Zealand.

Keywords Bullying · Victimization · Intervention · KiVa · Gender differences

Bullying is a phenomenon that affects individuals across the lifespan, across multiple contexts (Bradshaw et al. 2017; Craig et al. 2009; Due et al. 2005; Monks et al. 2009) and impacts at least 10–11% of school-age children throughout the world (Jimerson et al. 2010; Menesini and Salmivalli 2017; Salmivalli et al. 2012; Smith and Shu 2000; Smith 2014). Bullying can involve verbal or physical attacks as well as relational manipulation (e.g., social exclusion, rumor spreading) (Olweus 1993). It can also occur via the internet through the use of a range of new technologies (Monks and Smith 2006; Olweus 2013; Olweus and Limber 2017; Smith et al. 2013). To be considered an act of bullying there is a general agreement in the research literature that the perpetrator intends to harm the victim, it is repeated, and there is a power imbalance between the perpetrator and the victim, that is perpetuated and magnified given the dynamic nature of bullying and victimization (Hymel and Swearer 2015; Messini and Salmivalli 2017; Olweus 1993).

Bullying is more likely to be perpetrated by boys than girls (Smith et al. 2019) and is related to a range of negative outcomes for all those involved. Victims are at a greater risk of mental health issues and peer rejection, and perpetrators have a higher risk of delinquency and future unemployment (Kokko and Pulkkinen 2000; Ttofi et al. 2014; Vaillancourt et al. 2013; Vanderbilt and Augustyn 2010; van der Ploeg et al. 2016). Furthermore, those who witness bullying behavior may also experience some negative effects such as anxiety and depression (Nishina and Juvonen 2005; van der Ploeg et al. 2016; Werth et al. 2015). In addition, bullying and victimization also impact general school success as it associated with significantly lower reading achievement (UNICEF 2018).

In line with international data, bullying appears to be relatively common in New Zealand schools (Carroll-Lind 2009; Kljakovic et al. 2015; Slee et al. 2016). For example, Adair

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et al. (2000) found that in the course of a year, 58% of their 2066 students aged 14–18 years reported being victimized and 44% admitted to bullying others. Furthermore, data from *Trends in International Mathematics and Science Study* 2014/2015 (Mullis et al. 2016)—which is an international survey that includes questions about student bullying—showed that of the 6322 grade 4 students (~ 10 years old) surveyed in New Zealand, 24% indicated that they had been bullied "about weekly." The international average for grade 4 students experiencing bullying weekly was 16%. With 60% of 10-year-old students indicating that they had been bullied, New Zealand continues to be near the bottom of the international table (i.e., 46th out of 49 countries). This finding is consistent with a report on inequalities in education from UNICEF (UNICEF 2018), where New Zealand was ranked last amongst the 30th wealthiest OECD nations as having the highest rate of reported bullying amongst grade 4 children, showing that about one child in two experiences bullying at least once a month. Due to the negative effects of bullying and its prevalence, researchers and practitioners from around the globe have put considerable resources into the development of a wide range of bullying prevention and intervention programs, with varied success (see Smith et al. 2016a). A recent meta-analytic review has suggested that collectively anti-bully programs reduce victimization by about 15–16% and perpetration by about 19–20% (Gaffney et al. 2018).

The initiatives that have been implemented in New Zealand include *Kia Kaha* (meaning to stand strong in Māori) which was launched in 1992 and developed by the New Zealand Police. It adopts a whole-school approach by including parents, teachers, students, and school administrations. The focus is on increasing self-esteem and assertiveness through specific lessons that are implemented by classroom teachers and in consultation with Police Education Officers (Carroll-Lind 2009). An evaluation of the program in 31 schools showed that in comparison to a sample of 18 matched schools, who were not implementing the program, there were lower levels of victimization and bullying in *Kia Kaha* schools (Raskauskas 2007). In 2013, Green et al. reported that approximately 30% of the 1200 teachers and principals who responded to a national survey reported having used the *Kia Kaha* program in the past or were currently using it in their schools. Given its success and that it has been available for free to schools since 1992, it is unclear why the program has not had a more significant impact on reducing overall rates of bullying in New Zealand or why it has not been maintained or adopted more widely.

Given what is now known about the sustainability of whole-school programs (Smith et al. 2016a), it is possible that the uptake and sustainability of *Kia Kaha* were hindered by a lack of staff training and ongoing school commitment. In addition, it has been established that a yearly data collection process to monitor the ongoing effectiveness of a program on students is important to ensure its sustainability (Ansary et al. 2015). One limitation of the *Kia Kaha* is that despite its focus on prevention, it does not appear to include a clear process or set of actions for school to follow when bullying incidents arise. The establishment of specific disciplinary methods to tackle bullying has been recognized as an important intervention component related to reductions in both bullying and victimization (Ansary et al. 2015; Ttofi and Farrington 2011).

Another anti-bullying initiative that was launched in 2001 by the Peace Foundation was the *Cool Schools Mediation Program*, which has a peer mediation focus. The program has a strong restorative justice focus in that it teaches children to assess and resolve conflict and to then go on and practice these skills as peer mediators in their schools (Smith et al. 2016b). An evaluation of 24 schools who were implementing the program in 2004 revealed that despite some success in low SES schools there were several factors that prevented a strong commitment to the program. These included variable expectations amongst staff and an understanding that children do not necessarily want to be the role models/mediators as it sets them apart from their peers (Murrow et al. 2004; Smith et al. 2016b).

In their meta-analytic reviews on the effectiveness of anti-bullying programs, Ttofi and colleagues (Gaffney et al. 2018, 2019; Ttofi and Farrington 2011) have identified a number of programs that appear to be effective in reducing bullying and victimization. One of the most well-known of these is the Olweus Bullying Prevention Programme (1991, 1993) which was also the first to recognize that bullying is a multilevel problem and therefore needs a whole-school approach.

In addition to the recognition of the need for a whole-school approach, there has been a growing recognition that bullying is a group process (Salmivalli et al. 1996). Therefore targeting bystanders has become an increasingly common strategy in bullying prevention (Smith et al. 2012) and is the focus of the KiVa program (Salmivalli et al. 2011a). The program was developed at the University of Turku, Finland, and is an intensive and systematic research-based whole-school anti-bullying program. It aims to prevent bullying and victimization through universal actions targeted at all children and to intervene with the targets and perpetrators of bullying when incidents arise (Salmivalli et al. 2011a). KiVa means kindness in Finnish, and the word is also an acronym for "Kiusaamista Vastaan," which means against bullying (Salmivalli 2010). The program is based on the participant role model, where bullying is seen as a group process involving a number of roles in addition to the bully and victim. In particular, there are followers who can be divided into those who assist the bully and those who reinforce. The assistants may also attack the victim, while the reinforcers may laugh or applaud the bullying behavior. In addition, there are defenders who attempt to help the victim and the outsiders who do not

participate (Salmivalli et al. 1996; Sutton and Smith 1999). As noted by Salmivalli (2010), bullying is seen as a goal-directed behavior in which the rewards are largely social. The social reinforcement contingencies for bullying behaviors are determined at the group level, by the bystanders, whose attitudes and subsequent behaviors can either reward the bully for their actions or convey disapproval (Salmivalli 2010; Salmivalli et al. 2011b, 2013). This group level should be the major target for prevention and intervention (Salmivalli 2010; Salmivalli et al. 2013).

The KiVa program has been designed to address attitudes and behaviors relating to bullying at the group level in order to position bullying as socially undesirable and defending others from bullying as desirable, thereby changing the role of the bystander and changing school climate. This is achieved through the use of *universal actions* that are administered to all students within a KiVa school. Salmivalli (1999) proposed a three-step process to curriculum development and implementation based on the participant role model, whereby students have their awareness raised and have an opportunity to reflect on what they would do in a bullying situation. The third step is ensuring there is a commitment to anti-bullying behaviors (Salmivalli et al. 2005). The KiVa program contains three units, each having a series of specific lessons. The lessons are about diversity, inclusion, understanding emotions, group interactions, empathy, respect, conflict resolution, and social responsibility. Although many of these skills are also found in programs that focus on social and emotional development and learning (Corcoran et al. 2018; CASEL 2015; Elias and Arnold 2006), the KiVa program has a specific focus on teaching students how to be defenders. In particular, the lessons are developmentally appropriate and build upon each other as they seek to teach children about how to recognize bullying, support victims, and stand up against bullying. In this respect, they are specifically taught how to be a defender rather than a passive bystander. To assist in the development of these skills, students are given opportunities through interactive video games to practice their responses to bullying incidents.

The program has a strong evidence base, with randomized control trials demonstrating significant decreases in bullying and victimization after nine months of implementation, particularly for younger children aged 7 to 12 years (e.g., Kärnä et al. 2011a, b; Kärnä et al. 2013). In addition, further studies outside of Finland are beginning to emerge, where equally positive results have been reported in the UK (Clarkson et al. 2019; Hutchings and Clarkson 2015) and Italy (Nocentini and Menesini 2016). Furthermore, some studies have revealed additional positive side effects of the KiVa program, including a reduction in internalizing symptoms such as anxiety and depression (Salmivalli et al. 2012; Salmivalli and Poskiparta 2012; Williford et al. 2012)

Studies based on Finnish samples have not revealed any gender differences in terms of how effective the program is at reducing bullying and victimization; however, Hutchings and Clarkson (2015) reported gender differences in their sample of 748 9–11-year-old pupils from 17 schools in the UK. In particular, there was a significant reduction in bullying and victimization for girls, but only a reduction in bullying perpetration for boys. In a more recent study of 7–11-year-old children from 41 schools in the UK, Clarkson et al. (2019) found that KiVa had a positive impact on victimization and bullying and there were no reported gender differences. There is evidence to suggest that the effectiveness of KiVa may vary as a function of year level within schools. With lower year levels having more success than higher year levels (Kärnä et al. 2011a, b, 2013). However, to date, there is limited knowledge of whether these differences will also be apparent in countries outside Finland.

With regard to the effectiveness of whole-school interventions, there is some evidence to suggest that they are less successful in heterogeneous populations (e.g., USA) compared with homogenous populations (e.g., Finland) (Evans et al. 2014). New Zealand is currently ranked as the fifth most ethnically diverse country amongst the OECD countries, with 20% of the population identified as indigenous (Māori) and 25% of the population being born overseas (Office of Ethnic Communities 2016). Although racism is an issue in New Zealand (Alton-Lee et al. 1987; Crengle et al. 2012; Sullivan 2000), there appear to be some differences in the reported rates of ethnically based bullying. In their longitudinal sample of 1774 students aged 10, 12, and 14 years, Kljakovic et al. (2015) found no differences based on ethnicity when students were asked about bullying and victimization in the previous month. In contrast in their sample of 9080 13–17-year olds, Crengle et al. (2012) found ethnic differences when students were asked about bullying in the last year, and it was highest for those students who identified as Asian.

Despite the cultural diversity, New Zealand is ranked as a highly individualistic society when considered against Hofstede's model of national cultures (Hofstede 2011; Smith et al. 2016a). However, one of the unique features of New Zealand is that it has a strong commitment to recognizing its bi-cultural history and the endorsement of multiculturalism (Kljakovic et al. 2015) and this is also evident in the New Zealand Curriculum (Ministry of Education 2007). However, although there is a smaller divide between cultural groups, there is still great disparity with regard to wealth (Kljakovic et al. 2015; Ward and Masgoret 2008). As few formal evaluations of anti-bullying programs have been published in peer-reviewed journals using New Zealand data, it is unclear whether the heterogeneity of the sample and the unique multicultural context will influence the effectiveness of the KiVa program.

In an attempt to address the issue of bullying in New Zealand schools, a team of teacher professional development specialists at Victoria University of Wellington began investigating possible anti-bullying programs. A main part of the decision-making process was the cultural appropriateness of the program and whether it would align with the New Zealand curriculum; therefore, a detailed analysis was made of the curriculum content prior to an agreement being finalized. There were significant parallels in terms of the values underpinning the program. As a result, a decision was made by the team to introduce the program into New Zealand. As part of the KiVa training and ongoing consultation, school staff were given instructions/permission on how the program could be minimally adapted to suit the individual school context (i.e., appropriate changes to language and images).

In addition to evaluating the effectiveness of the KiVa program with regard to perceived levels of bullying and victimization (including cyber-victimization), it has been recognized that bullying can have negative effects on bystanders who witness acts of bullying. Therefore, bullying behaviors can contribute to general feelings amongst students of feeling unsafe at school (Wolke and Lereya 2015). Given that both in New Zealand and elsewhere it is considered a basic human right for children and young people to access education in a safe environment (Carroll-Lind 2009), the possible positive side effects of increased school liking as a result of KiVa is an important aspect of a whole-school approach to bullying prevention and intervention. Therefore, the student's perceptions of school safety are included in the current study.

Finally, regardless of the quality of the program itself, a whole-school approach requires buy-in from teachers. Studies have shown that teacher commitment can contribute to dosage and fidelity of KiVa which in turn can have an impact on whether or not bullying and victimization are reduced (Haataja et al. 2014; Swift et al. 2017). Therefore, as a proxy fidelity check of the visibility of the program, students perceptions of their teachers' commitment to bullying reduction was assessed by asking them to indicate the extent to which their teachers worked toward addressing bullying and victimization.

Method

Data Source and Procedure

In accordance with New Zealand law, ethical approval was obtained for this project from the Victoria University of Wellington Human Ethics Committee (# 23658). Once schools register with KiVa, they are given password access to the standardized online survey. All KiVa school pupils complete an annual anonymous survey which measures bullying and victimization. In particular, participating schools (those who had implemented KiVa for at least a year) were provided with information about the proposed project and given an opportunity to choose whether or not they would like to participate.

Schools that are registered with KiVa receive a report on their own data; thus, in giving consent, they were allowing the researchers to access and aggregate the historical data that had already been collected as part of their involvement in the KiVa program. Consent was given by all participating schools to enable the researchers to access the historical anonymous data that was collected as part of the program implementation.

This baseline data was collected during class time before any information about KiVa had been presented to the children, and students were not advised about the survey beforehand. Staff were given a step-by-step guide on how to collect the data. During data collection, the teachers ensured student confidentiality by making sure the students did not confer with each other when completing the survey. Given the age of the students (6–10 years) and the variability in literacy, the teachers guided them through the survey by reading aloud the definition of bullying and reading through the questions and response alternatives. After one year of KiVa implementation, the children completed a follow-up survey containing the same questions, as well as additional questions regarding their experience of the KiVa program. For consistency, this typically occurred during the month of November.

Intervention

Implementation of KiVa in New Zealand involved a group of professional development experts first undergoing intensive training conducted by two members of the Finland KiVa team. The program was then launched, and schools were informed of its availability. Staff from interested schools then received two days of training. In particular, all staff from each school attended the first day of training (including Librarians and other auxiliary staff). On the second day, those who had been nominated to form the KiVa team (usually three staff, but typically five) attended a more specialized training session. These KiVa team staff were usually also accompanied by members of the middle/senior management team within each school.

To ensure the pedagogical validity of the program, the universal actions include a set of lessons. These lessons are contained within specific units. The schools were provided with multiple copies of the KiVa lesson units appropriate to the year level of their school. There are 10 monthly 90-min lessons that in practice are typically divided into 20 × 45-min lessons, or smaller mini-lessons where needed. The lessons are interactive (e.g., role plays), have associated video material, and involve large and small group discussion and online games. In addition, there are parent guides, posters, and vests worn by teachers, who are part of the KiVa team and are

designed to be symbols of the school's commitment to KiVa. Alongside the universal actions, KiVa schools also have clear set of guidelines and policies on how to address bullying incidents as they arise through the use of indicated actions for both the bullies and victims (Caravita et al. 2009; Pöyhönen et al. 2010).

Measure

The measure under investigation included a subset of questions that are part of a larger online anonymous survey completed by students in participating schools as part of the KiVa program (i.e., KiVa Student Survey). In addition to a question about gender and school year, a subset of four questions formed the focus of this report. They were related to bullying, victimization, internet victimization, and school safety (a fifth question about how much the teacher had done to decrease bullying was used as a proxy fidelity check on KiVa implementation). Three questions about bullying and victimization were from the Revised Olweus Bully/Victim Questionnaire (OBVQ; Olweus 1996). The OBVQ has been found to have satisfactory construct validity and reliability (Hutchings and Clarkson 2015; Kyriakides et al. 2006) and has significant correlations with a range of related constructs (Haataja et al. 2014). One item asked the students "How often have you been bullied at school during the past few months?" The students were presented with five options ("I have not been bullied during the past few months," "once or twice,""2-3 times a month," "about once a week," "several times a week"). A similar set of options were provided for the question "Have you been bullied through the internet during the past few months?" For the question "How often have you bullied another student at school during the past few months?" the options were as follows: "I have not bullied anyone during the past few months," "only once or twice," "2–3 times a month," "about once a week," "several times a week." A further question was originally developed by the Finnish National Board of Education. "To what extent do you agree or disagree with the following statement - I feel safe at school" (5-point scale from *I disagree completely* to *I agree completely*). The fifth question used in the present study was created by the KiVa program developers (Herkama and Salmivalli 2014). That is, "How much has your teacher done to decrease bullying this year?" (the options included *very little or nothing*, *rather little*, *some*, *a lot*, *very much*). At the beginning of the survey, the students were provided with a definition of bullying as outlined in the Revised Olweus Bully/Victim Questionnaire (OBVQ; Olweus 1996). They were also provided with a brief definition before each question.

Design and Analysis

Given that the data was anonymous and had been de-identified, it was not possible to determine whether each child responded in one or two years, and therefore, we could not follow individual children longitudinally. In this respect, the current study is an opportunistic evaluation of data from seven of the first co-educational schools to implement KiVa in New Zealand for one year with an uncontrolled pre-post-test design. In the following analysis, the school level data were aggregated to look for any changes in overall perceptions and experiences of the children from baseline to after one year of KiVa.

Data were analyzed using cumulative link mixed models (clmm), using the *ordinal* package (Christensen 2019) for R (Core Team 2019). This analysis was selected to account for the ordinal nature of the responses to the questions as well as the nesting of data within schools. Models were fitted using the *clmm* function with gender, school year, and time-point (i.e., pre-post KiVa) as fixed effects, random intercepts for school, and random slopes for time-point within each school (Barr et al. 2013). Full models, with a three-way interaction between gender, school year, and time-point, were fitted, and statistical significance determined using likelihood ratio tests calculated according to the principle of marginality, that is, testing the significance of each term after all others, ignoring its higher-order terms. The *emmeans* package (Lenth 2019) was then used to determine which groups differed before and after KiVa by dichotomizing the response (e.g., comparing the probability that the frequency of bullying is at least once or twice over the past few months).

Results

The participants in this study included 1175 school-aged children in years 2–6 (~6 to 10 years) who attended seven co-educational New Zealand schools that at the time of data collection had implemented KiVa for one year. The school rolls ranged from 154 to 432 students (mean = 310) and were located in both rural and urban settings. As can be seen in Table 1, there were a similar number of boys and girls and the breakdown by year level was consistent. In New Zealand, schools are given a decile rating. Decile provides an indication of the proportion of students living in low socio-economic communities. High decile schools are given a ranking of 8–10, medium 4–7, and low decile 1–3 (Ministry of Education 2019). The present sample included 4 high, 2 medium, and 1 low decile school. While students did not specify their ethnicity, we can report school-level data. The overall ethnic diversity of New Zealand school children in 2017 was 50.3% NZ/European, 23.9% Māori, 9.8% Pasifika, 11.8% Asian, and 2.7% other (including MELAA) (Education Review Office

Table 1 Gender and year level of participants in 7 pre- and post-test schools

Students	Pre-KiVa $N = 1175$	Post-KiVa $N = 985$
Gender		
Female	589 (50.1%)	493 (50.1%)
Male	586 (49.9%)	492 (49.9%)
School year		
Year 2	220 (18.7%)	154 (15.6%)
Year 3	258 (22.0%)	190 (19.3%)
Year 4	246 (20.9%)	262 (26.6%)
Year 5	225 (19.2%)	201 (20.4%)
Year 6	226 (19.2%)	178 (18.1%)

2019). The average percentage of children identified as belonging to a specific ethnic group across the schools in the current sample was 58.1% NZ/European (range, 22.7–77.5%), 20.1% Māori (range, 7.9–68.8%), 5.0% Pasifika (range, 1.2–10.2%), 10.0% Asian (range, 1.7–13.4%), 2.5% other (range, 0–6.9%). Thus, the current sample was largely representative of the ethnic diversity of New Zealand school children.

Victimization

The analysis revealed there was a significant difference in the bullying frequency reported by students before and after the KiVa intervention ($X^2(1) = 5.476$, $p = .0193$). The difference in bullying frequency between males and females differed depending on the school level ($X^2(4) = 11.014$, $p = .0264$). Student responses to the question of whether they had experienced bullying or not in the previous few months were split into two groups. Namely, no experience of being bullied and experience of being bullied at least once or twice in the previous few months (the latter included the four options; once or twice in the previous few months, 2 or 3 times a month, about once a week, several times a week). As illustrated in Fig. 1, the pairwise comparisons revealed males in year 2 were more likely to have been bullied at least once or twice before KiVa compared with after KiVa ($p = .0467$). In addition, females in years 2, 3, 5, and 6 were more likely to have been bullied at least once or twice before KiVa compared with after KiVa ($p = .0275$, $p = .0032$, $p = .0137$, and $p = .0012$ respectively). Interestingly, the difference in the probability of being bullied before and after KiVa for females in year 4 was non-significant ($p = .6494$).

Victimization via the Internet

The analysis of victimization via the internet only includes year 3–6 students (those in year 2 were not asked this question) and also revealed that there was a significant difference in the bullying frequency reported by students before and after KiVa ($X^2(3) = 18.454$, $p = .0004$). The effect of time-point (i.e., before and after KiVa) on the reported frequency that the student had been bullied through the internet varied depending on the gender of the student ($X^2(1) = 5.367$, $p = .0205$).

The data was again split into two groups (never experienced bullying via the internet vs experienced bullying via the internet at least once or twice in the last few months). As illustrated in Fig. 2, the pairwise comparisons illustrate that females in years 3, 4, and 5 before KiVa implementation were more likely to have been bullied through the internet compared with after KiVa implementation ($p = .0162$, $p = .0033$, and $p = .0236$ respectively). Note that Fig. 2 does indicate that the probability of males having been bullied through the internet is lower in the year following KiVa implementation, but this difference is not statistically significant (all $p > .05$).

Engaging in Bullying Behavior

The analysis on the probability of engaging in bullying behavior revealed there was a significant effect of gender on bullying others ($X^2(1) = 33.809$, $p < .0001$). As shown in Fig. 3, it appears that boys reported engaging in bullying behavior at least once or twice in the previous few months more than girls. The effect of KiVa on the reported frequency that the student had bullied others varied depending on the year level of the student ($X^2(4) = 13.158$, $p = .0105$). Females in years 2, 3, 5, and 6 before KiVa implementation were more likely to have bullied others at least once or twice compared with after KiVa implementation ($p = .0001$, $p = .0320$, $p = .0001$, and $p = .0257$, respectively). Males in years 2 and 3 before KiVa implementation were more likely to have bullied others at least once or twice compared with after KiVa implementation ($p < .0001$ and $p = .0112$, respectively). Similar to the pattern for year 4 girls above, KiVa did not appear to have a significant impact on bullying for this age group.

Feeling Safe at School

The effect of time-point (KiVa) on the degree to which students feel safe at school depends on both the year level and gender of the student ($X^2(4) = 10.146$, $p = .0380$). To help interpret what this means, we consider the probability that a student agreed or strongly agreed that they felt safe at school. As illustrated in Fig. 4, females in years 2 and 5 were more likely to report feeling safe at school after KiVa implementation ($p = .0004$ and $p = .0156$, respectively). It is important to note however that overall students did feel safe at school (before KiVa 82.4% Agree or Strongly Agree compared with 84.2% after KiVa).

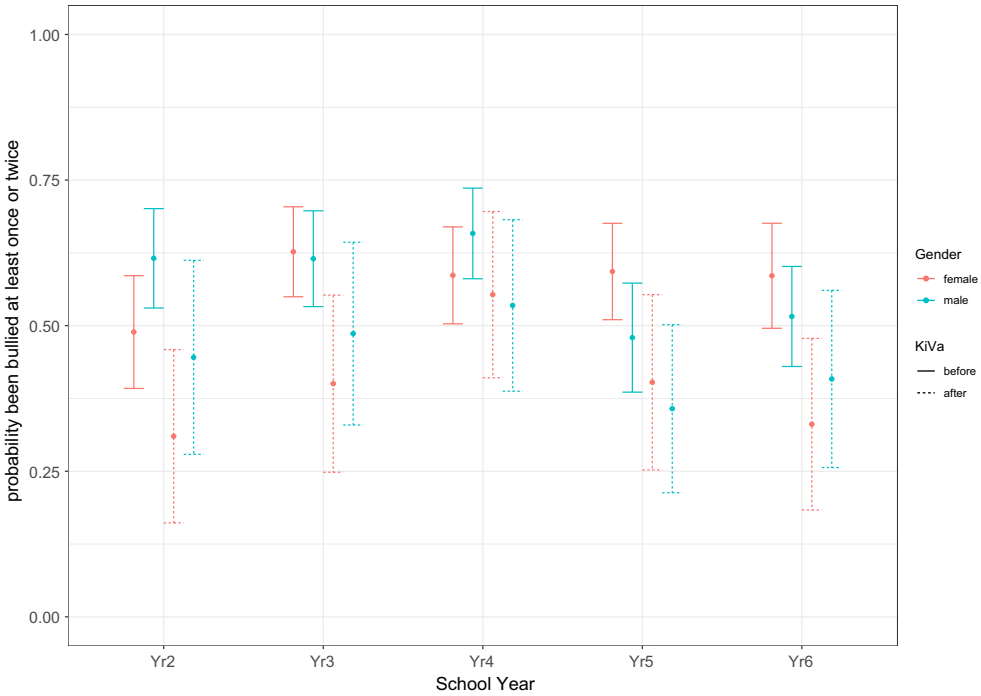

Fig. 1 Probability of being bullied at least once or twice in the past few months (with 95% confidence intervals) by gender, year level, and experience of KiVa

Amount of Time Spent Addressing Bullying

As a proxy fidelity check on the implementation of KiVa students were asked "how much their teacher had done to decrease bullying this year" with the assumption that if KiVa was being implemented and the training the teachers had experienced was changing their classroom practices, students would report an increase. As can be seen from Fig. 5, the number of students indicating that their teachers were doing a lot or very much to address bullying after KiVa appeared to increase for both males and females across all school years apart from year 4 boys. However, it is important to note there was a large percentage of students (~40–50%) indicating that their teachers were already doing a lot or very much to decrease bullying prior to KiVa, particularly in year 3.

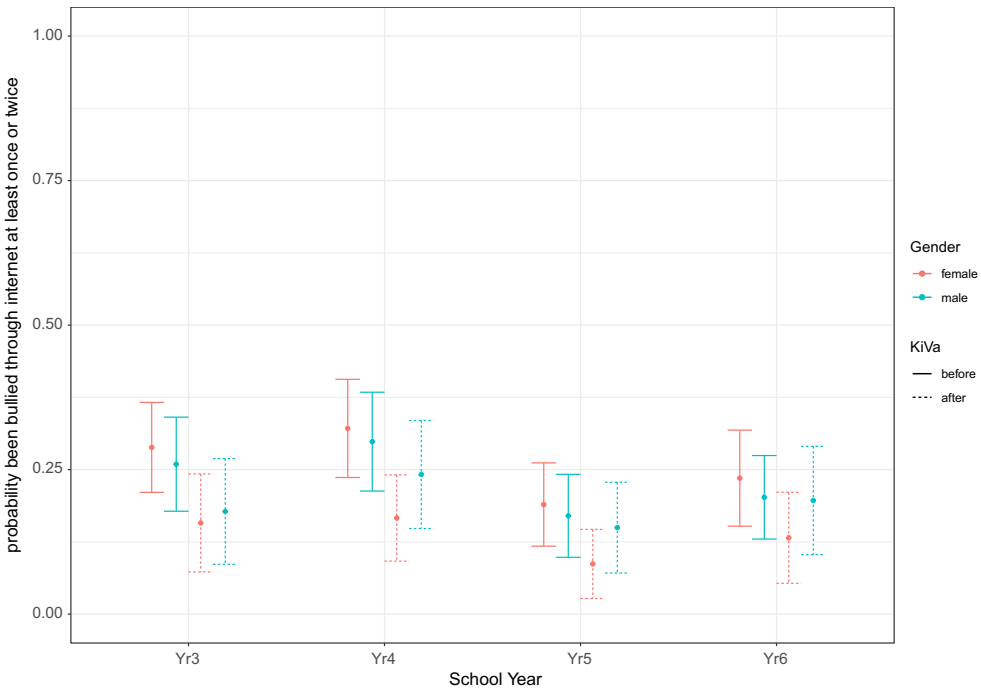

Fig. 2 Probability of being bullied via the internet at least once or twice in the past few months (with 95% confidence intervals) by gender, year level, and experience of KiVa

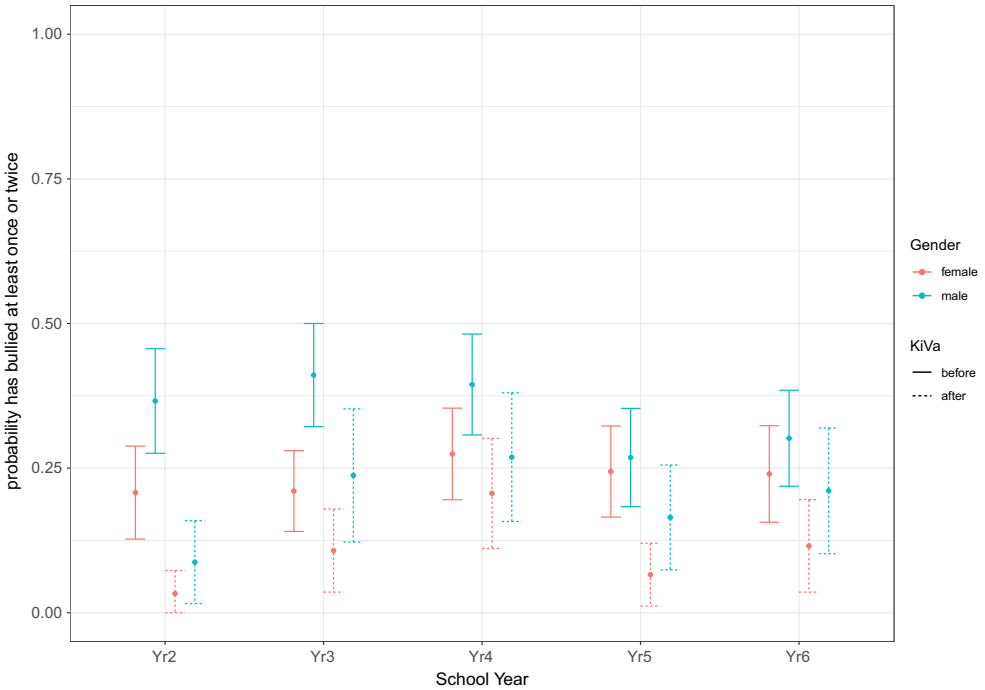

Fig. 3 The probability of bullying others at least once or twice in the last few months (with 95% confidence intervals) by gender, school year, and experience of KiVa

Discussion

The findings from this evaluation showed that overall there was a significant reduction in the rates of victimization (including via the internet) after one year of KiVa implementation; however, this was influenced by both year level and gender. It appears that KiVa had a bigger impact on rates of victimization for females and there was considerable variation amongst the year levels. In addition, the results showed that overall males were engaging in more bullying behaviors than females prior to KiVa and KiVa had a bigger impact on victimization and bullying for boys in the younger years. The findings also showed that most children indicated feeling safe at school and there was an increase after KiVa implementation. Again, this was however inconsistent across the year levels and between genders.

The overall findings that after just one year, KiVa appears to be having a positive impact on rates of victimization and

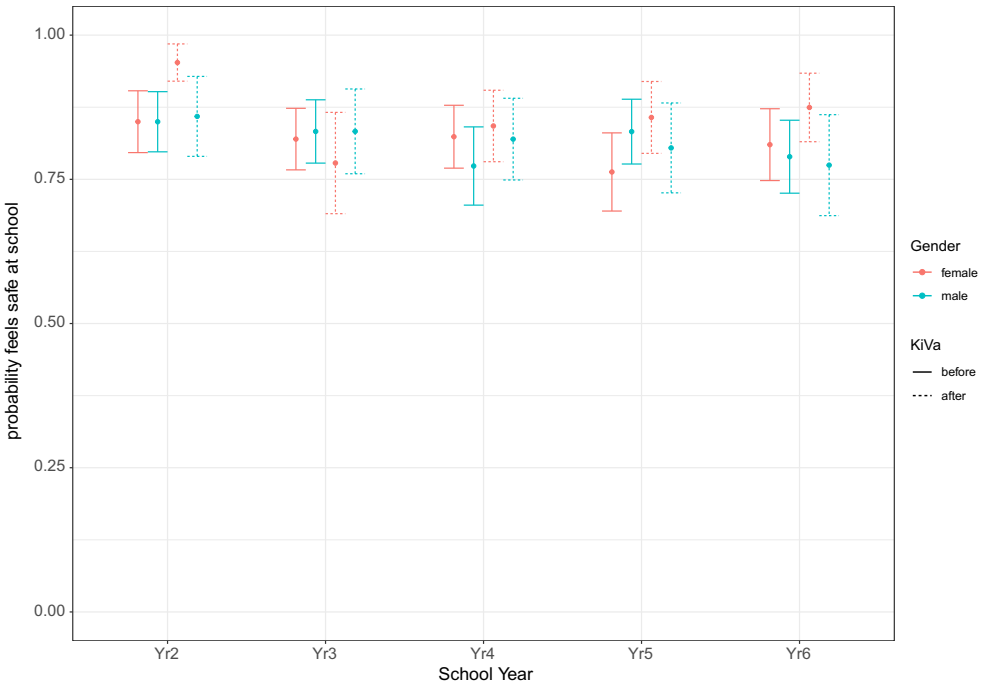

Fig. 4 The probability of feeling safe at school (with 95% confidence intervals) by gender, year level, and experience of KiVa

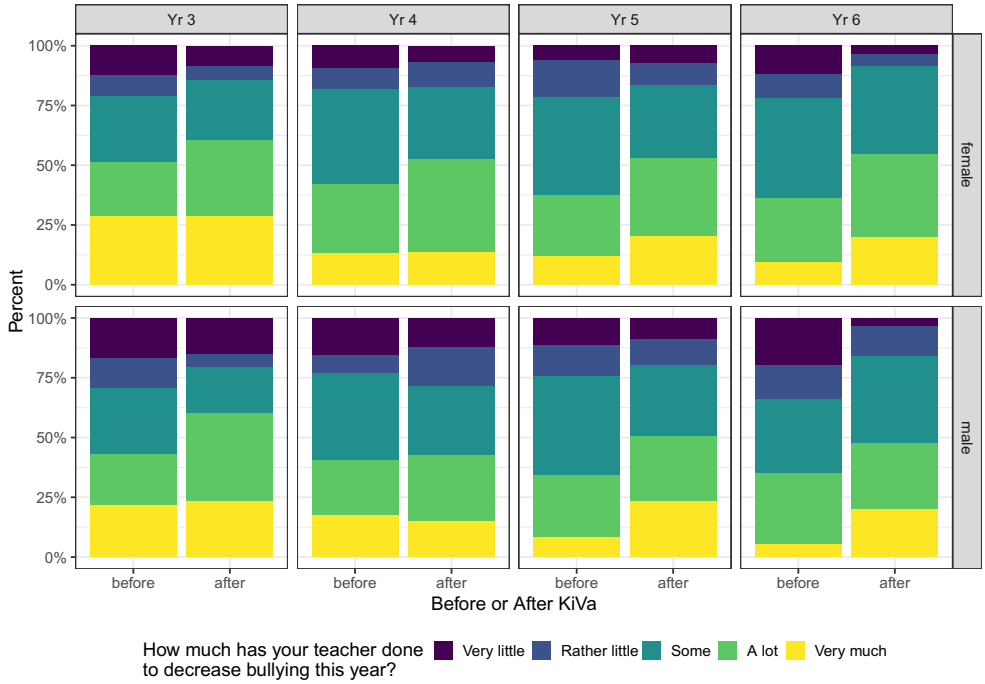

Fig. 5 Percentage of male and female students within years 3–6 indicating how much their teacher had done to decrease bullying before and after KiVa implementation

bullying are in line with previous studies (see Clarkson et al. 2019; Hutchings and Clarkson 2015). Furthermore, in the Finnish studies to date, this trend has continued over the ensuing years (e.g., Herkama and Salmivalli 2014; Kärnä et al. 2011a, b, 2013). However, when the data in the present study are broken down by year level, they reveal a more complex set of findings. The current results are however similar to those reported by Kärnä et al. (2011a, b), where intervention effects increased from grades 1 to 4, which in New Zealand equates to years 3–6 (7–10-year olds).

With regard to the gender differences in overall rates of bullying behavior, it appears that boys in this sample were engaging in more bullying behaviors than girls overall. Although this finding is line with international data (Smith et al. 2019), the KiVa program appeared to have a greater impact on girls compared with boys—but not for girls in year 4 (8-year olds). These findings contrast most of the previous KiVa evaluations to date, but it is similar with the findings from Hutchings and Clarkson (2015), where there was a significant reduction in victimization and bullying for girls, but only a reduction in bullying behavior for boys in their sample of 9–11-year olds. Although for boys in the current study there was an overall downward trend in the probability of being victimized after KiVa, this was most prominent and significant in year 2 (for traditional bullying). It is possible that younger compared with older boys are more inclined to listen to their teachers (Salmivalli et al. 2005).

The finding that KiVa does not appear to be as effective with boys as it is with girls is an area worthy of further investigation, to establish a plausible reason. It is possible that the egalitarian nature of Nordic countries who score lower on Hofstede' masculinity index compared with predominantly English speaking countries (Hofstede 2011) not only account for gender differences in rates of bullying (Smith et al. 2016a), but also the effectiveness of anti-bullying interventions on boys. The anomaly for year 4 for girls is an interesting one given that typically these children are around 8 years of age in New Zealand. It is unlikely that implementation of KiVa is the cause given that the year 4 data is from seven different schools; however, further investigations of this age group using qualitative methodologies may be relevant to understanding the reasons for this finding.

There are several limitations that need to be noted with the current investigation. The first and most significant is the data set itself. Due to the uncontrolled pre-post design and the inability to track students, we were not able to account for any cohort effects or establish any causal relationship for individual children related to the experience of KiVa. Future evaluations need to utilize a quasi-experimental method where students can be tracked across time using a cohort longitudinal design with adjacent cohorts (Clarkson et al. 2019; Kärnä et al. 2011a, b; Olweus and Alsaker 1991).

A further limitation is that the data set was not positioned within an evaluation framework prior to data collection and as such there were no monitoring procedures or fidelity checks in place. With no information beyond the training procedures with regard to how the program was actually delivered within schools, we can only speculate as to whether this inevitable

variation had a school/class level impact on the effectiveness and visibility of KiVa. This is an important factor to be considered in future research given that fidelity has been shown to be critical to the success of intervention and prevention programs (Dulak and DuPree 2008; Haataja et al. 2014). For example, Salmivalli et al. (2005) in their study of 48 school classrooms in 16 Finnish KiVa schools found reductions in bullying and victimization corresponded with higher levels of overall implementation. The authors suggested that the support provided to schools in randomized control trials may have contributed to the higher levels of fidelity. Furthermore, Clarkson et al. (2019) also state that a lack of program support in their sample of 41 schools appeared to show varying results in outcome data.

It is evident the program does not only have a positive impact on the students themselves but can also be highly beneficial to teachers. Previous research has shown that as a result of the KiVa program teachers have higher levels of self-evaluated competence in dealing with bullying compared with control schools (Ahtola et al. 2012). As noted by Green et al. (2016), approximately 30% of teachers in a nationally representative sample indicated that they had not had any formal training in how to deal with bullying or cyberbullying. Furthermore, the vast majority endorsed the need for training. Considering teacher training is a critical feature of an anti-bullying program's ongoing success and sustainability (Ansary et al. 2015), future research is required investigating how New Zealand teachers have implemented KiVa and their experiences of the program and self-evaluated competence in dealing with bullying within their diverse school environments. This will inform the further development of the program in heterogeneous communities. Lastly, given that KiVa is a whole-school approach, whereby parents and communities are included in the program's implementation, the views of parents of children within KiVa schools is a potential future area of investigation that may have important implications for the sustainability of KiVa within school communities.

As New Zealand is a highly multicultural, yet predominantly individualistic society, a further limitation with the dataset is that we were not able to identify the ethnicity of individual children in order to determine whether this impacted the effectiveness of KiVa. It is interesting to note that despite the small number of schools involved in the present study the ethnicity of the student population was in fact largely representative of the general school population, with a great deal of heterogeneity across the schools. Future evaluation studies that include ethnicity as a variable however would be important.

In a recent meta-analysis of the effectiveness of school-bullying prevention programs, Gaffney et al. (2018) concluded that anti-bullying programs do have a positive impact on the rates of bullying and victimization; however, it is evident that the quality of the program is critical. School-based bullying prevention requires a rigorous and long-term commitment, and both the intensity and duration of the program can have a significant impact on its success (Menesini and Salmivalli 2017; Ttofi and Farrington 2011). It is interesting to note and most likely not coincidental that in a recent OECD report (2015), Finland is ranked 1st in that they have the lowest rates of bullying amongst year 4 children amongst the 30 wealthiest nations included in the report. Finland has had a national commitment to bullying prevention over the last ten years. It remains to be seen whether New Zealand is able to achieve these kinds of results; however, there is an opportunity for all those involved in the New Zealand education system to make bullying prevention and intervention a key component of the curriculum, thereby prioritizing the wellbeing of children and young people in order to promote positive developmental and academic outcomes.

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Compliance with Ethical Standards

Conflict of Interest The authors declare that they have no conflict of interest.

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