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Friendly Schools Universal Bullying Prevention Intervention: Effectiveness with Secondary School Students

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Abstract

Peer bullying in schools is a significant public health problem that contributes to poor health and wellbeing outcomes for those who bully or are bullied. Meta-analyses of the efficacy of secondary-school bullying prevention interventions have typically found no effects, or an increase in student bullying. Consequently, few secondary school studies have examined the "real-world" effectiveness of these interventions. This age-cohort study design evaluated the effectiveness of the *Friendly Schools* (FS) secondary-school intervention, previously found to be efficacious. FS was implemented in schools under real-world conditions by an education publisher. Student survey data were collected in 12 schools. The primary outcomes were bullying victimization and perpetration. Results showed a significant decrease in reported bullying perpetration in subsequent cohorts of both grade 8 and 9 students, and a significant reduction in bullying victimization and cybervictimisation for grade 8 students, when the FS student curriculum was taught compared to the usual curriculum. This study demonstrates the importance of considering the effectiveness of secondary-school bullying-prevention interventions and real-world implementation supports for schools.

Keywords: School bullying; secondary school-intervention effectiveness; bullying prevention programs; anti-bullying; implementation

Friendly Schools Universal Bullying Prevention Intervention: Effectiveness with Secondary School Students

Peer bullying, defined as intended acts of aggression with a perceived power imbalance and potential for repetition (Olweus 1993), is a significant public health problem in schools. Students who bully, those who are bullied and bystanders to bullying can experience negative mental health consequences that may continue into adulthood. In particular, the experience of being bullied increases a young person's risk of eating disorders, low self-esteem, deliberate self-harm, suicidal ideation and attempts, as well as loneliness and an inability to sustain intact and meaningful relationships (Hemphill et al. 2011; Kim et al. 2011; Lester et al. 2013; Ttofi et al. 2011; Van Geel et al. 2014). The mental health consequences for perpetrators may include anxiety, depression, increased risk of violence, risk-taking behaviours (e.g., substance use), and an increased risk of suicide (Hemphill et al. 2011; Moore et al. 2014; Roland 2002). For both perpetrators and victims, peer bullying may also impact on their academic achievement (Ryan and Smith 2009). Witnessing bullying as a bystander is also associated with elevated mental health risks (Rivers et al. 2009). As bullying behaviour has important health consequences for students overall, prevention and intervention are important.

In response to the significant and potentially long-lasting impact of bullying, school-based bullying prevention interventions have been implemented worldwide (Flay 1986). Overall, many of these interventions appear to reduce reported levels of bullying, although with small effect sizes (Ttofi and Farrington 2011). Moreover, whole-school interventions that target all aspects of the students' socio-ecological context, including the classroom, school environment, home, and interpersonal relationships have been shown to be more likely to reduce peer bullying compared to single-component approaches, such as classroom curriculum only (Smith et al. 2004; Cross et al. 2011; Cross et al. 2012; Farrington and Ttofi 2009b; Ttofi and Farrington 2011). Meta-analytic findings have also demonstrated reduced efficacy with

secondary school aged students, especially in reducing the perpetration of bullying behaviour (Whitney and Smith 1993), with some studies finding no reduction in bullying behaviour or possible increases in bullying, compared to control conditions (Yeager et al. 2015). Yeager et al (2015) advised that to improve the efficaciousness of secondary school-based bullying prevention interventions, developers need to avoid simply 'aging up' materials developed for use with younger children and re-think the nature of intervention strategies for adolescents. Further, interventions need to be universal and also include strategies targeting higher risk students and those who are persistent perpetrators and/or continual targets of bullying (Green 2001).

Before investigating the effectiveness of an intervention (i.e. the extent to which benefits are imparted in naturalistic conditions), it is necessary to ensure strategies are efficacious (i.e. impart benefits under ideal controlled conditions), target whole-school policies and practices, work in secondary schools and include targeted interventions. While many interventions have been evaluated for efficacy, few are evaluated for effectiveness to determine best practice in real world settings. Efficacy reflects the extent to which the intervention imparts benefit under ideal controlled conditions whereas effectiveness refers to the extent to which benefit is imparted in naturalistic conditions.

Friendly Schools is a whole-school, universal bullying prevention program. Its theoretical base is social cognitive theory (Ryan and Deci 2000), theory of mind (Sutton et al. 1999) and the theory of planned behaviour (Rollnick et al. 2005). Parents, teachers, school leaders and students are involved in building positive, respectful relationships with social-emotional learning to prevent all forms of bullying behavior (traditional and cyberbullying) and to successfully manage any bullying that may occur.

Previous studies have established the efficacy of FS in various age-groups. Efficacy was demonstrated in primary schools via two group randomized controlled trials (with students

aged 8-9 years of age, and 8 to 11 years) (Cross et al. 2012; Cross et al. 2011) and in two secondary school trials (Cross et al. 2016; Cross et al. in press). The first FS secondary intervention was modified for developmental appropriateness, addressing the potential increase in online bullying behaviour and efficacy tested with students transitioning from primary to secondary schools. The second FS secondary trial focussed particularly on cyberbullying via the "Cyber Friendly Schools" intervention, tested in a group-RCT with students in Grade 8 and 9. Significant declines in bullying and cyberbullying involvement (both as a target and as a perpetrator) in the first two years of FS were observed in both efficacy studies (Cross et al. 2016; Cross et al. in press). Therefore, FS is considered ready to be evaluated for effectiveness.

To date, few studies evaluating school-based bullying prevention interventions, especially in secondary schools, have examined their effectiveness and implementation outcomes in real-world settings. Effectiveness evaluations present unique considerations, particularly in study and intervention design (Marchand et al. 2011; Gottfredson et al. 2015). Beyond ensuring efficacy under controlled conditions, these interventions must demonstrate their effectiveness in changing intended outcomes when delivered by endogenous providers (e.g. school practitioners, school counsellors; and educational publishers (Chalamandaris and Piette 2015)), rather than staff trained and managed by the researchers. Hence, little is known about the extent to which school-based bullying prevention interventions are beneficial when they are implemented by school staff within a real-world system, and what supports are needed to ensure success.

The Current Study

The larger study from which the data used in this paper were collected, was designed to measure the impact of adding Motivational Interviewing (MI) to the FS intervention to improve the targeted support for students who are engaged in bullying perpetration (Condition

1 schools). The original study hypothesized that this additional (MI) targeted component and FS would contribute to greater reductions in overall bullying behaviour compared to schools that receive only the FS intervention (Condition 2). While Motivational Interviewing (MI) provides a potentially valuable tool for school-based practitioners to support meaningful change in bullying perpetration (Cross, Runions, Resnicow…2018), school practitioners in this study experienced significant barriers inhibiting the use of this method in Condition 1 schools. Only three students in one of the schools assigned to the FS plus Motivational Interviewing (Condition 1) were recruited and provided with MI during the window between pre and post data collections. This almost complete lack of MI implementation by teachers following their training, meant that Condition 1 and Condition 2 schools received a similar level of FS implementation, and that the effectiveness of Motivational Interviewing on bullying and victimization outcomes cannot be determined from these data. Hence for the purpose of this paper, the schools from Conditions 1 and 2 were combined to assess the effectiveness of the secondary-school version of the FS bullying prevention intervention.

In this paper we hypothesized that:

1) In all study schools there would be lower levels of student bullying perpetration and victimization following the implementation of the FS intervention for grades 8 and 9 students in 2015/2016, compared to grade 8 and 9 cohorts prior to the intervention (i.e., when comparing subsequent cohorts of students in the same grade level) in all study schools.
2) In all study schools the successful implementation of FS would be associated with lower student bullying victimisation and perpetration scores than would be the case for schools in which implementation failure occurred.

Methods

Study Design and School Recruitment

This study utilized an age-cohort study design, which "largely eliminates the problems of selection, aging, regression, and differential attrition" (Farrington and Ttofi 2009a). In this design, students in grades 8 and 9 in 2016 (who received the intervention in 2015/2016) were compared with students from the same grade and school prior to the intervention implementation in 2015 (see Figure 1). Student assessments were conducted mid-2015; direct teaching of FS curriculum took place thereafter in 2015 and during the first half of 2016 (nb., the Australian school year begins in February and ends in December), with a follow-up student assessment in late 2016. Schools were randomly assigned to two conditions. As mentioned previously, Condition 1 schools (C1) received FS and a targeted motivational interviewing (MI) intervention for students identified as perpetrating bullying behaviour. Condition 2 (C2) schools received only FS, with a 'waitlist' for the MI component (to begin after the data collection in 2016). Due to implementation failure of MI, the two conditions are not analysed separately in this paper.

- Insert Figure 1 about here -

For age-cohort designs, a key to the unbiased estimation of a program effect is that the data obtained under control and experimental conditions are comparable and alternate explanations for the results can be eliminated. As a within-schools comparison, the age-cohort design requires fewer schools to ensure comparability of conditions than would randomisation to condition (Fox et al. 2012), which reduces the research burden for schools. In this age-cohort design, all students in grades 7, 8, and 9 in 2015 were eligible to participate and consenting students completed surveys (Grade 7_{15}, Grade 8_{15}, Grade 9_{15}). In 2016, we followed the two younger cohorts, at that point in grade 8 (Grade 8_{16}) and 9 (Grade 9_{16}) with a post-intervention survey. This design enabled analyses of different students in the same

grade in different years (i.e., Grade 8_{15} vs. Grade 8_{16}, and Grade 9_{15} vs. Grade 9_{16}). The pre-intervention "control data", in this case the 2015 data, are directly comparable with the post-intervention "experimental data" (2016), as the students measured under control and experimental conditions (i.e. before and after the intervention) were within the same schools and therefore had a shared socio-ecological setting (see Olweus (2005) for a discussion of the benefits of the age-cohort design).

Participants

As per 'real world' process, and due to the complexity of the intervention and the commitment required, schools were not randomly sampled. Instead, an expression of interest form was circulated across education sectors through the state network of school psychologists and schools enrolled in a 'health promoting schools' initiative. Interested schools were selected based on the following selection criteria: (a) School principal/psychologist positive about participation; (b) School psychologist likely to be at school for next two years; (c) school had at least 250 students across grades 7-9.

The required sample size was conservatively calculated as 950 Grade 7 and 9 students based on the comparison of two independent groups of students and assuming, in the absence of any intervention, 10% of students self-report bullying others. Assuming an ICC of .01 and two-sided testing, a sample of 950 students across 10 schools (so approximately 95 students per school) would have 80% power to detect a difference of 5.2%, a relative reduction of about 50% in the prevalence of bullying perpetration.

Twenty-four schools were recruited and randomly assigned to condition. All students within the grade levels were eligible. See Figure 2 for more details.

- Insert Figure 2 about here -

Recruitment

Due to differential requirements between government and non-government schools, consent procedures differed between sectors. Parents in government schools were approached by the school under an active opt-in procedure via two emails and one letter with a consent form, all containing a web link to a consent portal. No participation inducements were permitted by the government Education Department to encourage the return of parental consent forms. Parents in non-government schools were contacted in the same way, utilising a passive (opt-out) consent procedure. A school newsletter item was also provided to inform and encourage parent involvement.

Under the active parental consent procedures required in government schools, an 8.4% consent rate was achieved, whereas in non-government schools the passive consent rate was 94.7% (i.e. 5.3% of parents did not wish their child to participate in the study). Randomization resulted in unbalanced numbers of government and non-government schools in the two study conditions, and hence differing consent rates. Specifically, C1 included a majority of non-government schools, consequently the overall consent rate in C1 was 62.6%. C2 included a majority of government schools, and as such the parental consent rate was much lower (16.5%).

All participating students had parental consent (either active or passive dependent on the school sector) and provided their own informed assent. The surveys were conducted during school hours by school staff provided with a standardized protocol to ensure the confidentiality of student responses. Suggested sources of support for students for whom the survey raised issues of concern were provided to students and staff. Surveys were hosted on a secure survey software system (Qualtrics). The final sample comprised 50.0% female students, 2.5% Indigenous students and 16.3% of the students were from families who spoke a language other than English.

Intervention

Friendly Schools (FS) is a universal, whole-school social and emotional wellbeing and anti-bullying intervention, grounded in Social Cognitive Theory (Ryan and Deci 2000), Theory of Mind (Sutton et al. 1999) and Theory of Planned Behaviour (Rollnick et al. 2005).

FS uses a systematic implementation approach to enhance school policy and practice, building students' social and emotional capabilities and the capacity of school leaders, teachers, parents and students to build positive relationships and prevent and manage bullying and cyberbullying behaviours. Based on identified strengths and needs, schools implement student curricula (social and emotional learning (SEL) for students from school entry to grade 9 (aged 4-14 years), with a specific focus on online behaviours and safety from age 12) and select from and implement a range of relevant evidenced-based whole-school strategies within six core components that intervene socio-ecologically. These include: 1) school leadership and capacity; 2) policies and procedures; 3) the social environment; 4) the physical environment; 5) student social and emotional competencies through classroom curriculum, staff professional learning and parent engagement; and 6) partnerships with families, services and communities. The student SEL curriculum includes at least seven one-hour learning modules for each grade level. A suite of online and print capacity-building tools and resources support schools to progressively implement and monitor the FS intervention over three to five years. The intervention is described in more detail in Cross et al (In press).

Measures

Bullying victimization and perpetration: The Forms of Bullying Scale (FBS) (Shaw et al. 2013) was used to assess experiences both as a target (FBS-V) and as a perpetrator (FBS-P) of bullying, whether offline or online. The questions are preceded by a definition of bullying with pictorial representations, including online forms of bullying. In total, 20 items (10 FBS-V; 10 FBS-P) reflected physical, relational and verbal bullying (e.g., “I was deliberately hurt physically by someone and/or by a group ganging up on me”; “I tried to hurt someone by

leaving them out of a group or by not talking to them"; "I was teased in nasty ways", respectively). Contrary to the original FBS, the reference period for this study was defined as "in this year at school" as the surveys were conducted approximately half-way through the school year. The response options were "did not happen", "once or twice", "every few weeks", "about once a week", and "several times a week or more". Responses to the items were averaged (range 1-5) and ln transformed for the analyses (range 1-1.6). Reliability, convergent and discriminant validity have been established previously (Shaw et al. 2013). For our study, Cronbach's alpha values of .90 and above for the latent construct FBS-V and FBS-P in each of 2015 and 2016 were observed.

*Cybervictimization***:** In addition, given the focus of the FS curriculum on cyberbullying, the 15-item Berlin Cyberbullying-Cybervictimization Questionnaire (Schultze-Krumbholz and Scheithauer 2009a; Hiller et al. 2018; Schultze-Krumbholz and Scheithauer 2009b) was also included in the student survey. The item wording was adapted slightly based on device and social media use at the time of the survey. This scale measured experiences of being targeted by relational and verbal bullying online and included items such as "Rumours were spread about me on the Internet or by mobile phone", and "I was excluded from specific groups in online games or not admitted to the game at all" (e.g., clans in World of Warcraft). A positive response to this scale does not indicate bullying behaviour per se, as it makes no reference to repetition or power imbalance. Five response options ranged from "Not at all" to "Several times a week". A mean was calculated from the responses to the items (range 1-5) and ln-transformed. Internal consistency of this latent construct was good with alpha values of .93 and .94 in 2015 and 2016 respectively.

Procedure

All study schools nominated a leadership team responsible for FS implementation, who were invited to a six-hour FS whole-school implementation training. FS is available to

Australian schools for purchase via a commercial publisher that provides support for implementation in the form of professional development, online tools and printed resources. Although study schools were provided with the FS intervention resources, and as in real world conditions, schools were trained and received intervention resources through the publisher. During the training, the school leadership teams were given an "Evidence for Practice" (whole-school) FS manual, to support and guide them through a range of self-assessment and whole-school planning activities following an 'implementation road map'. Schools were also given access to the FS "Map the Gap" survey webtool, which automatically provides a customised snapshot of each school staff's review of their current bullying prevention policy and practices. These reports enable each school to identify areas of strength and focus on areas needing development, referring schools to specific sections of the whole-school manual most relevant to their school. One telephone coaching session with an experienced FS trainer was made available to schools in middle of the implementation year (i.e. 2015).

Schools were also specifically asked to implement FS curricula with the student cohort in both 2015 and 2016. Teachers were asked to teach the relevant curriculum modules (Grade 7: 7 modules, Grade 8: 7 modules, Grade 9: 9 modules), with each module designed to be delivered in 40-60 minutes. The Grade 7, 8 and 9 classroom teachers responsible for teaching the FS curriculum were trained using a two-hour train-the-trainer approach. The FS curricula provide strategies and resources that are developmentally targeted and co-developed by young people, including online social behaviour and cyberbullying.

Fidelity to FS implementation: Schools were asked to follow a five-staged implementation process that ensured 1) they were ready to implement; 2) decision making was based on assessment of student and school strengths, needs and current practice; 3) selection of evidence-based strategies for improvement with sufficient staff capacity; 4) implementation of strategies with sufficient time for them to work; and 5) monitoring of implementation and

outcomes to support sustainability and impact. Fidelity checks were conducted at the end 2015 and 2016 using an implementation specific checklist, developed in a previous FS study (Pearce et al. 2015), completed by school teams and verified by the FS publisher. As expected, within the two-year implementation period, these checks confirmed that most study schools had reached similar initial stages of implementing their selected whole-school practices. Most schools had moved through the preparation stage and assessment of current practice to selecting and building staff capacity to implement new practices. As all schools were at a similar stage of initial implementation and given there was insufficient time to achieve wider school system change, a score for the level of whole-school implementation was not included in these analyses. However, the extent to which schools taught the FS curriculum was assessed via teacher report logs completed by classroom teachers. Seven of the 12 schools reported teaching an average of four hours of curriculum across both Grades 7 and 8 in 2015, and two of those seven schools reported teaching an average three hours of curriculum across Grades 8 and 9 in 2016. The curriculum was not taught by the teachers in the remaining five schools. In the study analyses, schools were rated as either a) having taught FS curriculum (n=7) or b) not having taught the FS curriculum (n=5).

Data Analyses

Analyses were conducted in Stata 14 (StataCorp 2015). Intention to treat (ITT) analyses were conducted in the first instance to test hypotheses 1 and 2. In accordance with the study design and objectives the analyses were conducted separately by Grade level. Hypothesis 1 related to the aggregated effect of the C1 and C2 interventions (i.e. change from 2015 to 2016 across all schools) and was tested in a model including a main effect for time.

To test Hypothesis 2 and thereby assess the robustness of the findings from the ITT analyses and the evidence for or against program effects, we also ran analyses to determine differences on the bullying outcome variables based on FS implementation. Since schools were

at a similar level of implementation overall, as expected within the relatively short timeframe to effect school contextual changes such as school climate, a measure of implementation of whole-school practices was not included in these analyses. However, as schools were asked to teach the curriculum specifically to the student cohort, we tested for differences based on teaching versus no teaching of FS curriculum (as described above).

Given the degree of skew in their distributions and the preponderance of values at the minimum value, Tobit censored regression models were applied. As these models assume the values above the minimum or censored point follow a Normal distribution, these values were ln-transformed (natural log). Random intercepts were included in the models to account for the school-level clustering. ICC values unadjusted for covariates in the model were .048 or smaller, ICC values conditional on the variables included in the models were .008 and smaller. Effect sizes were calculated as the regression coefficient divided by the standard deviation of the ln-transformed data. The following variables were included in the models to account for their possible confounding effects: student sex, Indigenous status and whether the child lived in a household which spoke a language other than or in addition to English (as a proxy for ethnicity). School sector and school socio-economic status were also included.

The analyses excluded 25 cases who indicated they had not responded honestly when completing the survey (based on a single report item), and nine cases who completed the survey in less than 5 minutes (based on meta-data). Given there were missing data for at most 1.4% of the sample for the bullying outcomes and 4.4% for the secondary outcomes at each data point, missing data were assumed to be missing at random (MAR) with the variables included in the model, accounting for any effect from data missing at the student level.

Results

Demographics and School Attrition

School attrition occurred prior to the first data collection and was highly differential by condition, with 11 of 16 schools in C1 and only one of eight schools in C2 leaving the study (see Figure 2). Thus, the combined school data were available for five C1 schools and seven C2 schools for the 2015 survey. Attrition in C1 was particularly high in government schools. The five C1 schools comprised one government and four non-government schools; for C2, six of seven were government schools. Nevertheless, the conditions were comparable on socio-economic status: five of the 12 schools were at or below average socio-economic status – two of the five in C1 and three of the seven in C2. Given these differences between the conditions, the analyses reported in this paper based on combined C1 and C2 data provide more robust evidence of associations than analyses within condition would yield.

Survey data were obtained from 12 study schools in 2015, the five in C1 and seven in C2. Four of the C2 schools did not administer student surveys in 2016, thus student data were only obtained for eight of the 12 study schools in 2016. The number of students per Grade level and condition who completed surveys each study year are shown in Table 2.

Data from the four schools that did not administer student surveys in 2016 were retained in the analyses to avoid bias from school drop-out and to obtain more robust estimates of the pre-intervention values of the dependent variables, based on a larger sample size. The demographic and dependent variables collected from students in the schools with and without 2016 data were compared to determine the extent to which school drop-out may have biased the study findings. For example, if schools with lower bullying rates in 2015 (i.e., schools within which there was less potential for reductions), were lost and schools with higher rates retained, intervention effects may have been overestimated. The analyses were also repeated for the subsample of eight schools only, where the findings did not differ substantively from those reported below.

No significant differences were found between the students in 2015 from schools that did and did not survey their students in 2016 with regard to gender (χ^2 (1) = 0.1, p = .751), Indigenous status (χ^2 (1) = 0.1, p = .772), or home language (χ^2 (1) = 1.2, p = .273). The students in these schools also did not differ regarding the dependent variables, i.e. for victimization (z = -0.07, p = .941), perpetration (z = -0.87, p = .385) or cybervictimization (z = -0.12, p = .904). (Tested in univariate Tobit regression models.) Hence, there is no evidence of differential school drop-out.

FS Intervention Impact by Condition

Means and standard deviations are presented in Table 3 for Grade 8 and 9 students in 2015 and 2016; natural logarithm values are presented in line with the Tobit regression analyses. To illustrate the highly skewed distributions of the dependent variables (and hence the need to conduct Tobit analyses) the percent of students scoring above the minimum are also presented. The results from these analyses testing the hypotheses are presented in Table 4. Overall, for the two conditions combined, no differences in victimization scores were found for the Grade 8 students, but significantly lower victimization scores were observed in 2016 than in 2015 for Grade 9 students across both conditions (d = 0.22). Bullying perpetration was significantly lower in 2016 than in 2015 for both Grade 8 and Grade 9 students. Effect sizes (per Cohen's d) for these results were 0.32 (Grade 8) and 0.35 (Grade 9), suggesting a small-medium effect. No overall effect was observed for cybervictimization.

The Impact of FS Curriculum Implementation

Hypothesis 2 addressed the impact of teaching the FS curriculum. As evidenced by the year-by-implementation interactions, these two groups of schools differed significantly on bullying victimisation, perpetration and cybervictimisation for Grade 8 (see Table 4). In

schools where the FS curriculum was taught, students reported lower scores on all three bullying outcomes in 2016 compared to 2015. By contrast, all three bullying outcome 2016 scores were slightly higher than 2015 for schools where FS was not taught. Although none of the interactions are significant for Grade 9, schools that implemented the FS curriculum reported significantly less perpetration in 2016 and showed a trend toward lower victimization scores compared to schools where the curriculum was not taught. These results, based on FS curriculum implementation, are consistent with those from the ITT analyses of significantly less perpetration post-intervention. They also add to the evidence of intervention effects in the student cohort in grade 8.

Discussion

While Friendly Schools secondary has previously been found to be efficacious, the findings from this study suggest it may also be effective with secondary-school-aged students in Grades 8 and 9 in "real world" conditions, i.e. when implemented with minimal structure and support by school teachers. This study found that a developmentally appropriate secondary school-based bullying prevention intervention, co-developed with young people and school staff, can reduce bullying behaviour. Significant reductions in self-reported bullying perpetration was found for both Grades 8 and 9 students based on intention to treat analyses (ITT) and whether schools taught the FS curriculum.

This study is one of few bullying prevention interventions with demonstrated effectiveness in real-world conditions, operating with standardized support from an education publisher and almost no support from the research team. This is an important goal for bullying prevention research. Marchand et al. (2011) highlighted unique considerations for prevention work in real-world settings. When moving from efficacy to effectiveness stages, establishing infrastructure and providers, assessing and coping with varying levels of participant motivation and cost-effectiveness are integral to not only demonstrate effectiveness, but also the potential

for wider translation and scaling-up of school-based bullying prevention interventions (Marchand et al. 2011). This study measured each school's fidelity to the implementation process and teaching of the classroom curriculum, however, longer term follow-up and cost-benefit analyses to investigate the factors enabling and inhibiting schools' continued participation over time and sustainability will be important (Bradshaw 2015).

Although no significant differences were found in the ITT analyses for Grade 8 victimisation, analysis accounting for curriculum implementation suggests this is due to schools not implementing FS. For those schools that taught any of the FS curriculum, decreases in victimisation and cybervictimisation were found in Grade 8; for schools that did not, slight but non-significant increases in bullying were observed. Positive outcomes can therefore be achieved with a single day of training by the publisher for FS school teams, a two-hour curriculum train-the-trainer for FS school teams to enable them to train their classroom teachers at school, and provision of curriculum resources, a whole-school intervention guide and online tools to support schools through the implementation process, with an optional telephone coaching call for school teams.

The FS implementation process is designed as a stage-based approach to achieve practice change and it can take schools three to five years to move through the 'getting ready' phase to 'full implementation and sustainability' (Pearce et al. 2015). Although these findings reflect changes based on data collected approximately one year apart, schools were potentially preparing to implement FS for one year prior (2014) to the first student data collection. Nevertheless, given the schools had only two years to move through the more lengthy FS implementation process, it is reasonable to expect that schools were only in the early stages of implementation and trialling their changes to practice. This is particularly true for secondary school environments where overcoming barriers to implementation, such as whole-staff readiness and acceptability, organisational and system change, can be more complex. By

contrast, classroom curricular implementation is relatively quick to implement, and as our analyses suggest, potentially effective in reducing bullying in the short-term. However, to sustain change it is necessary for schools to implement whole school programs. Whole-school approaches were found to be more successful than single-component approaches (such as classroom learning or traditional disciplinary actions only) when they include socio-ecological strategies delivered at all levels of the school setting (Farrington and Ttofi 2009b; Ttofi and Farrington 2011).

Strengths and Limitations

A core strength of the study is its design: the use of a longitudinal age-cohort design allows the comparison of students within the same schools at the same grade-level, eliminating some key threats to validity (e.g., maturation effects), and permits the school to serve as its own control group (i.e., reducing unintended differences between comparison and intervention schools). Another methodological strength is the inclusion of both ITT analyses and analyses based on FS implementation, leading to more robust conclusions regarding intervention effects.

A possible threat to this study's validity is the potential for a testing effect. Completion of the survey for the second time in 2016 may have led to, for example, underreporting of outcomes due to 'satisficing' or less care in survey completion on the second occasion (Krosnick and Presser 2010). This explanation is negated to some extent given the FS curriculum implementation findings in which both groups, that is, the schools where the teachers implemented the FS curriculum and those where teachers did not implement the curriculum, are similarly subjected to a testing effect if it was present. The robustness of the findings is further supported by the results from an efficacy trial (employing a randomized-controlled design) of the FS secondary program which found significant reductions in bullying victimisation and perpetration (Cross et al. in press).

The high level of school attrition and low levels of parental consent in government schools limits the external validity of the study findings. The targeted MI intervention placed a heavy burden on schools, and for government schools in particular; this burden may have been untenable, leading to attrition. Based on the sensitivity analyses, however, no evidence of bias was found due to the four schools not administering the student surveys in 2016. Nevertheless, further research is warranted to investigate the capacity of schools, especially secondary schools and those with less resources, to implement complex interventions, and the support required at a school and system level to achieve implementation fidelity.

Another limitation of the study is the inability to test the impact of Motivational Interviewing due to the failure by schools to implement the approach.

Conclusion

Addressing bullying in secondary schools requires intervention strategies that are developmentally appropriate and an intervention that meets school needs and can be feasibly implemented by these typically large and differently organized school environments. The FS bullying prevention intervention is designed with advice from young people to address the developmental needs of today's adolescents and has been found to be an effective intervention to reduce bullying behaviour in secondary school settings.

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Table 1

Friendly Schools in Secondary Schools, Intended Intervention Components

Intervention component	Core Understandings and skills	Implementation Strategy	Timing	Dose
Whole-school level (selected and delivered by school teams)	Six core evidence-based practice components: 1. School leadership and capacity 2. Policy and procedures 3. Social environment 4. Physical environment 5. Building competencies though student curriculum, staff professional learning and parent communication; 6. Partnerships with families, services and communities.	School teams select evidence-based strategies using a five-staged implementation process and tools to assess school practice, needs and capacity	2015 2016	Over 2 study years (Min 52 hours/year)
Student level (delivered by teachers to students)	• Increasing students' pro-victim attitudes • Advocate for themselves and others • Cope adaptively with bullying • Regulate their emotions and react assertively rather than aggressively to bullying • Seek help and provide support to other • Provide bystander support especially related to cyber bullying	Teachers select and teach modules from a developmental social and emotional learning curriculum	2015 Gr 7-9 2016 Gr 8 & 9	Year 7 – 7 hours of classroom modules Year 8 – 7 hours of classroom modules Year 9 – 9 hours of curriculum modules
System level **Implementation Support** (provided to schools by FS publisher http://friendlyschools.com.au/fsp/)	• School capacity needs and readiness to implement • Implementation process and plan • Common understandings and consistent approaches to bullying prevention and response	School team training and manual (Whole school), online assessment, planning & practice tools	2015	6 hours Group training
		Classroom curriculum school team	2015	2 hours Group training

	• Bullying prevention skills • Social and emotional development	train-the-trainer curriculum resources		
		School implementation team coaching	2015	Optional 1 hour telephone call

Table 2

Numbers and Percentages of Student Respondents by Condition, Grade and Time

	Grade 8 (age 13-14 years)		Grade 9 (age 14-15 years)	
Condition	2015	2016	2015	2016
C1	5 schools n = 463 (70.7%)	5 schools n = 364 (77.8%)	5 schools N = 446 (75.7%)	5 schools N = 260 (69.0%)
C2	7 schools N = 192 (29.3%)	3 schools† N = 104 (22.2%)	7 schools N = 143 (24.3%)	3 schools† N = 117 (31.0%)

† n = 4 C2 schools did not survey their students in 2016

Table 3.

Outcomes: Mean, Standard Deviation and % Greater than Zero by Grade and Time

	Grade 8						Grade 9					
	2015			2016			2015			2016		
	M	SD	% > 0	M	SD	% > 0	M	SD	% > 0	M	SD	% > 0
Victimization (range 0 – 1.61)												
	0.34	0.35	73.8	0.30	0.32	72.5	0.35	0.35	74.5	0.30	0.33	69.7
Perpetration (range 0 – 1.61)												
	0.12	0.19	48.1	0.096	0.163	42.5	0.14	0.20	50.6	0.11	0.20	39.5
Cybervictimization (range 0 – 1.61)												
	0.14	0.22	53.1	0.14	0.22	51.0	0.18	0.26	56.3	0.15	0.26	51.7

Note. Data for C1 & C2 combined; Natural logarithm values of victimization, perpetration, and cybervictimization scores presented in line with values analysed in statistical models.

Table 4.

Results from Tobit Random Effects Models Comparing Cohorts in 2015 and 2016 for Victimisation, Perpetration and Cybervictimisation

	Grade 8 (n=1,103)				**Grade 9** (n=953)			
Victimization	Coefficient	SE	z	p	Coefficient	SE	z	p
				Intention to Treat Analyses				
Difference 2016 from 2015 (C1&C2)[a]	-0.04	0.00	-1.64	.10	-0.08	0.03	-2.43	**.02**
				FS Implementation Analysis				
Year by FS taught interaction[b]	-0.15	0.06	-2.64	**.01**	0.06	0.09	0.70	.49
Difference 2016 from 2015 (FS not taught)[c]	0.06	0.04	1.38	.169	-0.12	0.10	-1.18	.24
Difference 2016 from 2015 (FS taught)[d]	-0.09	0.04	-2.70	**<.01**	-0.07	0.03	-1.95	.05
Perpetration				*Intention to Treat Analyses*				
Difference 2016 from 2015 (C1&C2)[a]	-0.06	0.02	-2.58	**.01**	-0.07	0.03	-2.54	**.01**
				FS Implementation Analysis				
Year by FS taught interaction[b]	-0.14	0.05	-3.11	**<.01**	-0.06	0.08	-0.75	.46
Difference 2016 from 2015 (FS not taught)[c]	0.04	0.04	1.21	.23	0.02	0.07	0.22	.83
Difference 2016 from 2015 (FS taught)[d]	-0.10	0.03	-3.93	**<.01**	-0.08	0.03	-2.45	**.01**
Cybervictimisation				*Intention to Treat Analyses*				
Difference 2016 from 2015 (C1&C2)[a]	-0.02	0.02	-0.67	.51	-0.04	0.03	-1.46	.14
				FS Implementation Analysis				
Year by FS taught interaction[b]	-0.11	0.05	-2.13	**.03**	0.04	0.09	0.49	.62

Difference 2016 from 2015 (FS not taught)[c]	0.06	0.04	1.55	.12	-0.04	0.09	-0.41	.68
Difference 2016 from 2015 (FS taught)[d]	-0.05	0.03	-1.70	.09	-0.04	0.03	-1.05	.30

Note. Data from Condition 1 and Condition 2 combined; Tobit models fitted to log-transformed data.

[a] Test for difference between students in 2015 and 2016 across all schools (Hypothesis 1).

[b]

Test whether difference between students in 2015 and 2016 is greater/less in schools where FS curriculum taught versus schools where not taught (irrespective of condition) (Hypothesis 2).

[c] Test for difference between students in 2015 and 2016 in schools where FS curriculum not taught

[d] Test for difference between students in 2015 and 2016 in schools where FS curriculum was taught

<INSERT FIGURE 1>

Figure 1. Age-cohort design schematic representing three cohorts (when in Grade 7, 8, & 9) recruited in 2015, two of which were followed into the subsequent year to enable grade comparisons within schools.

<INSERT FIGURE 2>

Figure 2. Consort diagram (in separate document)

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