Translating Research to Practice in Bullying Prevention

Catherine P. Bradshaw
University of Virginia

Bullying continues to be a concern in schools and communities across the United States and worldwide, yet there is uncertainty regarding the most effective approaches for preventing it and addressing its impacts on children and youth. This paper synthesizes findings from a series of studies and meta-analyses examining the efficacy of bullying prevention programs. This paper considers some methodological issues encountered when testing the efficacy and effectiveness of bullying prevention and intervention approaches. It also identifies several areas requiring additional research in order to increase the effectiveness of bullying prevention efforts in real-world settings. Drawing upon a public health perspective and findings from the field of prevention science, this paper aims to inform potential future directions for enhancing the adoption, high quality implementation, and dissemination of evidence-based bullying prevention programs. It is concluded that although bullying prevention programs can be effective in reducing bullying and victimization among school-aged youth, there is a great need for more work to increase the acceptability, fidelity, and sustainability of the existing programs in order to improve bullying-related outcomes for youth. The findings from this review are intended to inform both policy and public health practice related to bullying prevention.

Keywords: bullying, prevention, schools, public health, prevention science, efficacy research

Recent epidemiological data illustrate a myriad of detrimental effects of bullying on behavioral, mental health, and academic outcomes, not only for those who are victimized but also for youth who bully others and are witnesses to bullying (e.g., Bradshaw, Waasdorp, Goldweber, & Johnson, 2013; Farrington, Ttofi, & Lösel, 2011; Ttofi, Farrington, & Lösel, 2011; Nansel, Overpeck, Haynie, Ruan, & Scheidt, 2003; Swearer, Espelage, Vaillancourt, & Hymel, 2010; see McDougall & Vaillancourt, 2015, this issue). Given the range of immediate and long-term impacts documented, there has been increased interest in prevention and intervention efforts, particularly within school settings. In fact, the number of bullying prevention programs has increased substantially since the 1990s, and nearly all states have passed laws specifically related to bullying, many of which encourage the use of programs or strategies to prevent bullying (U.S. Department of Education Office of Planning, Evaluation and Policy Development, Policy and Program Studies Service [USDOE], 2011; see Cornell & Limber, 2015, this issue). However, several questions remain regarding the effectiveness of the various school-based prevention approaches. In fact, recent reviews of bullying prevention approaches produced mixed findings (e.g., Farrington & Ttofi, 2009; Ferguson, Miguel, Kilburn, & Sanchez, 2007; Merrell, Gueldner, Ross, & Isava, 2008; Ttofi & Farrington, 2011). As a result, many researchers, policymakers, and practitioners remain unclear as to where the field stands in terms of the evidence-base for bullying prevention.

The current paper draws upon the bullying prevention and related prevention science literature to extract a set of recommendations related to bullying prevention programming. This issue is especially timely, given the growing number of prevention programs available to schools, making it difficult for local decision makers to determine which strategies to adopt (Petrosino, 2003). The current paper also identifies promising bullying prevention approaches and highlights the multitiered public health model as a framework for bullying prevention programing (Doll & Cummings, 2008; Srabstein & Leventhal, 2010; Vivolo, Holt, & Massetti, 2011). This paper summarizes some challenges currently faced in the field of bullying prevention research and proposes areas for further investigation to address the existing gaps in prevention programming. The overarching goal of this paper is to provide guidance for researchers, policymakers, and practitioners on promising bullying prevention approaches based on recent research across multiple fields.

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Correspondence concerning this article should be addressed to Catherine P. Bradshaw, Curry School of Education, University of Virginia, 139A Bavaro Hall, 417 Emmet Street South, PO Box 400260, Charlottesville, VA 22904-4260. E-mail: cpb8g@virginia.edu

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Catherine P. Bradshaw

Are Bullying Prevention Programs Effective?

A growing number of school-based bullying prevention programs has been developed but relatively few programs have been rigorously tested using randomized controlled trial (RCT) designs (Howard, Flora, & Griffin, 1999), which are considered to be the "gold standard" in prevention science research (Flay et al., 2005; Gottfredson et al., in press; Smith, Devane, Begley, & Clarke, 2011). Rather, there is considerable variability in the methodological quality of the evaluations of bullying prevention programs (Farrington, 2003; Petrosino, 2003; Ttofi & Farrington, 2011). With regard to the overall impact of prevention programs, a series of six systematic reviews and meta-analyses have evaluated the efficacy of bullying prevention programs on bullying behavior. Specifically, there have been two systematic reviews, which did not include a meta-analysis (i.e., Smith, Schneider, Smith, & Ananiadou, 2004; Vreeman & Carroll, 2007); two studies that included some level of meta-analytic assessment but were not based on systematic searches of the literature (i.e., Baldry & Farrington, 2007; Ferguson et al., 2007; only the latter carried out a full meta-analysis calculating weighted mean effect sizes for bullying perpetration); and two studies that included a systematic review and a meta-analysis (i.e., Merrell et al., 2008; Ttofi & Farrington, 2011). For a full review and contrast of the methods used by the prior six reviews, see Ttofi, Eisner, and Bradshaw (2014). The conclusions drawn by the authors of these studies have been somewhat mixed, with some researchers concluding that prevention programs have limited impact (e.g., Ferguson et al., 2007; Merrell et al., 2008), and others interpreting the literature more favorably (e.g., Farrington & Ttofi, 2009; Ttofi & Farrington, 2011). Because of its comprehensiveness and rigor, I focus here on the findings by Farrington and Ttofi (2009; see also Ttofi & Farrington, 2011, which is a peer-reviewed version of the original, longer Farrington & Ttofi, 2009, meta-analysis).

Applying the Campbell Systematic Review procedures, Farrington and Ttofi (2009) reviewed 44 rigorous program evaluations and RCTs. The majority of the studies reviewed were conducted outside of the United States or Canada (66%), and over a third of these programs were based in part on the work of Olweus (1993). Taken together, Farrington and Ttofi (2009) found that the programs, on average, were associated with a 20% to 23% decrease in perpetration of bullying, and a 17% to 20% decrease in victimization. Interestingly, the effects observed were generally stronger in the non-RCT designs, suggesting that the more rigorous the study design, the smaller the effect sizes. The effects appeared to be the largest among older children (ages 11–14) relative to those aged 10 years and younger. The programs also were generally more effective in Europe than in the United States or Canada.

In contrast to the more optimistic conclusions based on the rigorous review by Farrington and Ttofi (2009), some of the other systematic reviews of bullying prevention programs have generally been less favorable (e.g., Ferguson et al., 2007; Merrell et al., 2008). For example, Merrell et al. conducted a meta-analysis of 16 school-based bullying intervention studies and concluded that the interventions only produced a significant and "meaningful" impact on one third of the bullying-related outcomes examined. It is likely that the different conclusions drawn across the various systematic reviews is due to the variation in the methodology used to select studies for inclusion in the review (e.g., language or type of publication, sample size, a focus on North America, indicator of bullying; see Ttofi et al., 2014, for a detailed contrast). Taken together, the research generally suggests that bullying prevention programs can produce meaningful impacts on bullying-related outcomes; however, as will be discussed further, issues of implementation quality and poor compliance with the prevention model likely compromise the effects observed on bullying behavioral outcomes in real-world applications (Domitrovich et al., 2008).

Features of Promising Programs

The review by Farrington and Ttofi (2009) was also instructive in that it identified a number of factors associated with the effectiveness of bullying prevention programs. For example, they found that some of the core elements of effective programs included management approaches, such as high levels of playground supervision, use of consistent disciplinary methods, and classroom management strategies. Classroom and schoolwide rules related to bullying and training of teachers were also identified as common elements of effective programs. Another effective element included the use of parent training activities, meetings, and information, although these activities tended to be relatively "light touch" (e.g., disseminating informational ma-

terial about bullying). Moreover, aspects of the training, including the amount of time and the intensity of the training, were also positively associated with the efficacy of the programs. Consistent with previous studies (Domitrovich et al., 2008; Durlak, Weissberg, Dymnicki, Taylor, & Schellinger, 2011; Olweus, 2005), program dosage and fidelity were functionally associated with program impacts. Although this study shed some light on the most efficacious elements, it is important to note that additional research is needed to actually test and isolate the critical components of effective bullying prevention programs.

Another more recent meta-analysis examined impacts of 12 school-based bullying prevention approaches which focused on bystanders' responses to bullying; this study suggested that these models were generally effective (effect size [ES] = .20) at reducing bullying, with the effects being strongest in high schools (ES = .43) compared to younger samples (i.e., K–Grade 8; ES = .14). It is possible that these programs may operate through increased efficacy for the victim, which may explain some of the age-moderated effects. Specifically, programs targeting bystander behavior may require greater social–cognitive processing skills and social skills for navigating complex social dynamics and relationships, thereby rendering them more effective among older youth. Next, we consider some specific prevention programs, as they illustrate the potential impact of strategies that may reduce bullying and related risk factors, such as aggression and fighting. Their effects on aggression may also generalize to bullying-related outcomes.

Examples of Promising Bullying Prevention Programs

One of the most extensively studied bullying prevention program is the Olweus Bullying Prevention Program (Olweus, 2005), which is a multicomponent, schoolwide prevention model. Much of the extant research on this model was conducted in Norway (Olweus, Limber, & Mihalic, 1999); however, some studies of this model have also been conducted within the United States (e.g., Seattle, South Carolina; Bauer, Lozano, & Rivara, 2007; Limber, 2004), but with less favorable outcomes. This program addresses bullying by implementing components at multiple levels, including schoolwide components, classroom activities and meetings, targeted interventions for individuals identified as bullies or victims, and activities aimed to increase involvement by parents, mental health workers, and so forth. Some studies of the Olweus Bullying Prevention Program have reported significant reductions in students' reports of bullying and antisocial behaviors (e.g., fighting, truancy) and improvements in school climate (Olweus et al., 1999). However, some smaller scale studies of this model produced mixed results (e.g., Hanewinkel, 2004). Although other derivations of Olweus's model also have demonstrated promise at reducing bullying in North America (e.g., Pepler, Craig, O'Connell, Atlas, & Charach, 2004), these programs were generally more effective in Europe. In fact, Farrington and Ttofi (2009) found that programs that were conceptually based on the Olweus Bullying Prevention Program were the most effective (adjusted odds ratios range [*AOR*] = 1.69 to 2.14).

Since the publication of Ttofi and Farrington (2011), other multicomponent, schoolwide programs have produced some positive effects. For example, the Finish KiVa Program provides classroom materials and discussions between students and teachers, peer support for student victims, disciplinary strategies, and information for parents to combat bullying. Computer games are also used to help students practice bullying prevention skills. A recent RCT of KiVa demonstrated significant impacts on bullying and victimization among students in Grades 4–6 (ESs = .06 to .33; Kärnä, Voeten, Little, Poskiparta, Alanen et al., 2011, Kärnä, Voeten, Little, Poskiparta, Kaljonen et al., 2011), as well as for youth in Grades 1–9 (*AOR*s = .46 to .79; Garandeau, Poskiparta, & Salmivalli, 2014). KiVa has only been tested in Europe, although efforts to adapt the model for other countries, including the United States are currently underway.

Programs aiming to prevent violence and disruptive behaviors and promote a positive school climate can also impact bullying and peer victimization, even if they do not specifically target bullying behaviors. For example, recent findings from a large, longitudinal RCT of the schoolwide Positive Behavioral Interventions and Supports (PBIS; Sugai & Horner, 2006; Walker et al., 1996) model produced significant impacts on teacher reports of bullying and rejection (ESs = .11 to .14; Waasdorp, Bradshaw, & Leaf, 2012), as well as school climate (ESs = .16 to .29; Bradshaw, Koth, Thornton, & Leaf, 2009; Horner et al., 2009) and discipline problems (ESs = .11 to .27; Bradshaw, Mitchell, & Leaf, 2010; Bradshaw, Waasdorp, & Leaf, 2012, in press). Social–emotional learning programs, such as the Promoting Alternative Thinking Strategies (ESs = .15 to .42; Greenberg, Kusche, Cook, & Quamma, 1995) and Second Step (*AOR* = .70; Espelage, Low, Polanin, & Brown, 2013), and classroom management programs, such as the Good Behavior Game (ESs = .22 to 1.7; Bradshaw, Zmuda, Kellam, & Ialongo, 2009) have demonstrated impacts on a range of aggressive–disruptive behavior problems, but have rarely specifically measured bullying. While the vast majority of bullying and violence prevention programs rigorously evaluated have used a universal classroom- or schoolwide model, there is some evidence that more intensive programs can also be effective at stemming aggressive behavior. For example, the Coping Power Program (ESs = .29 to .38; Lochman, Wells, Qu, & Chen, 2013), targets aggressive youth and their parents and has demonstrated significant impacts on aggressive–disruptive behavior and social interactions, which would likely reduce rates of bullying.

In summary, rigorous research suggests significant effects of bullying prevention programs on bullying outcomes specifically. Similarly, a number of more general youth violence prevention programs and climate promoting programs also impact a range of aggression out-

comes, including bullying. However, the effect sizes are generally in the small to moderate range (Cohen, 1992), thereby suggesting room for improvement in the efficacy of these approaches. Moreover, many more universal programs have been tested as compared to the number of programs targeting youth who are already involved in bullying.

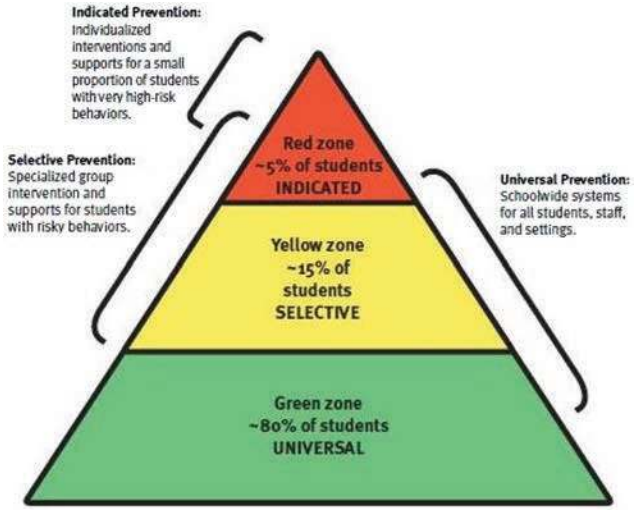
Recommended Bullying Prevention Approaches

The rapid growth in the research on school bullying has greatly informed our understanding of this public health concern affecting a large proportion of school-aged youth (Vivolo et al., 2011). However, considerable work is still needed for its successful translation into effective practice and policy. Drawing upon the findings of the Ttofi and Farrington (2011) meta-analysis (see also Farrington & Ttofi, 2009) and other intervention studies from the field of prevention science (for a review, see O'Connell, Boat, & Warner, 2009; Spoth et al., 2013), I identify a number of recommended practices and factors to consider when implementing bullying prevention efforts in schools. Consideration of these factors may inform bullying prevention programming efforts and future research to optimize the impacts of programs when implemented in real-world settings.

Public Health Approach to Bullying Prevention

It is recommended that schools adopt the three-tiered public health model when aiming to prevent bullying and other emotional and behavioral problems (Mrazek & Haggerty, 1994; O'Connell et al., 2009; Weisz, Sandler, Durlak, & Anton, 2005). This type of multitiered system of support model is increasingly used to address issues in education, behavior, and public health. For example, in special education, this type of multitiered model is often referred to as a response-to-intervention framework, whereby students not responding to a particular Tier 1 level intervention receive increasingly more intensive interventions until the symptoms are attenuated, thereby providing a full continuum of support services (Hawken, Vincent, & Schumann, 2008). At their foundation, multitiered models include universal programs or activities that affect all youth within a defined community or school setting. In fact, most of the bullying prevention programs that have been rigorously evaluated have employed a universal approach to prevention (Ttofi & Farrington, 2011), whereby a set of activities (e.g., social–emotional lessons delivered by teachers, teaching staff and students strategies for responding to bullying, or classroom meetings held between students and teachers) are intended to benefit all youth within a particular setting (e.g., school). Programs that focus on improving school climate, shifting the norms about bullying, and targeting bystander behavior often take the form of universal prevention (e.g., Bradshaw, 2014; Olweus et al., 2007). These programs typically are expected to meet the needs of approximately 80% of students within a school (see Figure 1).

Figure 1
Three-Tiered Framework of Positive Behavioral Interventions and Supports (PBIS)



Note. This multitiered system of support framework guides the development and implementation of a continuum of behavioral and academic programs and services, at the universal (Tier 1, schoolwide "green-zone"), selective (Tier 2, targeted "yellow-zone"), and indicated (Tier 3, intensive "red-zone") levels. Within schools, the universal elements of the model, typically referred to as schoolwide PBIS, are the most commonly implemented aspect of this three-tiered public health model (see Sugai & Horner, 2006; O'Connell et al., 2009; www.pbis.org). See the online article for the color version of this figure.

A selective intervention may include more intensive social skills training and emotion-regulation approaches for small groups of youth at risk for becoming involved in bullying. These types of models are often intended to meet the needs of students not responding adequately to the universal system of support. Approximately 10–15% of the student population may require this level of support. Finally, an indicated preventive intervention may include more intensive supports and programs for those identified as a bully or victim, and are showing early signs of problem behaviors. Indicated preventive interventions typically address mental and behavioral health concerns and often include the youth's family. These supports are usually tailored to meet the needs of the students demonstrating negative effects of bullying (Espelage & Swearer, 2008); they may be used with approximately 5% of the student population.

Consistent with the public health approach, these three levels of support could be integrated into a coherent, tiered framework, whereby selective and indicated approaches are employed to meet the needs of youth not responding adequately to the universal preventive intervention (O'Connell et al., 2009; Sugai & Horner, 2006; Walker et al., 1996). Although many researchers encourage the use of a multitiered approach to address bullying (Espelage &

Swearer, 2008; Waasdorp et al., 2012), relatively few large-scale studies have systematically examined the effects of multitiered programs on bullying. Therefore, much of what is known about bullying prevention has centered on the impact of universal programs, with limited consideration of selective and indicated prevention models.

Multicomponent Programs

Given the complex nature of bullying, it is recommended that schools implement multiple integrated components, which target various aspects of bullying behavior and the climate that supports bullying. This is in contrast to the typical single-session school assembly, which may increase bullying awareness, but in isolation is unlikely to actually reduce bullying behaviors (Bradshaw, 2013). Rather, prevention and early intervention efforts should be implemented at multiple levels of the child's ecology (Espelage & Swearer, 2008). For example, at the classroom level, research highlights the importance of providing class time to discuss bullying and using lessons to foster social–emotional skills, effective communication, and strategies for responding to bullying (Olweus, 1993; Olweus et al., 2007). Effective classroom management is critical, as well-managed classrooms are rated as having a more favorable climate, being safer and more supportive, and having lower rates of bullying and aggressive behavior (Waasdorp et al., 2012). A recent meta-analysis by Durlak et al. (2011) also highlights the significant impact of social–emotional learning programs on academic and behavioral outcomes (ESs = .22 to .27). Such programs provide children with direct instruction on replacement behaviors and skills for avoiding and effectively responding to bullying and other conflictual situations. Indicated interventions and counseling should also be delivered separately for children who bully and those who are bullied (for an example, see Swearer, Wang, Collins, Strawhun, & Fluke, 2014), but few of these programs have been rigorously evaluated.

Schoolwide Prevention Activities

Consistent with the social–ecological framework (Espelage & Swearer, 2008), schools should address their social environment and the broader culture and climate of bullying. Given the links between bullying and school climate (Swearer et al., 2010), activities that improve the various facets of school climate (e.g., safety, engagement, environment) will likely translate into reductions in bullying, and may increase high quality implementation of research-based programs (Bradshaw, Koth et al., 2009; Domitrovich et al., 2008). However, efforts aimed at improving school climate require sustained and intensive commitment from all students, staff, families, and the community. Related research has documented the importance of schoolwide prevention efforts that provide consistent positive behavior supports, establish a common set of expectations for positive behavior across all school contexts, and involve all school staff in prevention activities (Bradshaw, 2013). Effective supervision—especially in bullying "hot spots"—and clear antibullying policies are essential elements of an effective schoolwide prevention model (Olweus, 1993; Olweus et al., 2007). The playground appears to be a particularly important context for increasing supervision in order to prevent bullying (Farrington & Ttofi, 2009; Frey, Hirschstein, Edstrom, & Snell, 2009). Collecting data on bullying via anonymous student surveys can inform the supervision and intervention process. These data can identify potential areas of training for teachers and other school staff, which is an essential element of successful bullying prevention (Farrington & Ttofi, 2009). Ongoing data collection is also critical for monitoring progress toward the intended goal of reducing bullying and victimization.

Involving Families and Communities

Consistent with the ecological model, research suggests that programs which include some type of family component are most effective at preventing bullying. Families play a critical role by providing emotional support to promote disclosure of bullying incidents and by fostering coping skills in their children (Bradshaw, 2014). Parents appear to benefit from training in how to talk with their children about bullying, how to communicate their concerns about bullying to the school, and ways to get actively involved in school-based prevention efforts (Waasdorp, Bradshaw, & Duong, 2011). Yet, recent research suggests that simply having dinner together on a regular basis (i.e., 4 or more times a week) can serve as a buffer for the negative effects associated with bullying (Elgar et al., 2014). Although an understudied area, there are also bullying prevention activities that can occur at the community level, such as awareness or social marketing campaigns that encourage all youth and adults (e.g., doctors, police officers) to intervene when they see bullying and become actively involved in school- and community-based prevention activities (Holt, Raczynskib, Frey, Hymel, & Limber, 2013). Such programs and strategies aim to shift norms related to bullying and aggressive responses to threat, but there has been little to no research on their effectiveness.

Sustained and Integrated Prevention Efforts

It may be tempting to adopt a different program to combat each new problem that emerges. In fact, some principals may perceive that a greater number of programs is better for students, but that may not always be the case. In fact, research by Gottfredson and Gottfredson (2001) indicates that on average, schools are implementing approximately 14 different programs to prevent violence and promote a safe learning environment. This can often be overwhelming for school staff to execute well, thereby leading to poor implementation fidelity. Moreover, schools should develop a consistent and long-term prevention plan that addresses multiple student concerns through a set of integrated programs and services. Such efforts would address multiple competencies and skills in order to prevent bullying, and help students cope and respond appropriately when bullying does occur. Given that bullying typically co-occurs with other forms of aggressive and disruptive behavior (Bradshaw et al., 2013), programs that have a broader focus on preventing aggressive and disruptive behavior by addressing social–emotional skills, interpersonal conflict, and

behavioral inhibition also likely curb bullying. Schools are, therefore, encouraged to implement these more comprehensive programs to address a range of problem behaviors, not just bullying (see Wilson & Lipsey, 2007 for examples of evidence-based violence prevention programs). Integrating the prevention efforts into a seamless system of support, which is coordinated, monitored for high fidelity implementation, and includes all staff across all school contexts, will reduce burden on schools (Walker et al., 1996). The three-tiered public health framework provides a logic for this type of integration to prevent a range of behavioral and academic problems.

Considerable preimplementation planning is needed to garner staff support and buy-in for the program and to integrate the new program with existing supports and services (Limber, 2004); for example, work by Aarons (2004) focused on strategies for assessing and improving implementers' attitudes toward adoption of evidence-based practice (also see Aarons & Sommerfeld, 2012). There also needs to be an agreed upon commitment to the use of a continuum of positive, and proactive supports, as contrasted with the traditional reactive and typically punitive approach to discipline (e.g., zero tolerance; American Psychological Association Zero Tolerance Task Force, 2008; Sugai & Horner, 2006). Maintaining buy-in from all students and staff is critical to the success of any prevention effort, particularly for a problem as pervasive and complex as bullying.

Focus on Program Fidelity

Once adopted the collection of fidelity and outcome data is critical to ensuring high quality implementation, track progress toward outcomes, and to promote sustainability. Unfortunately, most programs lack valid, reliable, and efficient tools for tracking fidelity. Moreover, regular assessments of fidelity can be costly and perceived as burdensome for some schools. However, research highlights a number of contextual factors, like principal leadership, staff attitudes toward the intervention, and the availability of resources, that impact implementation quality (Domitrovich et al., 2008). Many schools find it helpful to form a team to lead the implementation, help with the integration of programs, and monitor fidelity and outcomes (Sugai & Horner, 2006; Walker et al., 1996). An implementation 'coach' can also be helpful in ensuring high quality implementation of bullying prevention programs. The development of an implementation infrastructure, at the school, district, and state level, is essential to scaling-up research-based programs (Bradshaw, Pas et al., 2012; Sugai & Horner, 2006).

Future Directions in Bullying Prevention Research and Programming

It is important to launch a national research agenda related to the prevention of bullying (Hanish et al., 2013). The sections below outline some areas for future research to improve the effectiveness of bullying prevention programs.

Measurement Challenges

One of the challenges in evaluating bullying prevention programs is assessing the outcome of bullying. Only recently has there been consensus regarding the definition of bullying to include intentional aggressive behaviors, which are typically repeated and usually occur in the context of a power imbalance (Gladden, Vivolo-Kantor, Hamburger, & Lumpkin, 2013; Olweus, 1993). However, most measures of bullying fall short of adequately assessing all three core features of the definition. For example, relatively few studies have fully considered the power differential when assessing "bullying," yet research suggests this is a critical element of the construct in differentiating it from other forms of peer victimization or aggression (e.g., fighting; Ybarra, Espelage, & Mitchell, 2014). Similarly, it is challenging to assess the repeated nature of the bullying behavior, including the timeframe in which the bullying occurred and its frequency, which may in turn impact the conclusions regarding a program's efficacy (Mehari, Farrell, & Le, 2014).

Regarding measures of bullying typically used in prevention studies, much of the research on the impact of bullying prevention approaches has focused rather narrowly on students' self-reports of bullying and victimization (Ryan & Smith, 2009). However, researchers generally agree that self-reports are among the most valid indicators of bullying (Furlong, Sharkey, Felix, Tanigawa, & Greif-Green, 2010). Other related self-report outcomes such as attitudes toward bullying, avoidance of bullying situations, or bystanders' responses to bullying have also been examined in select studies; there should be increased use of these types of secondary indicators in RCTs in order to better understand the potential mechanisms associated with the change process (e.g., Frey et al., 2009; Polanin, Espelage, & Pigott, 2012). Some of the more comprehensive studies have also examined impacts using observational data, peer reports, or teacher ratings (Farrington & Ttofi, 2009). Yet, relatively few studies report significant impacts of bullying across multiple sources; in fact, most program effects appear to be localized to a particular indicator of bullying (e.g., self-report, but not peer-report; Ttofi & Farrington, 2011).

It is well established that the extent of agreement regarding the perceived problem and prevalence of school bullying varies across informants (Bradshaw, Sawyer, & O'Brennan, 2007; Vaillancourt et al., 2008) and for various interrelated concepts (e.g., perceptions of safety and witnessing bullying; e.g., Waasdorp, Pas, O'Brennan, & Bradshaw, 2011). This is not a trivial point as it has direct implications for conclusions regarding the efficacy of bullying prevention strategies. For example, research on Steps to Respect (Frey et al., 2009), a multicomponent bullying prevention program (which includes a schoolwide prevention effort, parent activities, classroom-focused lessons, and targeted activities for children involved in bullying facilitated by counselors) has demonstrated significant impacts on children's bullying-related attitudes (ESs = .12 to .19) and teachers' observations of bullying (AOR = .61),

but not student self-reports of bullying (Brown, Low, Smith, & Haggerty, 2011; Frey et al., 2009). This finding illustrates some of the challenges associated with formulating conclusions regarding program efficacy when the results vary according to reporter; this also highlights the importance of utilizing multi-informant assessments of program impacts, such as through surveys of youth, peers, and staff (Furlong et al., 2010). In summary, researchers should obtain data on bullying based on multiple informants and explore the concordance between effect sizes and bullying as indicated by self-reports, observations, and official records (see Hymel & Swearer, 2015, this issue).

Rigor in Study Design

Given the large number of programs currently in use (Howard et al., 1999), there is a need for more longitudinal RCTs of promising programs and programs in wide use (particularly in the United States) in order to strengthen the current evidence-base for preventing bullying. Not surprisingly, larger effect sizes are also typically observed in efficacy trials, where there is a higher level of researcher-imposed support and structure during the implementation process, than in effectiveness studies, where the training and implementation occurs as would be typically expected in real-world settings (Flay et al., 2005; Gottfredson et al., in press; Spoth et al., 2013). Moreover, there are very few rigorous scale-up (i.e., effectiveness) studies of bullying prevention programs (see, e.g., Kärnä, Voeten, Little, Poskiparta, Alanen et al., 2011; Waasdorp et al., 2012). Regardless of prior research demonstrating an evidence base for a particular program, there is no guarantee that bullying intervention/prevention efforts will be effective when implemented in a different setting or in a different cultural context (e.g., Hanewinkel, 2004). As a result, it is important for practitioners to evaluate the impact of whatever program they use, rather than trust that the findings from a previous trial will necessarily generalize to their local context.

Notably, the majority of bullying trials have relatively short follow-up periods (e.g., single school year), which may not provide sufficient time for school contextual changes, such as improvements in the school climate or increases in staff supervision and intervention; yet, these factors are often theorized to mediate the effectives of many bullying prevention programs. In fact, the change process is likely slow when factors such as norms about retaliation and bystander intervention are the target of the intervention (see Polanin et al., 2012). Future research should also identify factors related to sustainability of treatment effects, both within the context of scale-ups and longer-term follow-ups (Spoth et al., 2013). It is also important to examine the potential transfer of program effects to other outcomes, such as academics, substance use, and gang activity, given the co-occurrence of these concerns and overlapping risk factors (Bradshaw et al., 2013).

There should also be greater rigor and transparency in bullying prevention studies (see Gottfredson et al., in press). For example, when conducting RCTs, the methodological quality criteria of the Consolidated Standards of Reporting Trials (CONSORT) statement should be followed (Altman et al., 2001), as is common in public health and medicine. There is increasing emphasis on transparency in the research process, as illustrated by recent efforts to create an equivalent CONSORT statement for the social sciences (Perry & Johnson, 2008) and the creation of the Campbell Collaboration's methodological criteria for secondary analyses (Farrington, Weisburd, & Gill, 2011). Another concern pertains to conflict of interest analyses, as is common in medicine and public health. In fact, recent studies have shown that the reported effect sizes of prevention and intervention trials are larger when program developers are involved in or leading the study than when trials are conducted by independent researchers; these differences may be due to different types of biases, including biases resulting from conflict of interest issues (Eisner, 2009; Eisner & Humphreys, 2011; Farrington, 2006).

Cost–Benefit Analysis

Another highly neglected topic is that of cost–benefit analyses (Cohen & Piquero, 2009; Farrington & Ttofi, 2009), as data on return on investment can be a considerable "selling point" to policymakers and potential funding agencies. Interesting, only one (i.e., Bagley & Pritchard, 1998) of the 53 program evaluations programs identified by Ttofi and Farrington (2011) included a cost–benefit analysis. In fact, the cost and related resource needs may serve as barriers to implementing multicomponent prevention models, like the Olweus Bullying Prevention Program, which require intensive training and can be expensive to implement with high fidelity.

Identifying Critical Components of the Program and Implementation Support Model

The available research does suggest that multicomponent prevention approaches, which address different ecological layers and target multiple risk factors are among the most effective, although we know little about which program components are most impactful. As outlined above, some of the meta-analyses and systematic reviews have provided insight into potentially efficacious components (Farrington & Ttofi, 2009). However, more work is needed to discern which program components are effective, and which may be ineffective or potentially iatrogenic. For example, Farrington and Ttofi (2009) found that many programs that used peer-facilitated approaches (e.g., peer-mediation, peer mentoring) actually resulted in increases in victimization. Given the importance of youth involvement in prevention programming and the need to engage youth in addressing the challenging social phenomena of bullying, it is critical that future studies identify which roles youth should play in the programming and characteristics of youth (e.g., personality, status, interpersonal skills) who are most effective at reducing bullying. For example, given the growing body of social network research on peer bullying, it may be advantageous to consider a youth's social status within a peer group when identifying potential youth to facilitate bullying prevention activities (Paluck, 2011). Also of interest are the role of the family and community in prevention pro-

gramming. Although bullying prevention programs including some type of a family component have generally been found to be more effective (Farrington & Ttofi, 2009), few school-based prevention programs have a model of parental involvement which is feasible, acceptable, and sustainable (Gross, Breitenstein, Eisbach, Hoppe, & Harrison, 2014).

Aspects of the student and teacher training, including the amount of time and the intensity of the training, have also been associated with the program effects; this illustrates the importance of implementation supports, such as coaching, to ensure high fidelity (Spoth et al., 2013). School contextual factors can also influence the fidelity of program implementation as well as the outcomes achieved (Bradshaw, Koth, et al., 2009; Domitrovich et al., 2008). Finally, we have much to learn about models for disseminating evidence-based programs. For example, consumer marketing research shows that teachers are less likely to utilize research findings and more likely to rely friends' or other teachers' recommendations to identify programs they might implement (Cunningham et al., 2009). Determining the impact of the relatively recently enacted state-level bullying policies on the adoption of evidence-based bullying prevention programs and rates of bullying is also critical (USDOE, 2011).

What Works for Whom?

Further research is needed to determine the effectiveness of the extant programs with different populations or subgroups, such as ethnic minority youth. There may be some cultural or community contexts in which students or families who report bullying are shunned by their peers or other community members, thereby potentially compromising the effectiveness of approaches which emphasize reporting bullying to adults (e.g., Olweus Bullying Prevention Programs). Program impacts also likely vary based on other student factors, such as the students' age or gender, the type of involvement in bullying experienced (e.g., bully, victim, bully/victim), as well as form of bullying, such as cyberbullying or bullying related to perceived sexual orientation or disability (Cook et al., 2010; Swearer et al., 2010). Although the rates of bullying tend to peak during middle school (Swearer et al., 2010), very few bullying prevention programs have been developed for and tested with high schoolers (Farrington & Ttofi, 2009). Yet, as noted above, both Farrington and Ttofi (2009) and Polanin et al. (2012) reported larger effects among adolescents relative to younger children. There is also growing concern about the impacts of bullying and prevention programming on youth who witness bullying (Polanin et al., 2012; Swearer et al., 2010), as few studies have examined impacts on bystanders. A related line of research aims to identify characteristics of the child, peer relationships, school environmental, and the bullying situation that may serve as risk or protective factors for involvement in bullying (Cook, Williams, Guerra, Kim, & Sadek, 2010). This area of research is critical for identifying potential targets for prevention programing.

Consideration of the Culture and Context of the Programming

The vast majority of programs seek to prevent bullying within schools, yet there is a great need for identification of effective prevention models to be implemented in other contexts, such as communities, afterschool programs, camps, colleges and universities, and medical settings (e.g., Committee on Injury, Violence, and Poison Prevention, 2009). Other issues, such as the culture of the school, community (e.g., urbanicity, rurality), or country where the research is conducted (Hazler & Carney, 2010; Swearer et al., 2010), should be considered as related to the context of the prevention research. There is also some evidence that the effectiveness of some prevention models may vary as a function of contextual factors. For example, as noted above, Farrington and Ttofi (2009), the programs they reviewed were generally more effective in Europe than in the United States or Canada. Although it is unclear why this may be the case, it is possible that schools in North America foster a different cultural context related to peer behaviors and norms about aggression and retaliation. Moreover, the increasing emphasis on academics and high stakes testing is often prioritized over activities to promote children's social–emotional development.

Conclusion

The recent tragic acts of violence in American schools remind us of the importance of mental health promotion within this context. Although the issue of bullying is not a new one, and not the only mental health concern affecting school-aged youth, it is one that demands considerable attention as we work to translate the epidemiologic and prevention research that has amassed over the past 2 decades. While schools continue to be a critical setting for preventing behavioral and mental health problems (Bradshaw, Pas et al., 2012; Weist, Lever, Bradshaw, & Owens, 2014), we are reminded of the challenges associated with conducting sound prevention research and translating research to practice. Several promising developments have been made with regard to bullying prevention; however, there is considerable room for improvement both in terms of the quality of the research, as well as the impact of the extant programs on bullying and related behavioral and mental health concerns. The field is ripe for additional rigorous research on bullying prevention programs consistent with high standards for evidence (Gottfredson et al., in press; Petrosino, 2003), particularly within the context of randomized scale-up effectiveness studies (e.g., Waasdorp et al., 2012; Kärnä, Voeten, Little, Poskiparta, Alanen et al., 2011). Although the focus of this paper has been on programs specifically targeting bullying behavior, it is important to note that programs aiming to prevent violence and disruptive behaviors and promote a positive school climate can also impact bullying (e.g., Bradshaw, 2013; Waasdorp et al., 2012). Consistent with the public health framework, a holistic and multidisciplinary approach is needed to advance the field of bullying prevention and to help translate research findings to practice and policy.

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