# Examining the Effectiveness of School-Bullying Intervention Programs Globally: a Meta-analysis

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## Abstract

This article presents results from an extensive systematic and meta-analytical review of the effectiveness of school-based bullying prevention programs. Its main aim is to explore the results of this meta-analysis specifically in regard to variations in the effectiveness of school-bullying programs globally and the effectiveness of specific anti-bullying programs. Our meta-analysis included 100 independent evaluations, and found that, overall, programs were effective in reducing school-bullying perpetration and victimization. In the present paper, we focused on 12 countries (e.g., Italy, Norway, USA, UK), three regions (i.e., Europe, North America, and Scandinavia) and four anti-bullying programs (i.e., KiVa, NoTrap!, OBPP, and ViSC) with multiple evaluations. Our results showed that anti-bullying programs evaluated in Greece were the most effective in reducing bullying perpetration, followed by Spain and Norway. Anti-bullying programs evaluated in Italy were the most effective in reducing bullying victimization, followed by Spain and Norway. Evaluations conducted in North America were the most effective in reducing bullying perpetration, and evaluations conducted in Scandinavia were the most effective in reducing bullying victimization. Evaluations of the Olweus Bullying Prevention Program produced the largest effect sizes for bullying perpetration outcomes, but the NoTrap! Program was the most effective in reducing bullying victimization. We also systematically review the core components of the intervention programs and make recommendations for researchers, practitioners, and policy makers.

**Keywords** Bullying · School-bullying · Prevention · Anti-bullying · Meta-analysis

## Introduction

Bullying remains a ubiquitous problem internationally and is an important topic for effective intervention and empirical research. Bullying is characterized by three core elements, namely (1) an intention to harm; (2) repetitive in nature; and (3) a clear power imbalance between perpetrator and victim (Centers for Disease Control and Prevention 2014; Farrington 1993; Olweus 1992). In other words, a bully is an individual who intends to cause harm to a victim, or victims, repeatedly, over a long period of time. Additionally, victims of bullying will feel that they cannot easily defend themselves against a bully, either due to a physical or social power imbalance.

Recent research has highlighted the various forms that bullying can take, not only amongst school children and

adolescents but also between adults too, particularly within the workplace environment (Kowalski et al. 2018). Moreover, bullying can include relational, verbal, or physical behaviors. Most recently, online aggressive behaviors that are consistent with definitions of school bullying have been defined as cyberbullying (Bauman 2013; Betts 2016). The present review, however, is concerned only with school-bullying, specifically, bullying that occurs in schools involving children and adolescents, typically aged between 4 and 18 years old. School bullying is a complex social phenomenon and can commonly involve the whole peer group (Salmivalli 2010).

### Outcomes of School Bullying

The negative outcomes of school-bullying perpetration and victimization are well documented in the research literature. These outcomes highlight the need for effective intervention and prevention programs to reduce school-bullying amongst children and adolescents around the world. Cross-sectional studies have found that bullying perpetration and victimization experiences are associated with worrying mental health outcomes, such as increased suicidal ideation (e.g., Hinduja and

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Patchin 2010; Holt et al. 2015; Klomek et al. 2010). In addition, adolescent victims of school bullying have been found to report higher levels of social anxiety (e.g., Hawker and Boulton 2000) and depression (e.g., Ttofi et al. 2011a) in comparison to their non-victimized peers. Bullies, on the other hand, are more likely to carry weapons (e.g., Valdebenito et al. 2017) or use drugs (e.g., Ttofi et al. 2016; Valdebenito et al. 2015).

A recent review of systematic reviews concluded that the outcomes of school-bullying behaviors can occur not only concurrently with these experiences but also during adulthood (Zych et al. 2015). For example, longitudinal studies have suggested that individuals who bully others in childhood are more likely to be violent (e.g., Ttofi et al. 2012) and offend (e.g., Ttofi et al. 2011b) as adults. While there is limited understanding of how these outcomes may vary between bullies and victims in different countries, researchers have suggested that experiences of school bullying may function as stepping stones towards many undesirable life outcomes (Arsenault et al. 2010). Thus, bullying is not only a concern for parents and educators but it is a public health concern also (Masiello and Schroeder 2013), and it is imperative that effective intervention efforts are put in place (Ttofi 2015).

Internationally, Due et al. (2005) reported that the risk of physical and psychological symptoms increased with higher levels of exposure to bullying across 28 countries. More recently, Fry et al. (2018) conducted an extensive meta-analysis across 21 countries to examine the relationship between childhood violence and educational outcomes. Predictors included school-bullying perpetration and victimization, as well as cyberbullying and peer-to-peer victimization (Fry et al. 2018). This study concluded that experiences of bullying in childhood were significantly related to higher rates of school dropout and absenteeism. Bullying was also related to a decrease in school graduation and lower academic achievement overall, although, the latter relationship was not statistically significant (Fry et al. 2018).

## International Prevalence of School Bullying

A recent report published by the United Nations Educational, Scientific, and Cultural Organization (UNESCO 2018) proposes that creating educational spaces that are free from violence and safe learning environments for all children remains a global priority. This report outlines that bullying and other forms of violence affect approximately one-third of children and adolescents, but the rates of bullying victimization vary between regions. Using international self-report data (e.g., Health Behavior of School Children survey; HBSC), this report suggests that reports of bullying victimization are highest in regions such as the Middle East (41.1%), North Africa (42.7%), and sub-Saharan Africa (48.2%). Additionally, reports of bullying victimization were comparatively low in

North America (31.7%) and lowest in Europe (25%), the Caribbean (25%), and Central America (22.8%).

An extensive meta-analysis reported that the mean prevalence of involvement in school bullying was 35% across 80 different countries (Modecki et al. 2014). Recent analyses of the Health Behaviour in School-aged Children (HBSC) study found interesting trends in bullying victimization across male and female schoolchildren (aged 11, 13, and 15 years old) from 33 countries (Chester et al. 2015). The authors suggested that, overall, occasional school-bullying victimization had decreased from 33.5% in 2001–2002 to 29.2% in 2009–2010, while chronic school-bullying victimization had also decreased from 12.7% in 2001–2002 to 11.3% in 2009–2010. This report also found that, while reports of school-bullying victimization were declining in one-third of countries included in the analysis, there are still large variations in bullying victimization across countries.

Researchers have attempted to identify factors that may explain these geographical differences. Elgar, Craig, Boyce, Morgan, and Vella-Zarb (2009) concluded that school-bullying prevalence varied according to rates of income inequality across 37 countries. Specifically, higher income inequality was associated with more reports of school bullying amongst adolescents. After controlling for income inequality, family and school support were associated with lower levels of school-bullying perpetration (Elgar et al. 2009). However, the relationship between income inequality and school-bullying victimization was not consistent across each of the countries included in the analysis.

Definitions of school bullying, and behaviors that constitute bullying, can also differ between countries. Previous research conducted by Smith, Kwak, and Toda (2016) showed that school bullying in Eastern cultures manifests more often as exclusion or isolation of an individual victim. Specifically in Japan, *ijime* involves a group excluding or isolating one student. In comparison, school bullying in Western cultures comprises a wider range of physical, verbal, and relational forms of aggression (e.g., Toda 2016). Thus, standardized international surveys may be insufficient at detecting different manifestations of bullying in different cultures which may in turn influence prevalence rates.

Regardless of international variation, bullying behaviors remain very frequent. One in four schoolchildren in Europe to nearly one in two children in sub-Saharan Africa report bullying victimization (UNESCO 2018). It is imperative, therefore, that practitioners should implement effective anti-bullying programs in their schools to protect students from bullying and its potential negative outcomes. From the perspective of international human rights law, the right to be safe at school and not be subjected to the aggression and victimization associated with bullying should be afforded to all children (Olweus and Limber 2010; Convention on the Rights of the Child 1989; Universal Declaration of Human Rights 1948).

## Effectiveness of School-Bullying Intervention Programs

There have been many previous attempts to establish what works in bullying intervention and prevention. Farrington and Ttofi (2009) found that school-based anti-bullying programs were effective in reducing bullying perpetration by approximately 20–23% and bullying victimization by approximately 17–20%. This report identified that evaluations conducted in Norway were significantly more likely to report desirable results in comparison to evaluations conducted in other locations (Farrington and Ttofi 2009). The authors also reported the difference between evaluations conducted in Europe and elsewhere, but the difference in the odds ratio mean effect sizes was not statistically significant (p. 140).

More recent analyses have found that anti-bullying programs are effective in reducing both school-bullying perpetration and victimization, but these reviews are limited in various ways. For example, some previous systematic reviews have failed to conduct a meta-analysis to quantify the effectiveness of school-bullying intervention programs (i.e., Cantone et al. 2015; Chalamandaris and Piette 2015; Evans et al. 2014). Therefore, we cannot adequately quantify and judge the objective effectiveness of included anti-bullying programs.

Some previous meta-analyses have over-restricted their analysis to include only randomized controlled trials (i.e., Jiménez-Barbero et al. 2016), or evaluations published after 2000 and conducted with participants between the ages of 6 and 16 years old (i.e., Jiménez-Barbero et al. 2012). These restrictive inclusion criteria may unnecessarily exclude studies that used non-randomized quasi-experimental designs or younger/older children and adolescents. Often in school-based evaluation research, randomized controlled trials are not feasible and thus, high-quality non-randomized quasi-experimental designs are an appropriate alternative evaluation design. Furthermore, although forms of bullying may change with age, bullying behaviors have been reported in kindergarten-aged students and adolescents over the age of 16 (UNESCO 2018).

## Objectives of the Current Report

A recent comprehensive systematic review and meta-analysis of the effectiveness of school-based bullying prevention programs found overall that anti-bullying programs are effective (Gaffney, Ttofi, and Farrington 2019a). This meta-analysis found that anti-bullying programs were collectively effective in reducing school-bullying perpetration by around 19–20% (odds ratio = 1.309) and school-bullying victimization by around 15–16% (odds ratio = 1.244). This study included evaluations of many different anti-bullying programs from across the world. However, as you would expect, there was significant heterogeneity in the results (see Gaffney et al. 2019b).

Thus, the objective of the present report is to explore some possible explanations for the variations in results between evaluations of anti-bullying programs. We use the data collected for the aforementioned review and evaluated the effectiveness of anti-bullying programs according to moderator variables. The present report explores variables such as the location of the evaluation and the particular intervention program that was evaluated. We aim to establish the effectiveness of existing anti-bullying efforts globally, to better inform ongoing research and potential translation of existing programs between countries. We also aim to identify and review existing anti-bullying programs that are widely disseminated or have been implemented across different settings and populations.

We suggest that the results of this analysis will be useful to researchers, policy makers, and practitioners (e.g., teachers, principals, school counselors/psychologists). It is important for all parties involved in anti-bullying work to understand the mechanisms of change underlying effective anti-bullying programs, and also to appraise the existing evidence on "what works" in bullying prevention. Therefore, we hope that this review will inform practitioners, such as school staff or counselors/psychologists, when deciding what anti-bullying program to implement in their schools.

## Methods

### Systematic Review

In order to locate studies for our review, we conducted a series of extensive systematic searches of the literature. Boolean searches were conducted using combinations of the following keywords: *bully\**; *victim\**; *bully-victim*; *school*; *intervention*; *prevention*; *program\**; *evaluation*; *effect\**; and *anti-bullying*. We searched several online databases, including, but not limited to, Web of Science, PsychINFO, EMBASE, ERIC, DARE, Google Scholar, and Scopus. Databases of unpublished reports (e.g., ProQuest) were also searched to include gray literature in this review. The inclusion of unpublished studies should reduce any potential publication bias (Easterbrook et al. 1991; McAuley et al. 2000).

In addition, studies both included and excluded by previous meta-analyses and systematic reviews (i.e., Cantone et al. 2015; Chalamandaris and Piette 2015; Evans et al. 2014; Jiménez-Barbero et al. 2016; Jiménez-Barbero et al. 2012) were reviewed to identify any potentially includable studies for the present review. In total, 49 studies that were included in a previous systematic review (i.e., Farrington and Ttofi (2009)) were included in our updated analysis. New searches were conducted for studies published from 2009 to the end of December 2016.

To be included in the updated meta-analysis, primary studies were measured against a set of pre-determined inclusion

criteria. Namely, studies must (1) describe an evaluation of a school-based anti-bullying program that was implemented with school-age participants; (2) utilize an operational definition of school bullying that coincides with existing definitions (e.g., CDC 2014; Farrington 1993; Olweus 1992); (3) measure school-bullying perpetration and/or victimization using quantitative measures, such as self-, peer-, or teacher-report questionnaires; and (4) use an experimental or quasi-experimental design, with one group receiving the intervention and another (control group) not receiving the intervention.

## Search Results

Our searches of the literature produced approximately 20,000 reports that were screened for eligibility. Based on titles and abstracts, 474 of these results were retained for further screening. The majority of these studies were excluded for various reasons. Our initial wave of screening excluded 107 studies that did not actually evaluate a specific anti-bullying program, 108 studies that reviewed several anti-bullying programs, and 43 studies that did not report empirical quantitative data.

Following more in-depth screening of the methodologies and results of the remaining studies, 133 studies were excluded because they (1) reported irrelevant outcomes; (2) did not have an adequate control group; or (3) did not meet the specified methodological criteria. For a detailed description of the screening process and how we determined which studies were included, please see Gaffney et al. (2019b). Following screening, 83 studies published after 2009 were eligible for inclusion in the systematic review.

In total however, 141 studies were eligible for inclusion in the present systematic review. This number includes 83 studies identified in the searches described here, five studies identified after searches were completed, and 53 studies that were included in the previous systematic review by Farrington and Ttofi (2009). However, only 100 primary evaluations were included in our meta-analysis, as a number of studies were excluded for a number of different reasons. For example, 10 studies lacked statistical information (needed to estimate effect sizes), 26 reported outcomes of evaluations conducted with the same sample (i.e., non-independent studies, repeat publications, or follow-up studies), and the remaining studies used an "other" experimental-control design (i.e., non-randomized with no before and after measures).

Included evaluations used one of three experimental methodologies: (1) randomized controlled trials; (2) quasi-experimental designs with before and after measures; and (3) age cohort designs. Randomized controlled trials are considered the gold standard in experimental evaluations (Weisburd et al. 2001) and involve the random assignment of individuals, or clusters of individuals, to experimental and control conditions. Quasi-experiments are conceptually similar to randomized controlled trials but do not use random assignment. As such, the validity of

results may be reduced so in our meta-analysis, we only included quasi-experiments that measured school bullying before and after the implementation of an intervention. Age cohort designs involve students of a particular age assessed for relevant outcomes in the first year of the intervention and this data acts as a control for students in the same school and the same age tested after the intervention has taken place. For detailed descriptions of these 100 evaluations, please refer to Gaffney et al. (2019b), for studies published after 2009, and to the original systematic review by Farrington and Ttofi (2009), for studies published before 2009.

## Meta-analysis

From the 100 evaluations, we estimated 103 independent effect sizes for the effectiveness of anti-bullying programs in reducing bullying perpetration and bullying victimization. The majority of effect sizes were corrected for the effect of clustering (i.e., the allocation of groups, classes, or schools, rather than individuals, to experimental conditions) which is a common approach in school-based evaluation studies (Donner et al. 2001). Our meta-analysis included evaluations that were conducted using randomized-controlled designs ($n = 45$ effect sizes), quasi-experimental designs with before and after measures of bullying outcomes ($n = 44$ effect sizes), and age cohort designs ($n = 14$ effect sizes).

The Comprehensive Meta-analysis software was used to conduct our analysis of the effectiveness of anti-bullying programs. Gaffney et al. (2019b) presented the results of this analysis using three different models of meta-analysis and highlighted the strengths and weaknesses of each approach. For the present report, the results will be presented only using the multiplicative variance adjustment model (MVA; Farrington and Welsh 2013). This model of meta-analysis overcomes the problems associated with both the fixed-effects model (i.e., the assumption of a normal distribution of studies, even though homogeneity between primary studies is rare) and the random effects model (i.e., the additive adjustment for heterogeneity resulting in disproportionate weight given to smaller studies, which is undesirable).

We also translated odds ratio effect sizes to percentages to more effectively communicate the effectiveness of school-based anti-bullying programs. A clear example is provided by Ttofi and Farrington (2011), but this process involves assuming equal allocation of participants to experimental and control conditions in primary evaluations. For example, if there were around 55 bullies and around 145 non-bullies in the control condition ($n = 200$) and approximately 45 bullies and approximately 155 non-bullies in the experimental condition ($n = 200$), the OR would be about 1.3. This relates to a reduction in bullying perpetration of approximately 19–20%. Following this logic, we were able to translate ORs to approximate percentage decreases in bullying behaviors.

## Coding Moderator Variables

For the purpose of the present report, we coded each of the 100 evaluations according to three moderators. Firstly, the country in which the evaluation took place was recorded (e.g., Australia, Sweden, or the USA). Secondly, for comparison, we coded the world region in which this country lies. For example, studies conducted in Italy, France, Spain, etc. were coded as the region "Europe," and studies conducted in the USA or Canada were coded as "North America." Evaluations conducted in Finland, Norway, or Sweden were coded as the region "Scandinavia," but, an additional category (named EU) was created to encompass all European studies (i.e., inclusive of Scandinavian countries).

Both the country and regional information of all was coded all except one country. Sapouna et al. (2010) evaluated the FearNot! Virtual-learning intervention program in both the UK and Germany. Therefore, this study was not included in either the UK or German evaluations but was included in regional analysis as a European study. Thirdly, we also recorded the specific intervention program evaluated in each primary study. For example, some anti-bullying programs are widely disseminated and have been evaluated repeatedly in different locations and samples (e.g., KiVa or the Olweus Bullying Prevention Program).

## Systematic Review Results

### Evaluations Globally

Of the 100 evaluations included in our meta-analysis of school-based anti-bullying programs, the majority (80 for perpetration, 84 for victimization) were conducted in one of 12 different countries (i.e., Australia, Canada, Cyprus, Finland, Germany, Greece, Italy, Netherlands, Norway, Spain, UK, USA). We also identified singular evaluations conducted in Austria (Yanagida et al. 2016); Brazil (da Silva et al. 2016); China (Ju et al. 2009); Czechoslovakia (modern day Czech Republic and Slovakia; Rican, Ondrova, and Svatos 1996); Hong Kong (Wong et al. 2011); Ireland (O'Moore and Minton 2004); Malaysia (Yaakub et al. 2010); Romania (Trip et al. 2015); Sweden (Kimber et al. 2008); South Africa (Meyer and Lesch 2000); Switzerland (Alsaker and Valkanover 2001); and Zambia (Kaljee et al. 2017).

### Repeatedly Evaluated Anti-bullying Programs

We found that very few specific anti-bullying programs had been implemented and evaluated more than once using independent samples. Sixty-five different school-based bullying intervention and prevention programs were included in our meta-analysis, but only eight were repeatedly evaluated (i.e.,

Bully Proofing Your School; the fairplayer.manual; KiVa; NoTrap!; OBPP; Second Step; Steps to Respect; ViSC). Moreover, of these programs, only four were evaluated more than twice across different locations with different evaluators (i.e., KiVa, OBPP, NoTrap!, and ViSC). The following sections of this report outline the key features of these programs. These four studies are outlined in Table 1.

### KiVa Anti-bullying Program

The KiVa anti-bullying program was developed and widely disseminated in Finland from 2007 to the present (Kärnä et al. 2013). The program was developed on the basis on several theoretical models of human social behavior, such as Bandura's (1989) social-cognitive theory and the complex involvement of peers in school-bullying scenarios (e.g., Salmivalli 2010). Thus, the KiVa anti-bullying program targets bystanders in bullying situations, with the aim of reducing the social rewards for bullies and in turn reducing their bullying behaviors (Kärnä et al. 2013). The program is composed of three age-appropriate curriculum materials that focus on enhancing empathy, self-efficacy, and anti-bullying attitudes of bystanders.

Kärnä et al. (2011a, b, 2013) reported that trained teachers implement the KiVa intervention program in their classrooms and are provided with detailed lesson plans, which include various activities, such as group discussion, role-play, and short anti-bullying videos. Classroom anti-bullying rules are also devised throughout lessons. The KiVa program also includes a virtual-learning element, with primary school students playing an anti-bullying computer game both during and between lessons. Secondary school students are introduced to "KiVa Street" which is an online forum, providing vast information on bullying-related topics. Kärnä et al. (2011a) state that the KiVa program includes many features identified by a previous review (Farrington and Ttofi 2009) as being significantly effective intervention components. For example, it includes disciplinary methods, improved playground supervision, teacher training, classroom rules, a whole-school anti-bullying policy, information for parents, videos, and cooperative group work (Kärnä et al. 2011a, p. 797).

Our systematic searches identified 16 potentially includable evaluations of the KiVa anti-bullying intervention (i.e., Ahtola et al. 2012, 2013; Garandeau et al. 2014a, b; Haataja et al. 2014; Hutchings and Clarkson 2015; Kärnä et al. 2011a, b, 2013; Nocentini and Menesini 2016; Noland 2011; Sainio et al. 2012; Salmivalli et al. 2012; Williford et al. 2012; Williford et al. 2013; Yang and Salmivalli 2014). Of these 16 studies, only four met our inclusion criteria and were included in our meta-analysis (i.e., Kärnä et al. 2011a, b, 2013; Nocentini and Menesini 2016). These studies presented the results of nationwide evaluations of the KiVa anti-bullying program using an age cohort design (i.e., Kärnä et al. 2011a)

**Table 1**  Key components of repeatedly evaluated anti-bullying programs

| Intervention program: | KiVa | OBPP | NoTrap! | ViSC |
|---|---|---|---|---|
| Intervention component: | | | | |
| Whole-school approach | Yes | Yes | No | Yes |
| Parental involvement | Leaflets/letters and information nights | Leaflets/letters and involvement | No | Yes |
| Teacher involvement | Training and implement lessons | Training and implement lessons | Minor | Training and implement lessons |
| Classroom rules | Yes | Yes | No | Yes |
| Curriculum materials | Detailed program outline | Detailed program outline | No | Detailed program outline |
| Work with peers | Engaging bystanders and in-class group exercises | Class discussions | Peer-led | In-class project |
| Work with bullies | Yes | Yes | Yes | No |
| Work with victims | Yes | Yes | Yes | No |
| Punitive approach | Confronting approach | No | No | No |
| Non-punitive approach | No blame approach | No | No | No |
| Hot-spot supervision | Yes | Yes | No | No |
| Approach to bullying | Universal and indicated | Universal and indicated | Peer-led online forum | Socio-ecological |

and a randomized controlled trial (i.e., Kärnä et al. 2011b, 2013). Additionally, Nocentini and Menesini (2016) reported the results of the implementation and evaluation of the KiVa anti-bullying program in Italy using a randomized controlled trial design.

## NoTrap!

Noncadiamointrappola (let us Not Fall Into a Trap), or NoTrap!, is a web-based anti-bullying program that has been developed and evaluated in Italian high schools (Menesini et al. 2012). The intervention involves actively engaging students in the development of a website to promote anti-bullying. In addition, a number of participating students are enrolled as peer-educators throughout the intervention. These students act as moderators of the online anti-bullying forum, regulating discussion threads and responding to users' questions and concerns (Menesini et al. 2012).

Additionally, peer-educators hold workshops offline with participating students to highlight the key issues surrounding both school- and cyberbullying (Palladino et al. 2016). Offline activities incorporate several elements that focus on (1) victims' roles and victim support; (2) involving bystanders in bullying; (3) greater involvement of teachers; and (4) creation of a Facebook group to supplement online forum materials (Palladino et al. 2012). Classroom workshops target empathy and problem-solving skills (Palladino et al. 2016).

Our meta-analysis included four independent evaluations of the NoTrap! program in Italian secondary schools using quasi-experimental designs with before and after measures of school- and cyberbullying. Menesini et al. (2012; Study 1), implemented the program with 386 9th to 13th grade

students during the December 2009 to June 2010 academic year. Palladino et al. (2012) and Menesini et al. (2012; Study 2) reported the results of the implementation and evaluation during the December 2010 to June 2011 academic year. Finally, Palladino et al. (2016) reported the results of two trials of the NoTrap! program with 9th grade students from 15 secondary schools, for the 2011/12 (Trial 1) and 2012/13 (Trial 2) academic years.

## Olweus Bullying Prevention Program

It can be argued that the Olweus Bullying Prevention Program (OBPP; Olweus 1993a, b) was the original whole-school anti-bullying program. This program aims to improve the school environment in order to reduce existing bullying problems and prevent further instances of bullying (Olweus et al. 1999). The program includes elements at many levels, specifically, school, classroom, individual, and community levels (Olweus et al. 2007). Intervention components are guided by four key principles, namely, adults, both at school and home, should (1) show warmth and positivity towards students; (2) set strict limits and restrictions on unacceptable student behavior; (3) apply consistent and non-aggressive consequences; and (4) act as positive and authoritative role models (Olweus and Limber 2010, p. 126).

Olweus and Limber (Olweus and Limber 2010, p. 127, see Table 1) specify that, at the school-level, the OBPP intervention involves establishing a Bullying Prevention Coordinating Committee (BPCC) that is comprised of school staff, parents, and members of the wider community. Intensive training is also provided for staff, and regular staff discussion groups are held. School rules against bullying are implemented at the

whole-school and classroom levels, and a school-wide "kick off" event is held to launch the start of the intervention. At the individual level, intervention components include "hot-spot" supervision (i.e., increased staff presence at locations around the school where bullying is known to occur). The intervention also targets specific individuals who are recognized as bullies and victims, and their respective parents. Individual-specific intervention strategies are also designed for students involved in bullying.

Our meta-analysis of school-based anti-bullying programs included 12 independent evaluations of the OBPP intervention, largely implemented in Norway and the USA (e.g., Finn 2009; Limber et al. 2018; Losey 2009; Purugulla 2011). We also identified one evaluation of the OBPP in Malaysia (i.e., Yaakub et al. 2010). The OBPP was largely evaluated using quasi-experimental designs with before and after measures, or age cohort designs. The OBPP can be implemented with children and adolescents of a range of ages. For example, Finn (2009) implemented and evaluated the program with elementary schoolchildren, Purugulla (2011) implemented the program with middle school students, and Losey (2009) and Yaakub et al. (2010) implemented the program with secondary school students. Several of the OBPP evaluations that were included in our meta-analysis were implemented with students from a range of grades (e.g., Limber et al. 2018).

### Viennese Social Competence Program

The Viennese Social Competence (ViSC) intervention program approaches bullying prevention from a socio-ecological perspective (Bronfenbrenner 1979; Swearer and Espelage 2004). This intervention targets not only individual students but also includes teachers, parents, and school staff, from a social learning theory (Bandura 1977) perspective. The ViSC program ensures that teachers have a shared responsibility to prevent bullying perpetration and victimization amongst students. The aim of the ViSC program is to reduce aggressive and bullying behaviors and also to create social and intercultural competencies within the school environment (Gradinger et al. 2015).

Designed to be implemented with secondary school students, the ViSC program is a 1-year program and adopts a "train-the-trainer" model. In other words, experts train teachers, who in turn train their students (Gradinger et al. 2015). The first semester of the program incorporates school-level intervention components, implemented with teachers and school staff. Participants are trained in how to recognize and tackle bullying scenarios and implement preventative measures at the school- and class-levels. Participating students also complete 13 lessons that follow a student-centered approach. Lessons one to eight focus on bullying behaviors and require students to actively work together to develop ways to prevent aggressive behavior in their respective classes. In the

remaining five lessons, students work together on a class project to achieve a positive common goal and practice their social skills (Atria et al. 2007; Gradinger et al. 2015).

Our systematic review included five evaluations of the ViSC program, implemented in Austria (Gradinger et al. 2015; Yanagida et al. 2016); Cyprus (Solomontos-Kountouri et al. 2016); Germany (Gollwitzer et al. 2006); and Romania (Trip et al. 2015). One evaluation (i.e., Trip et al. 2015) of the ViSC program also implemented additional cognitive-behavioral intervention lessons, based on Rational Emotive Behavioral Education (REBE).

## Meta-analysis Results

Overall, our meta-analysis found that anti-bullying programs were effective in reducing both school-bullying perpetration (OR = 1.324; 95% CI 1.27–1.38; $p < 0.001$) and school-bullying victimization (OR = 1.248; 95% CI 1.27–1.38; $p < 0.001$) outcomes. We estimated that this result corresponds to an approximate reduction of 19–20% and 15–16% for bullying perpetration and victimization respectively.

While the mean effect sizes suggest that anti-bullying programs are effective, there was significant heterogeneity for both bullying perpetration ($Q = 323.39$; $p < 0.001$) and bullying victimization ($Q = 387.26$; $p < 0.001$) outcomes. This result is not surprising in light of the large number of studies included in our meta-analysis, and the wide array of countries and intervention programs represented. Therefore, the aim of the present report is to explore variations in the effectiveness of intervention programs between countries and regions and specific anti-bullying programs.

### School-Bullying Perpetration

Table 2 presents the effectiveness of anti-bullying programs across 22 different countries for bullying perpetration outcomes. Table 2 shows that, amongst international locations where more than one evaluation was conducted, evaluations carried out in Greece were the most effective in significantly reducing bullying perpetration, followed by Norway, Italy, the USA, and Finland. When singular evaluations were included, the anti-bullying program implemented in the former Czechoslovakia had the largest effect size for bullying perpetration, followed by Ireland. Effect sizes for bullying perpetration across all 22 countries included in our meta-analysis are represented graphically in Fig. 1.

### School-Bullying Victimization

Table 2 also summarizes the effectiveness of anti-bullying programs across 21 different countries for bullying victimization outcomes. Amongst international locations where more

**Table 2** MVA odds ratio for school-bullying perpetration and victimization by country

| Country (n) | School-bullying perpetration | | | Country (n) | School-bullying victimization | | |
|---|---|---|---|---|---|---|---|
| | OR | 95% CI | p | | OR | 95% CI | p |
| Australia (2) | 0.99 | 0.58–1.71 | 0.98 | Australia (3) | 1.35 | 0.72–2.53 | 0.35 |
| Austria (1) | 1.40 | 0.70–2.80 | 0.34 | Austria (1) | 3.73 | 1.66–8.38 | <0.001* |
| Brazil (1) | 1.26 | 0.56–2.82 | 0.58 | Brazil (1) | 0.68 | 0.28–1.68 | 0.41 |
| Canada (6) | 1.00 | 0.65–1.56 | 0.99 | Canada (7) | 1.01 | 0.69–1.45 | 0.98 |
| | | | | China (1) | 1.67 | 0.75–3.70 | 0.21 |
| Cyprus (3) | 0.86 | 0.61–1.23 | 0.42 | Cyprus (3) | 0.88 | 0.52–1.46 | 0.61 |
| Czechoslovakia[a] (1) | 2.52 | 0.64–9.96 | 0.19 | Czechoslovakia[a] (1) | 2.44 | 0.65–9.13 | 0.19 |
| Finland (6) | 1.15 | 1.11–1.21 | <0.001* | Finland (6) | 1.15 | 1.04–1.27 | 0.008* |
| Germany (5) | 1.16 | 0.74–2.83 | 0.52 | Germany (4) | 1.18 | 1.07–1.41 | 0.01* |
| Greece (2) | 1.95 | 1.93–1.98 | <0.001* | Greece (2) | 1.45 | 1.16–1.80 | <0.001* |
| Hong Kong (1) | 2.11 | 1.41–3.01 | <0.001* | | | | |
| Ireland (1) | 2.12 | 0.81–5.55 | 0.13 | Ireland (1) | 1.99 | 0.98–4.05 | 0.058 |
| Italy (11) | 1.39 | 1.12–1.75 | 0.004* | Italy (10) | 1.62 | 1.24–2.12 | <0.001* |
| Malaysia (1) | 1.09 | 0.94–1.26 | 0.28 | | | | |
| Netherlands (3) | 0.86 | 0.29–2.48 | 0.78 | Netherlands (3) | 0.91 | 0.39–2.14 | 0.83 |
| Norway (8) | 1.47 | 1.37–1.57 | <0.001* | Norway (7) | 1.41 | 1.30–1.52 | <0.001* |
| Romania (1) | 1.24 | 0.87–1.78 | 0.24 | Romania (1) | 1.03 | 0.72–1.47 | <0.001* |
| South Africa (1) | 0.88 | 0.43–1.79 | 0.73 | | | | |
| Spain (3) | 1.59 | 0.77–3.29 | 0.21 | Spain (3) | 1.54 | 1.19–1.99 | <0.001* |
| | | | | Sweden (1) | 1.83 | 1.12–2.99 | 0.02* |
| Switzerland (1) | 1.13 | 0.58–2.22 | 0.71 | Switzerland (1) | 3.12 | 1.61–6.03 | <0.001* |
| UK (4) | 1.16 | 0.87–1.54 | 0.32 | UK (6) | 1.11 | 1.01–1.23 | 0.041* |
| USA (26) | 1.38 | 1.24–1.54 | <0.001* | USA (28) | 1.17 | 1.05–1.30 | 0.005* |
| Zambia (1) | 0.59 | 0.49–0.71 | <0.001* | Zambia (1) | 0.88 | 0.74–1.05 | 0.15 |

n = number of independent effect sizes; *significant effect; [a] Rican et al. (1996) use the name Czechoslovakia to describe the country in which their evaluation took place. However, this area is now composed of the independent states of the Czech Republic and Slovakia

than one evaluation was conducted, evaluations conducted in Italy were the most effective in significantly reducing bullying victimization, followed by Spain, Norway, the USA, and Finland. Additionally, evaluations conducted in Germany and the UK were significantly effective. When singular evaluations were included, the anti-bullying program implemented in Austria had the largest effect size for bullying victimization, followed by Switzerland. Effect sizes for bullying victimization across all 21 countries included in our meta-analysis are represented graphically in Fig. 2.

## Comparing Regional Effectiveness

In addition to exploring the effectiveness of anti-bullying programs conducted in individual countries, we also estimated effect sizes for different regions. Table 3 shows the weighted mean effect sizes across seven different geographical regions for school-bullying perpetration and victimization outcomes. We were able to code effect sizes for seven regions: Africa, Asia, Australia, Europe (excluding Scandinavia), North America, South America, and Scandinavia. The majority of

studies were conducted in either Europe, North America, or Scandinavia. We also estimated a weighted mean effect size for studies conducted in Europe (including Scandinavia).

In regard to school-bullying perpetration outcomes, evaluations conducted in North America were the most effective, followed by Scandinavian studies, and then European studies. For school-bullying victimization outcomes, evaluations conducted in Scandinavia were the most effective. Evaluations conducted in Europe were the second most effective, followed by North American studies. When weighted mean effect sizes were estimated for European and Scandinavian countries collectively, they were significantly more effective in reducing bullying victimization outcomes than North American studies. However, the effect size in North American studies for bullying perpetration outcomes was not significantly different from the weighted mean for European and Scandinavian studies.

## Effectiveness of Specific Anti-bullying Programs

Table 4 summarizes the effectiveness of specific anti-bullying programs in reducing school-bullying perpetration and
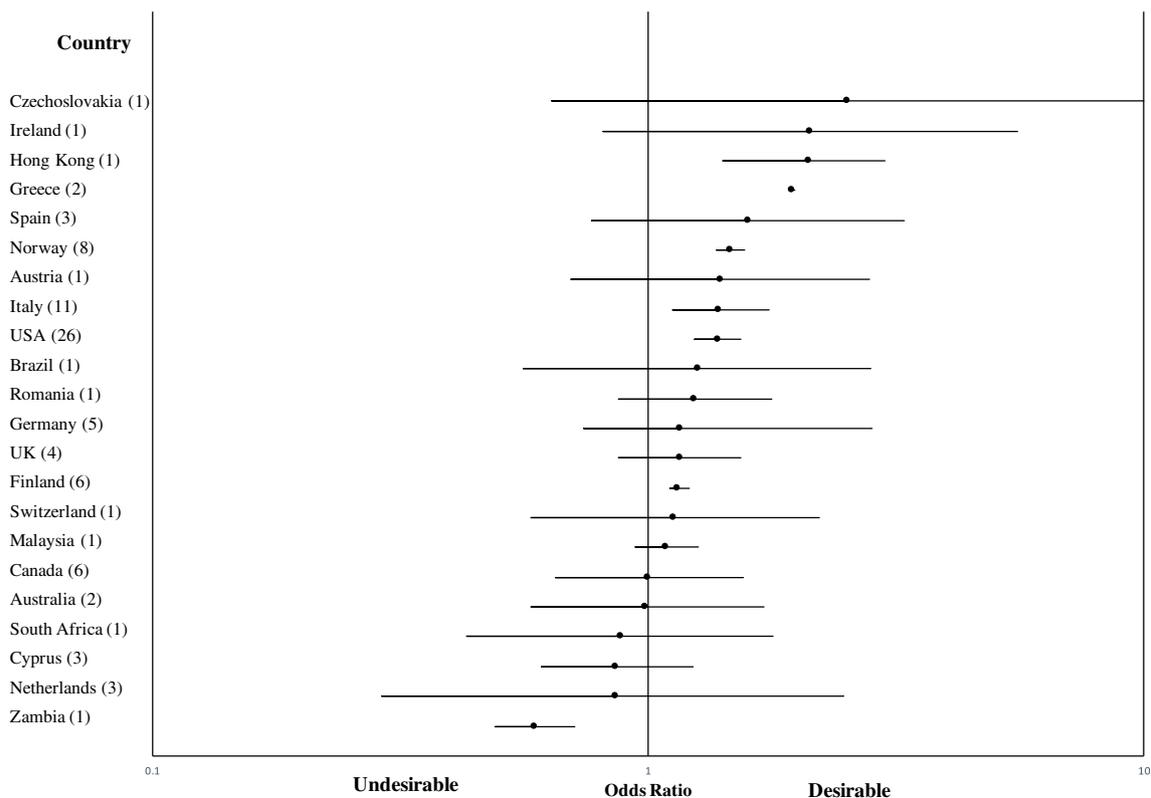
*Note.* Odds ratios are shown on a logarithmic scale.

**Fig. 1** Forest plot of weighted mean odds ratios for bullying perpetration outcomes across 22 different countries. Odds ratios are shown on a logarithmic scale

victimization. Eight programs (i.e., Bully Proofing Your School, fairplayer.manual, KiVa, NoTrap!, OBPP, Second Step, Steps to Respect, and ViSC) could be studied in relation to bullying perpetration outcomes. The same programs, with the exception of the fairplayer.manual program, were studied in relation to bullying victimization outcomes. The effectiveness of these programs varied greatly. For both perpetration and victimization outcomes, we also report effect sizes for evaluations of the OBPP conducted in Norway ($n = 5$) and the USA ($n = 6$) separately. Overall, there were 12 evaluations of the OBPP included in our analysis, which includes one evaluation conducted in Malaysia.

### School-Bullying Perpetration

In relation to school-bullying perpetration outcomes, overall the OBPP was the most effective intervention program. In addition, evaluations of the OBPP in Norway and in the USA were the most effective individually, in comparison with other included anti-bullying programs. The difference in the magnitude of OBPP evaluations conducted in Norway and in the USA was not statistically significant for school-bullying outcomes. Other programs were also significantly effective in reducing school-bullying perpetration behaviors, including

KiVa, Second Step, and Steps to Respect, although their effect sizes were markedly lower in comparison to the OBPP. Positive effect sizes (i.e., OR > 1) were also observed for the BPYS and NoTrap! programs, but these effects were not statistically significant. Surprisingly, negative effects were found for two anti-bullying programs, the fairplayer manual and ViSC, although these effects were not statistically significant.

### School-Bullying Victimization

In relation to school-bullying victimization outcomes, NoTrap! was the most effective anti-bullying program, followed by the Bully Proofing Your School Program. Our analysis found that other anti-bullying programs were also significantly effective in reducing school-bullying victimization, including Steps to Respect and KiVa. The OBPP intervention program was the third most effective anti-bullying program for reducing victimization. Effect sizes for the OBPP varied significantly between evaluations conducted in Norway and evaluations conducted in the USA. Our analysis also found negative effects of the Second Step program in relation to victimization. Evaluations of the ViSC program also had a negative effect on bullying victimization, although this effect was not statistically significant.
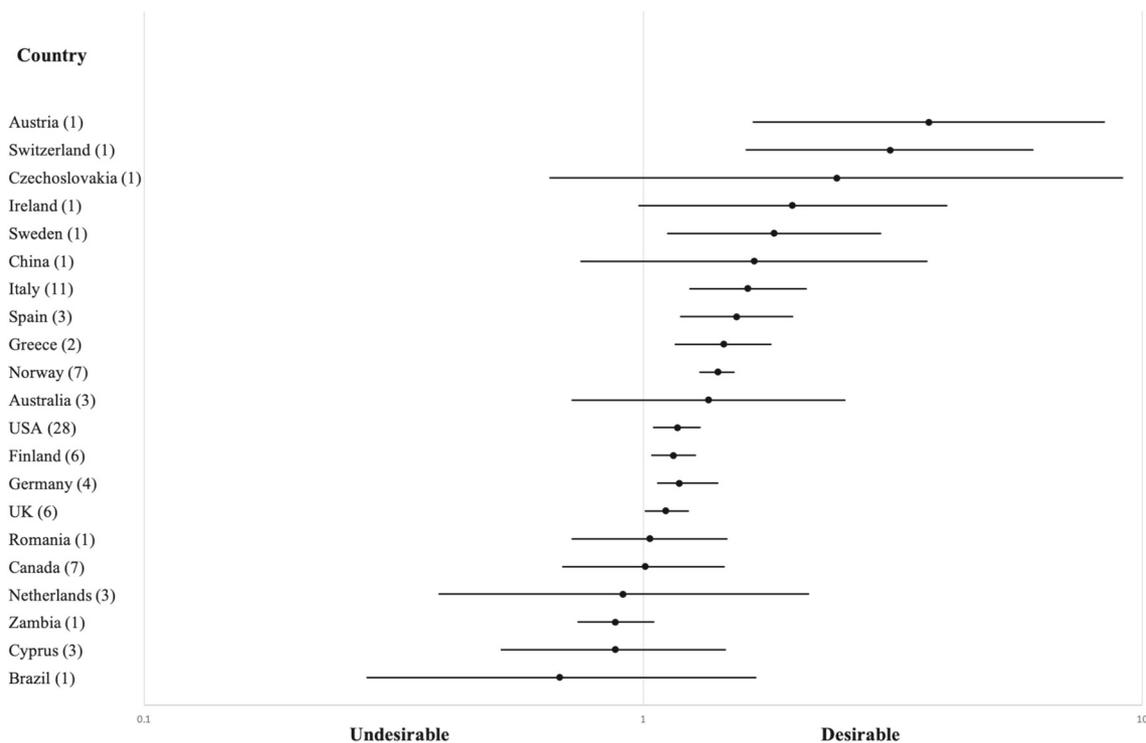
*Note.* Odds ratios are shown on a logarithmic scale.

**Fig. 2** Forest plot of weighted mean odds ratios for bullying victimization outcomes across 21 different countries. Odds ratios are shown on a logarithmic scale

## Discussion

Overall, the results of our meta-analysis are consistent with previous findings and show that school-based anti-bullying programs are effective in reducing bullying perpetration and victimization. Our meta-analysis included evaluations of anti-bullying programs from a wide range of countries and specific intervention programs, far more than in any previous meta-analysis (e.g., Cantone et al. 2015; Chalamandaris and Piette 2015; Evans et al. 2014; Jiménez-Barbero et al. 2012; Jiménez-Barbero et al. 2016). We conclude that school-based anti-bullying programs are effective in reducing both school-bullying perpetration and victimization globally and across different school-based programs.

**Table 3** Regional differences in program effectiveness in reducing school-bullying perpetration and victimization

| Region (n) | School-bullying perpetration | | | Region (n) | School-bullying victimization | | |
|---|---|---|---|---|---|---|---|
| | OR | 95% CI | p | | OR | 95% CI | p |
| Africa (2) | 0.606 | 0.505–0.727 | 0.001* | Africa (1) | 0.878 | 0.735–1.048 | 0.151 |
| Asia (2) | 1.199 | 0.754–1.908 | 0.444 | Asia (1) | 1.669 | 0.752–3.702 | 0.208 |
| Australia (2) | 0.994 | 0.576–1.715 | 0.983 | Australia (3) | 1.349 | 1.046–1.739 | 0.021* |
| Europe (37) | 1.195 | 1.046–1.365 | 0.009* | Europe (37) | 1.24 | 1.102–1.396 | 0.001* |
| N America (32)[a] | 1.367 | 1.286–1.453 | 0.001* | N America (35)[a] | 1.164 | 1.101–1.230 | 0.001* |
| S America (1)[b] | 1.259 | 0.562–2.821 | 0.576 | S America (1)[b] | 0.683 | 0.278–1.679 | 0.406 |
| Scandinavia (14) | 1.345 | 1.244–1.454 | 0.001* | Scandinavia (14) | 1.31 | 1.214–1.414 | 0.001* |
| Scan and Europe (51)[c] | 1.327 | 1.257–1.401 | 0.001* | Scan and Europe (51)[c] | 1.303 | 1.241–1.368 | 0.001* |

n = number of independent effect sizes; *significant effect; [a] North America (N America) and included evaluations conducted in the USA and Canada; [b] S America (i.e., South America) included only one study conducted in Brazil (i.e., da Silva et al. 2016); [c] Scan and Europe = weighted mean effect size for European (including Scandinavian) studies

**Table 4**    Weighted mean effect sizes for the most commonly evaluated school-bullying prevention programs

| Program (n) | School-bullying perpetration | | | Program (n) | School-bullying victimization | | |
|---|---|---|---|---|---|---|---|
| | OR | 95% CI | p | | OR | 95% CI | p |
| BPYS (2) | 1.07 | 0.95–1.19 | 0.14 | BPYS (3) | 1.35 | 1.19–1.53 | < 0.001* |
| Fairplayer.manual (2) | 0.85 | 0.49–1.44 | 0.27 | | | | |
| KiVa (6) | 1.14 | 1.08–1.22 | < 0.001** | KiVa (6) | 1.16 | 1.04–1.30 | 0.01* |
| NoTrap! (4) | 1.38 | 0.76–2.48 | 0.27 | NoTrap! (4) | 1.84 | 1.15–2.93 | 0.01* |
| OBPP: Overall (12) | 1.49 | 1.38–1.62 | < 0.001** | OBPP: Overall (12) | 1.26 | 1.16–1.38 | < 0.001** |
| OBPP: Norway (5) | 1.75 | 1.69–1.81 | < 0.001** | OBPP: Norway (5) | 1.57 | 1.39–1.76 | < 0.001** |
| OBPP: USA (6) | 1.47 | 1.37–1.58 | < 0.001** | OBPP: USA (6) | 1.17 | 1.12–1.23 | < 0.001** |
| Second Step (3) | 1.10 | 1.03–1.18 | 0.05 | Second Step (3) | 0.81 | 0.67–0.98 | 0.03* |
| Steps to Respect (2) | 1.16 | 1.11–1.22 | < 0.001** | Steps to Respect (2) | 1.19 | 1.12–1.27 | < 0.001** |
| ViSC (5) | 0.95 | 0.73–1.24 | 0.72 | ViSC (5) | 0.95 | 0.64–1.43 | 0.81 |

*Significant effect at $p < 0.05$ level; **significant effect at the $p < 0.001$ level. *BPYS*, Bully Proofing Your School; *OBPP*, Olweus Bullying Prevention Program; *ViSC*, Viennese Social Competence program

## Global Effectiveness

In Greece, where evaluations included in our meta-analysis were highly effective, school-bullying perpetration was reduced by approximately 40%. Evaluations conducted in the Norway, Italy, and the USA were effective in reducing bullying perpetration by approximately 21–25%. Anti-bullying programs implemented and evaluated in Italy were also very effective in reducing victimization in our meta-analysis, with the odds ratio effect size corresponding to an approximate reduction of 31%. Evaluations conducted in Spain and Norway reduced victimization by approximately 28% and 23%, respectively. Evaluations conducted in Finland, Germany, and the UK were also significantly effective in reducing victimization by approximately 8–12%.

We also identified regional differences in the effectiveness of anti-bullying programs. Specifically, intervention programs conducted in Europe significantly reduced bullying perpetration by around 13%, while interventions conducted in Scandinavian countries significantly reduced bullying perpetration by around 20%. Evaluations conducted in North America (i.e., the USA and Canada) significantly reduced bullying perpetration by around 21% and bullying victimization by around 11%. Comparatively, anti-bullying programs that were implemented and evaluated in Scandinavia and Europe reduced victimization by a larger percentage, 18% and 15% respectively. However, no clear pattern of statistically significant differences between regional effect sizes was identified in our analysis.

## Limitations and Future Research

While the results of our further analysis in relation to the location of evaluations are interesting, the findings are limited in explaining why heterogeneity occurs between mean effect sizes. The current report highlights that anti-bullying programs are effective and are largely effective worldwide. The results are consistent with previous findings such as the recent UNESCO (2018) report on bullying. The majority of anti-bullying programs were evaluated in regions where the prevalence of bullying is already comparatively low, for example, Europe and North America. Our systematic review further highlights the lack of existing anti-bullying programs in areas where UNESCO report worryingly high levels of bullying, such as sub-Saharan Africa and the Middle East.

The lack of a clear pattern in relation to the regional effectiveness of anti-bullying programs may be explained by several factors. Firstly, there are a large number of potential confounding factors that could be influencing the overall results. When comparing the effectiveness of anti-bullying programs in a meta-analysis such as this, other moderators need to be considered. For example, previous analyses have found that anti-bullying programs are more effective with older participants (i.e., over age 11) than they are with participants aged 10 years old and younger (Farrington and Ttofi 2009). The relationships between participant age and overall effectiveness are not consistent, with prominent researchers disagreeing with this finding (e.g., Smith et al. 2012; Smith 2010).

Other potential confounding variables include the type of measurement, the specific intervention components, or the evaluation methodology used. Gaffney et al. (2019b) showed that evaluations conducted using an age cohort design consistently resulted in the largest effect sizes. This may also serve to explain why the OBPP program and evaluations conducted in Norway/Scandinavia are found to produce larger effect sizes as this evaluation method is predominantly used to evaluate this program in Norwegian schools (Gaffney et al. 2019b).

Previous research has indicated that there are cultural differences in bullying behaviors amongst adolescents (e.g., Smith et al. 2016). Therefore, an anti-bullying program that is designed to reduce these behaviors should reflect these differences. This is

particularly evident when we observe the variations in effect sizes for the Olweus Bullying Prevention Program (OBPP; Olweus 1993a, b). This program was originally designed and implemented in Norway, and it is therefore not surprising that the OBPP program was more effective in reducing both perpetration and victimization when evaluated in Norway, compared to evaluations in the USA (see Table 4). While the program was still significantly effective in the USA, the percentage decrease in school-bullying perpetration was 25% and in victimization was 11%. These figures are low in comparison to the decreases in bullying seen in Norwegian evaluations (35% perpetration; 29% victimization). These differences could be attributed to different evaluation methodologies (see Gaffney et al. 2019b), but they could also reflect cultural and societal differences between youth in Norway and youth in the USA.

Moreover, when the OBPP was evaluated in six Malaysian secondary schools, with a sample size of approximately 3816 students, the program was not significantly effective in reducing school-bullying victimization (Yaakub et al. 2010; OR = 1.09, $p = 0.28$). This may be a result of the different manifestations of school-bullying victimization in Eastern societies. As previously stated, researchers (e.g., Smith et al. 2016) have outlined that bullying manifests differently in Eastern and Western cultures. This may explain why in Malaysia, the OBPP was seemingly ineffective at reducing bullying victimization. It may be that the program itself was not tailored to the specific experiences and/or behaviors demonstrated by Malaysian students.

Future research is needed to better explore the potential factors that may explain heterogeneity observed between mean effect sizes of anti-bullying evaluations. For example, such research could incorporate the type of intervention implemented, the age of participants, the sample size, timeframe of measurement (i.e., bullying experienced in past 3, 6, 9 months), and the type of report (i.e., self-, peer-, or teacher-reported bullying).

## Specific Interventions

We also explored the effectiveness of the four most widely disseminated anti-bullying programs that were included in our review (i.e., KiVA, NoTrap!, OBPP, ViSC). For the purpose of this analysis, we only included programs that had been evaluated on three or more independent occasions. The OBPP was the most effective in reducing school-bullying perpetration. Across 12 evaluations, the OBPP reduced bullying perpetration by approximately 26%. In relation to victimization outcomes, the NoTrap! program was the most effective, reducing victimization by around 37%. NoTrap! also reduced bullying perpetration by a considerable amount, approximately 22%, but this effect was not statistically significant. The KiVA program significantly reduced school-bullying perpetration by approximately 9% and school-bullying victimization

by approximately 11%. The ViSC program was the only program to increase bullying perpetration (by roughly 4%) and bullying victimization (by roughly 4%), although these effects were not statistically significant. Again, these results may have been influenced by the particular evaluation methods used (see Weisburd et al. 2001).

## Intervention Components

As Table 1 shows, the KiVA, NoTrap!, OBPP, and ViSC programs incorporated quite similar intervention components. Specifically, the KiVA, OBPP, and ViSC programs are very similar in practice, with the NoTrap! program being the most different of the four programs. As the effectiveness of these programs also varied, it may be possible, by exploring these different components, to better inform future research, practice, and policy decisions.

## The Whole-School Approach

With respect to these programs, it is not surprising that three of the four adopted a "whole-school" approach (i.e., KiVA, the OBPP, and ViSC). This approach to anti-bullying programs was first introduced and implemented by Dan Olweus in Norway (i.e., OBPP, Olweus 1991), and it is undeniably the most common approach to bullying prevention. Other programs (i.e., KiVa or ViSC) have implemented this approach and applied a socio-ecological theoretical framework to explain any potential changes that occur as a result of the implementation. The whole-school approach to bullying prevention incorporates individuals involved in every aspect of students' lives, for example, not only the students involved in bullying but also their peers, parents, teachers, and the wider community.

In relation to effectiveness, our meta-analysis suggests that the whole-school approach was not always the most effective. The OBPP was very effective in reducing both bullying perpetration and victimization, but the KiVa program was only marginally effective (approximately 9% and 11% decreases in perpetration and victimization respectively), and the ViSC program had an undesirable effect. Although the effect sizes for the ViSC program were not statistically significant, the odds ratios correspond to roughly a 4% increase in both bullying perpetration and victimization. Moreover, the non-whole-school program NoTrap! was the most effective intervention in reducing bullying victimization, with a decrease of 37% approximately. NoTrap! involved creating an online forum where trained students acted as moderators, responding to participants' questions and concerns about bullying.

This suggests that, while school bullying may very well be a complex social peer-group phenomenon, the whole-school approach might not be effective for every individual student. This observation is consistent with previous research. For example, in the context of the KiVa anti-bullying program,

Kaufman et al. (2018) recently characterized participants into different trajectories of victimization. This study found that high-trajectory (for victimization) participants (i.e., those who reported high levels of peer rejection, internalizing problems, and lower quality parent-child relationships) reported lesser decreases in victimization following the intervention, in comparison to participants in the decreasing and low/no victimization trajectories. The universal approach commonly includes school- and class-level components that focus on raising awareness about bullying-related issues. It may be the case that, by raising awareness, and focusing on highlighting bullying issues amongst students, the effect sizes may be influenced by a social desirability bias. This might explain why greater reductions are seen for whole-school programs for bullying perpetration in comparison to decreases for bullying victimization. To explore this result further, future research should aim to compare effect sizes based on participants' self-reports to teacher- or peer-reports of bullying victimization and perpetration.

## Peer Involvement

Gaffney, Ttofi, and Farrington (2019a) previously found that the intervention component "work with peers" was associated with an increase in bullying victimization. However, this finding was not widely accepted by other researchers in the field who champion the peer-led approach to bullying prevention (e.g., Smith et al. 2012). In the four most widely disseminated programs, the peer group was involved in intervention activities in various ways. For example, the OBPP program involved actively working with participants to engage bystanders in order to encourage them to prevent, or respond accordingly to, bullying situations in their daily lives. Moreover, the OBPP involved in-class group exercises and discussions, as did the KiVA and ViSC programs. In comparison, the NoTrap! program is a peer-led program.

The NoTrap! program includes a peer-led online forum for participants to discuss bullying victimization experiences. It may be that the anonymity and protection of an online environment encourages participants to truly open up about bullying victimization, whereas in classroom settings, they may feel uncomfortable about disclosing their experiences. Previous research has shown that a number of factors, including trust and perceived privacy, can influence disclosure in online settings, in relation to sensitive issues (Joinson et al. 2010).

Furthermore, the overlap between offline and online bullying perpetration and victimization will increase amongst adolescents, as the Internet has become a part of our daily lives rather than an abstract place where different social norms

apply (Rooney, Connolly, Hurley, Kirwan, and Power 2015). Previous studies have shown that the greatest risk factor for cyberbullying is school bullying (Baldry et al. 2015), and that the factors involved in both online and offline bullying regularly overlap (Tzani-Pepelasi et al. 2018). Therefore, it may be that moving from the classroom to online peer-led forums may be a way in which practitioners can improve intervention programs to better reduce bullying victimization. This may also be a practical and cost-effective method, to get students actively involved in anti-bullying work while also highlighting key issues.

## Parent and Teacher Involvement

The NoTrap! program was the only program of these four widely disseminated programs that did not formally include teachers or parents in prevention activities. While this intervention focused on peer-led online forums (in conjunction with peer-led offline anti-bullying activities), the OBPP, KiVa, and ViSC programs each included the involvement of both parents and teachers. As previously stated, the involvement of teachers and parents is a key feature of the ecological, whole-school approach to anti-bullying programs. In both the KiVa and OBPP programs, parents received leaflets or letters at home that provided them with information about bullying and about the intervention program. Parents were also invited to information nights held at participating schools.

Similarly, the KiVA, OBPP, and ViSC programs trained teachers to implement the detailed anti-bullying curricula that were specific to the intervention programs. In the KiVA program, teachers were trained to implement either the "confronting approach" or the "no blame approach" when dealing with bullies. Both the KiVA and OBPP programs required teachers to engage with "hot-spot" supervision, which has been found to be an effective intervention component (Farrington and Ttofi 2009). Hot-spot supervision involves identifying locations within the school premises where bullying occurs frequently and increasing teacher presence in these areas. These elements are missing in the NoTrap! and ViSC programs, and this may be one potential reason why the KiVa and OBPP programs are more effective in reducing bullying perpetration.

## Implications for Schools and Researchers

Our meta-analysis provides practitioners with useful insights into the effectiveness of anti-bullying interventions in a number of countries worldwide. Our results show that the effectiveness of school-based interventions for bullying perpetration and victimization varies between locations, and this

should be something practitioners should take into account. Effectiveness also varies across different intervention programs, and particular components of anti-bullying programs have differential effectiveness in reducing bullying perpetration and victimization. The results of the present report lead to many recommendations and implications for teachers, schools, and practitioners who deal with school bullying amongst children and adolescents.

Recommendations for teachers and schools:

If implementing an existing anti-bullying program, practitioners should consider:

- Previous evaluations of the effectiveness of anti-bullying programs in the same country, region, or culturally similar setting, as these factors may influence effectiveness.
- The location and population for which the program was developed and evaluated initially, and whether this impacts previous measures of its effectiveness and its particular approach to tackling bullying.
- A pre-intervention survey to explore the specific manifestations of bullying in their respective schools, to evaluate whether or not one particular program may address these issues better than another.

If implementing a new anti-bullying program, practitioners should consider:

- Existing research reports and meta-analyses that assess specific intervention components and their effectiveness.
- That whole-school anti-bullying campaigns can be effective, but they may not be the best strategy to combat bullying victimization; additional intervention components may also be needed.
- That comprehensive anti-bullying programs should include intervention elements at multiple levels, including the school, class, parent, peer, and individual level. Targeted interventions are needed to help individual children that are particularly vulnerable to bullying victimization.
- A pre-intervention survey to explore the specific manifestations of bullying in their respective schools to evaluate which components are the most effective, and practical, methods of reducing bullying victimization and perpetration.
- That online forums, moderated by trained students, may be an efficient and cost-effective way to tackle bullying victimization.
- That hot-spot supervision and specific strategies for dealing with bullying scenarios when it occurs are effective methods for preventing school-bullying perpetration and victimization.

Practitioners should take a number of factors into consideration when choosing an anti-bullying program. It is important

to initially evaluate the nature, presence, and frequency of bullying in the relevant school. Bullying behaviors will not necessarily manifest in the same way in different countries, regions, communities, or schools, and thus may impact the effectiveness of any intervention program implemented. For example, the cross-national Health Behaviour in School-Aged Children (HBSC) study showed that greater income inequality predicted higher levels of bullying perpetration and victimization (Elgar et al. 2013). Therefore, implementing a program developed in a region with low-income inequality may not have the same level of effectiveness in an area of greater income inequality, as the causal roots of bullying are different.

The NoTrap! program was particularly effective, in comparison with other studies included in our meta-analysis, in reducing bullying victimization. This specific program was developed through several iterations and multiple evaluations in the same schools, but with different participants each year (Menesini et al. 2012; Palladino et al. 2012, 2016). This suggests that schools should evaluate anti-bullying efforts on an ongoing basis and adapt programs according to the specific needs of the students, staff, and parents. Our meta-analysis did include several programs that adopted this approach, but they have not yet been repeatedly evaluated, and so are not included in the present report.

Practitioners should also consult the wealth of research and literature that exists in relation to effective anti-bullying programs. Research reports and meta-analyses of bullying intervention and prevention programs (e.g., Gaffney et al. 2019b) can give practitioners a detailed overview about what works overall. Experts in the field have also produced a number of accessible handbooks and guides in relation to bullying issues (e.g., Patchin and Hinduja 2016: *Bullying today: bullet points and best practices*; Smith 2013: *Understanding School Bullying: Its Nature and Prevention Strategies*). Furthermore, journals such as this one, and interdisciplinary conferences such as the World Anti-Bullying Forum (next meeting in Dublin, June 2019), are key resources for teachers, school personnel, policy makers, and researchers to share and discuss important issues relating to bullying and its prevention.

Our results not only have important implications for teachers and schools. The results of our meta-analysis can have implications for researchers also. For example, 41 studies published between the years of 1983 and 2016 that reported the effectiveness of an anti-bullying program did not report enough statistical information. Frequently, authors included complicated advanced statistics to demonstrate the effectiveness of an anti-bullying program, but this information is not useful to meta-analysts. In addition, using advanced statistical methods may reduce the accessibility of evaluation studies for teachers and practitioners.

Thus, when reporting the evaluation data of an anti-bullying program, it is important to include basic descriptive

statistics, such as the mean, standard deviation, and sample size. Alternatively, the frequency or prevalence of bullying perpetration and/or victimization should be reported as percentages to easily convert to odds ratio effect sizes. The second recommendation we would make is that more replication of scientific evaluations of anti-bullying programs is needed. Replication is essential in designing effective intervention programs. Yet our meta-analysis included 100 evaluations of approximately 65 anti-bullying programs, and only four of these programs had been evaluated three or more times.

We included roughly 65 different programs, as there was quite a bit of overlap in some of the intervention strategies included. For example, Trip et al. (2015) evaluated the ViSC program, yet also included elements of REBE. Therefore, the evaluated intervention is slightly different from the ViSC program evaluated by other researchers. The same can be said for the impact of implementation fidelity and quality on effect sizes. Previous studies in criminology, psychology, and other social sciences have found strong evidence to support the positive correlation between implementation quality and effect sizes for multiple outcomes (e.g., Farrington, Ttofi, and Losel 2016). Also, researchers could consider cost-benefit analysis of anti-bullying programs as a core aspect of evaluations. The few studies included in our meta-analysis that did conduct a cost-benefit analysis found desirable results (e.g., Bonell et al. 2015). Moreover, prominent researchers in the field have highlighted how using a metric to convert effect sizes to monetary values is a convincing way to communicate research findings to policy makers, government departments, and practitioners (Farrington and Koegl 2015).

Finally, the current paper is limited in its ability to inform on the effectiveness of intervention programs to reduce other forms of bullying, such as cyberbullying. Gaffney et al. (2019b) recently reported that interventions are largely effective in reducing cyberbullying perpetration and victimization. However, more research needs to be conducted in this area as cyberbullying is a growing phenomenon amongst children and adolescents worldwide.

## Concluding Remarks

This paper presents key findings and further analyses of a large-scale meta-analysis that explores the effectiveness of school-based anti-bullying programs (i.e., Gaffney et al. 2019b). Overall, while school-bullying prevention programs are effective, there are significant differences between countries, regional areas, and existing intervention programs. Specifically, there is a lack of existing anti-bullying work in areas that report high levels of bullying behaviors and repeated evaluations of existing programs. We make several recommendations for practitioners and researchers and suggest that future research can be conducted to better understand what works in anti-bullying programming.

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