




# 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 victimisation 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 victimisation 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 programmes · Anti-bullying · Implementation

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 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). Since the pioneering work of Dan Olweus in Norway in the 1980s (Olweus 1992), with its commitment to the social

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context of bullying, school-based anti-bullying interventions have been largely focused on increasing awareness of bullying amongst both adults and peers in a school context, and looking to those populations to support the resolution of bullying problems (Stevens et al. 2001). Curricular approaches have been bolstered by elements of “whole-school” approaches, which aim to establish policies on bullying and incorporate the whole-school community including parents (Foster et al. 1990). Other programmes have included social skills components, emotional regulation training, and/or peer support elements (see Lee et al. 2015 for a partial meta-analysis). Overall, many of these interventions appear to reduce reported levels of bullying, although with small-to-moderate effect sizes (Lee et al. 2015; 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 (Cross et al. 2011; Cross et al. 2012; Farrington and Ttofi 2009b; Smith et al. 2004; Ttofi and Farrington 2011).

However, 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.

Friendly Schools (FS) is a whole-school, universal bullying prevention programme. Its theoretical base is social cognitive theory (Ryan and Deci 2000), theory of mind (Sutton et al. 1999), and 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 behaviour (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 randomised controlled trials (RCTs; with students aged 8–9 years, and 8–11 years) (Cross et al. 2011; Cross et al. 2012) and in two secondary school trials (Cross et al. 2018; Cross et al. 2016). 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 focused particularly on cyberbullying via the “Cyber Friendly Schools” intervention, tested in a group RCT with students in grades 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. 2018; Cross et al. 2016). 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 (Gottfredson et al. 2015; Marchand et al. 2011). 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

In light of Yeager et al. (2015), it is imperative to test school-based anti-bullying interventions with secondary school-aged populations. As part of a larger study that included examining the use of motivational interviewing (MI) with bullying perpetrators by school staff (Cross et al. 2018), the original study hypothesised that this additional MI-targeted component and FS would contribute to greater reductions in overall bullying behaviour compared to schools that received only the FS intervention. However, school practitioners in this study experienced significant barriers inhibiting the use of MI in their schools. An almost complete lack of MI implementation by teachers following their training meant that schools received a similar level of FS implementation, and the effectiveness of MI on bullying and victimisation outcomes cannot be determined from these data. Hence, for the purpose of this paper, the schools from both conditions were combined to assess the

effectiveness of the secondary school version of the FS bullying prevention intervention.

We deployed an age-cohort design that compares cohorts of the same age within the same school before and after the intervention is introduced. Thus, we collected “pre”-test data in 2015 from schools for students in grades 8 and 9. In 2016, we collected data from the same schools on students in grades 8 and 9 (i.e., students in grade 9 had been in grade 8 the previous year; see “Methods” section below for further detail on the benefits of the age-cohort design for use with school-based anti-bullying interventions). We do not report on the longitudinal within-participants data here. With this design, we hypothesised that:

1. In all study schools, there would be lower levels of student bullying perpetration and victimisation following the implementation of the FS intervention for grade 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

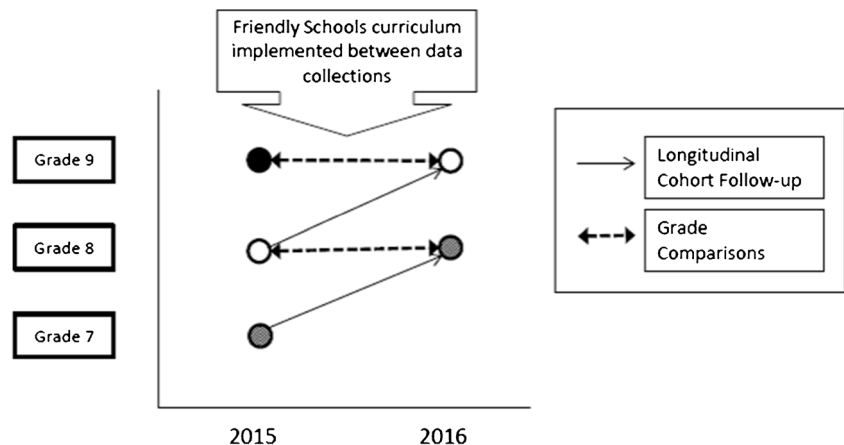
### Study Design and School Recruitment

This study utilised an age-cohort study design, which “largely eliminates the problems of selection, ageing, regression, and differential attrition” (Farrington and Ttofi 2009a, p. 31). 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 Fig. 1). Student assessments were conducted mid-2015; direct teaching of FS curriculum took place thereafter in 2015 and during the first half of 2016 (n.b., 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 (C1) schools 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.

For age-cohort designs, a key to the unbiased estimation of a programme 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<sub>15</sub>, grade 8<sub>15</sub>, grade 9<sub>15</sub>). In 2016, we followed the two younger cohorts, at that point in grades 8 (grade 8<sub>16</sub>) and 9 (grade 9<sub>16</sub>) with a post-intervention survey. This design enabled analyses of different students in the same grade in different years (i.e., grade 8<sub>15</sub> vs. grade 8<sub>16</sub>, and grade 9<sub>15</sub> vs. grade 9<sub>16</sub>). 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).

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



### 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, that 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

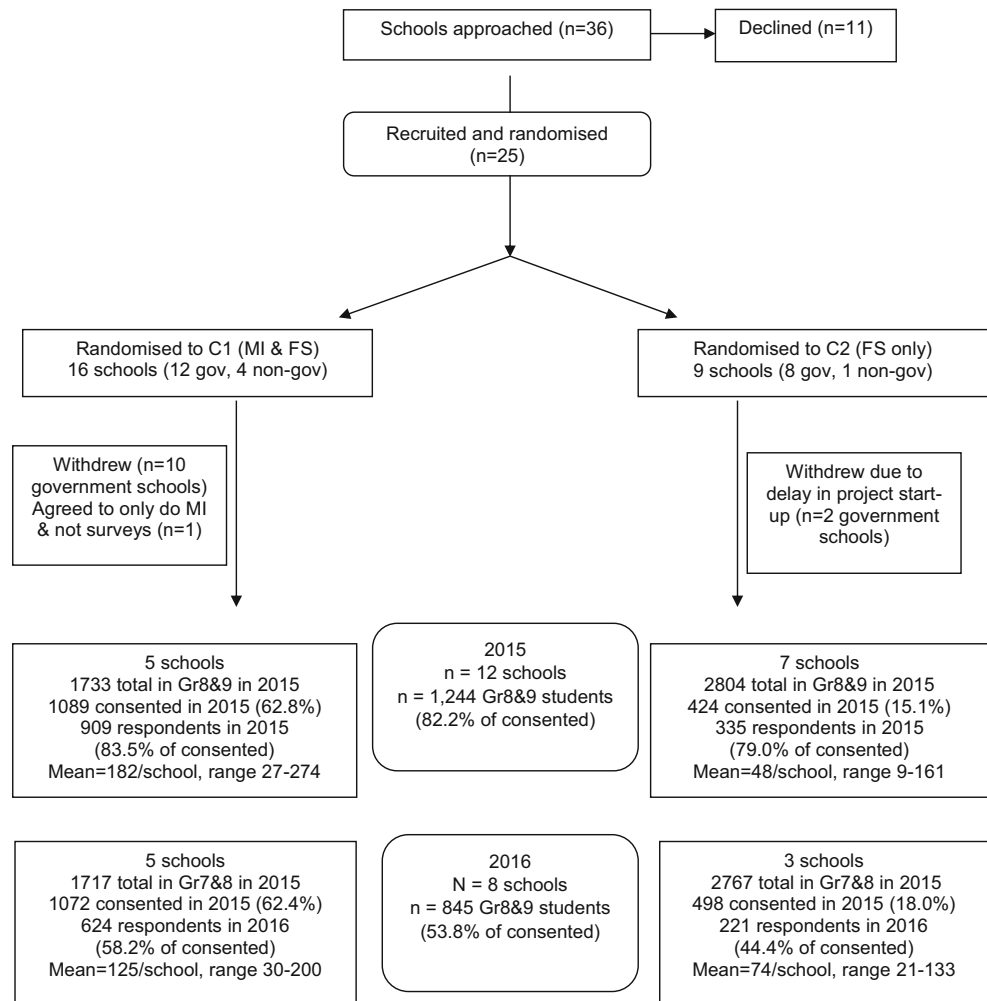
difference of 5.2%, a relative reduction of about 50% in the prevalence of bullying perpetration.

Twenty-four schools were recruited and randomly assigned to condition. All students within the grade levels were eligible (see Fig. 2 for more details).

### Recruitment and Data Collection Procedures

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

Fig. 2 Recruitment, randomisation, and response rates



Note. Students recruited in 2015. Consent rates based on 2015 enrolment numbers, response rates based on numbers consented in 2015. 2015 Grade 8 students are 2016 Grade 9 students.

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). Randomisation 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, and 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 standardised 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 50:50 female:male students, 2.5% indigenous students, and 16.3% of the students were from families who spoke a language other than English.

## Intervention

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 the capacity of school leaders, teachers, parents, and students to build positive relationships and prevent and manage bullying and cyberbullying behaviours. The school implementation team is supported to select from and implement a range of relevant evidence-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.

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. Intervention targets are based on research addressing the role of peer relationships, school connectedness, and developing social and emotional capabilities. The SEL foci include self-awareness and self-management, social awareness,

relationship skills, and social decision-making. The student SEL curricula include at least seven one-hour learning modules for each grade level, implemented at the discretion of the teacher/school leadership. 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 (see Cross et al. (2018) for a full description of the intervention targets and logic).

## Measures

**Bullying Victimisation 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. The two-factor structure of the scale was also confirmed in confirmatory factor analyses (2015: RMSEA = 0.031, 90% CI 0.028–0.034, CFI = 0.972; 2016: RMSEA = 0.025, 90% CI 0.019–0.031, CFI = 0.978).

**Cybervictimisation** In addition, given the focus of the FS curriculum on cyberbullying, the 15-item Berlin Cyberbullying-Cybervictimisation Questionnaire (Hiller et al. 2018; Schultze-Krumbholz and Scheithauer 2009a, 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. The unidimensionality of the scale was confirmed in confirmatory factor analyses (2015: RMSEA = 0.033, 90% CI 0.029–0.038, CFI = 0.983; 2016: RMSEA = 0.049, 90% CI = 0.042–0.056, CFI = 0.977).

## Intervention Implementation Procedures

Table 1 describes the FS intervention components. 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, 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 the 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 of 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 programme 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.

Approval for this research was obtained from the relevant university Human Research Ethics Committee and educational sectors, and the research was conducted in strict accordance with the Australian National Health & Medical Research Council's National Statement on Ethical Conduct in Human Research.

## 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 Fig. 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 in each study year is 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 ( $\chi^2(1) = 0.1, p = .751$ ), indigenous status ( $\chi^2(1) = 0.1, p = .772$ ), or home language ( $\chi^2(1) = 1.2, p = .273$ ). The students in these schools also did not differ regarding the dependent variables, i.e., for victimisation ( $z = -0.07, p = .941$ ), perpetration ( $z = -0.87, p = .385$ ), or cybervictimisation ( $z = -0.12, p = .904$ ) (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 victimisation scores were found for the grade 8 students, but significantly lower victimisation scores were observed in 2016 than those in 2015 for grade 9 students across both conditions ( $d = 0.22$ ). Bullying perpetration was significantly lower in 2016 than that 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 cybervictimisation.

### 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

**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 through 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 h/year)
Student level (delivered by teachers to students)	<ul style="list-style-type: none"> <li>• Increasing students' pro-victim attitudes</li> <li>• Advocate for themselves and others</li> <li>• Cope adaptively with bullying</li> <li>• Regulate their emotions and react assertively rather than aggressively to bullying</li> <li>• Seek help and provide support to others</li> <li>• Provide bystander support especially related to cyberbullying</li> </ul>	Teachers select and teach modules from a developmental social and emotional learning curriculum	2015 Gr 7–9	Year 7 – 7 h of classroom modules Year 8 – 7 h of classroom modules Year 9 – 9 h of curriculum modules
System level Implementation support (provided to schools by FS publisher <a href="http://friendlyschools.com.au/fsp/">http://friendlyschools.com.au/fsp/</a> )	<ul style="list-style-type: none"> <li>• School capacity needs and readiness to implement</li> <li>• Implementation process and plan</li> <li>• Common understandings and consistent approaches to bullying prevention and response</li> <li>• Bullying prevention skills</li> <li>• Social and emotional development</li> </ul>	School team training and manual (whole school), online assessment, planning & practice tools Classroom curriculum school team train-the-trainer, curriculum resources School implementation team coaching	2015 2015	6-h group training 2-h group training Optional 1-h telephone call



**Table 2** Numbers and percentages of student respondents by condition, grade, and time

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

<sup>†</sup> *n* = 4 C2 schools did not survey their students in 2016

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 those of 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 victimisation 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 the Friendly Schools secondary intervention 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 were found for both grade 8 and 9 students based on intention to treat (ITT) analyses 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 standardised 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

**Table 3** Outcomes: mean, standard deviation, and % greater than zero by grade and time

	Grade 8						Grade 9					
	2015			2016			2015			2016		
	<i>M</i>	SD	% > 0	<i>M</i>	SD	% > 0	<i>M</i>	SD	% > 0	<i>M</i>	SD	% > 0
Victimisation (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
Cybervictimisation (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

Data for C1 & C2 combined; natural logarithm values of victimisation, perpetration, and cybervictimisation 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 ( <i>n</i> = 1103)				Grade 9 ( <i>n</i> = 953)			
	Coefficient	SE	<i>z</i>	<i>p</i>	Coefficient	SE	<i>z</i>	<i>p</i>
<b>Victimisation</b>								
Intention to treat analyses								
Difference 2016 from 2015 (C1 & C2) <sup>a</sup>	-0.04	0.00	-1.64	.10	-0.08	0.03	-2.43	.02*
FS implementation analysis								
Year by FS taught interaction <sup>b</sup>	-0.15	0.06	-2.64	.01*	0.06	0.09	0.70	.49
Difference 2016 from 2015 (FS not taught) <sup>c</sup>	0.06	0.04	1.38	.169	-0.12	0.10	-1.18	.24
Difference 2016 from 2015 (FS taught) <sup>d</sup>	-0.09	0.04	-2.70	< .01*	-0.07	0.03	-1.95	.05
<b>Perpetration</b>								
Intention to treat analyses								
Difference 2016 from 2015 (C1 & C2) <sup>a</sup>	-0.06	0.02	-2.58	.01*	-0.07	0.03	-2.54	.01*
FS implementation analysis								
Year by FS taught interaction <sup>b</sup>	-0.14	0.05	-3.11	< .01*	-0.06	0.08	-0.75	.46
Difference 2016 from 2015 (FS not taught) <sup>c</sup>	0.04	0.04	1.21	.23	0.02	0.07	0.22	.83
Difference 2016 from 2015 (FS taught) <sup>d</sup>	-0.10	0.03	-3.93	< .01*	-0.08	0.03	-2.45	.01*
<b>Cybervictimisation</b>								
Intention to treat analyses								
Difference 2016 from 2015 (C1 & C2) <sup>a</sup>	-0.02	0.02	-0.67	.51	-0.04	0.03	-1.46	.14
FS implementation analysis								
Year by FS taught interaction <sup>b</sup>	-0.11	0.05	-2.13	.03*	0.04	0.09	0.49	.62
Difference 2016 from 2015 (FS not taught) <sup>c</sup>	0.06	0.04	1.55	.12	-0.04	0.09	-0.41	.68
Difference 2016 from 2015 (FS taught) <sup>d</sup>	-0.05	0.03	-1.70	.09	-0.04	0.03	-1.05	.30

Data from condition 1 and condition 2 combined; Tobit models fitted to log-transformed data

<sup>a</sup> Test for difference between students in 2015 and 2016 across all schools (hypothesis 1)<sup>b</sup> 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)<sup>c</sup> Test for difference between students in 2015 and 2016 in schools where FS curriculum not taught<sup>d</sup> Test for difference between students in 2015 and 2016 in schools where FS curriculum was taught\*  $p < .05$

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 whole-school implementation can be more complex. Larger staff numbers within sub-systems can mean a longer timeframe to gain whole-staff readiness and acceptability before training can be delivered and necessary organisational and system changes made. Additional factors influencing implementation of whole-school interventions include school climate, capacity and leadership, teacher attitudes and self-efficacy, and characteristics of the intervention itself, e.g., how complex or clear it is to implement (Durlak and DuPre 2008). By contrast, classroom curricular implementation is relatively quick, 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 programmes. Whole-school approaches were found to be more successful than single-component approaches (such as classroom learning or traditional disciplinary actions only) when they included 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. Even in the seven schools that were considered “implementers”, the total amount of time dedicated to

FS curriculum implementation was limited to an average of three to four hours. While it is heartening to imagine that such a limited implementation might have significant effects on bullying outcomes, on the other hand, it is disappointing that schools cannot make more time within the curriculum timetable to address a topic that has such health-limiting implications. Further study of school-level barriers and facilitators is required to uncover why implementation is limited. Tailoring strategies to each school’s context and prior assessment of capacity for implementation may be more likely to enhance whole-school delivery and sustainability.

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, were 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 randomised controlled design) of the FS secondary programme which found significant reductions in bullying victimisation and perpetration (Cross et al. 2018).

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.

Finally, the adaptation to the FBS, which asked students about bullying “in this year at school” rather than the usual “in the last 10 weeks”, makes it difficult to compare data from this study to prior uses of the FBS. Indeed, the wide range of measures to assess bullying creates a challenge to integration of findings across studies in general, with no scientific consensus yet on how best to measure bullying involvement. Of particular concern is the challenge in assessing whether interventions work similarly for targets of bullying who are themselves engaged in bullying others (bully/victims) as opposed to “pure” victims, who are not aggressive. The psychological and motivational mechanisms are known to diverge for these subgroups (e.g., Runions et al. 2018), so future research is needed to determine whether school-based interventions affect hypothesised underlying psychological mechanisms.

## 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 organised 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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## Compliance with Ethical Standards

Approval for this research was obtained from the relevant university Human Research Ethics Committee and educational sectors, and the research was conducted in strict accordance with the Australian National Health & Medical Research Council's National Statement on Ethical Conduct in Human Research.

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

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