

Predictors of Bullying and Victimization in Childhood and Adolescence: A Meta-analytic Investigation

Clayton R. Cook
University of Washington

Kirk R. Williams, Nancy G. Guerra,
Tia E. Kim, and Shelly Sadek
University of California, Riverside

Research on the predictors of 3 bully status groups (bullies, victims, and bully victims) for school-age children and adolescents was synthesized using meta-analytic procedures. The primary purpose was to determine the relative strength of individual and contextual predictors to identify targets for prevention and intervention. Age and how bullying was measured were also considered as moderators. From an original pool of 1,622 studies conducted since 1970 (when research on bullying increased significantly), 153 studies were identified that met criteria for inclusion. A number of common and unique predictors were found for the bully status groups. The implications of the meta-analytic findings for future research on bullying and victimization prevention and intervention are discussed.

Keywords: meta-analysis, bullying, victimization, bully victims, predictors

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Prevention of childhood aggression has long been considered an important social and clinical problem (Tolan, Guerra, & Kendall, 1995). In recent years, emphasis has shifted somewhat, particularly for school-based programs, to understanding and preventing a specific form of aggression labeled *bullying* (Cornell, 2006). This shift becomes evident when one examines the publication trends from 1980 to 2009. Whereas there were fewer than 190 peer-reviewed articles published on bullying during the 20-year span from 1980 to 2000, there have been well over 600 articles published on this topic from 2000 to the present time.

Bullying has been conceptualized as a distinct type of aggression characterized by a repeated and systematic abuse of power (Olweus, 1999; P. K. Smith & Sharp, 1994). In addition to

acts of deliberate physical aggression, bullying also includes verbal aggression (e.g., name calling and threats), relational aggression (e.g., social isolation and rumor spreading), and cyber-aggression (e.g., text messaging and e-mailing hurtful messages or images), a new venue for inflicting harm in an increasingly electronic youth culture (Williams & Guerra, 2007). Because bullying involves a bully and a victim, early research tended to dichotomize children into one of these two mutually exclusive groups. However, there also appears to be a third group of bully victims who *both* bully and are bullied by others (Haynie et al., 2001; Veenstra et al., 2005), although children typically fall along a bully–victim continuum (Bosworth, Espelage, & Simon, 1999; Olweus, 1994; Swearer, Song, Cary, Eagle, & Mickelson, 2001).

Research indicates that between 10% and 30% of children and youth are involved in bullying, although prevalence rates vary significantly as a function of how bullying is measured (Nansel et al., 2001; Solberg & Olweus, 2003). Bullying also increases during the middle school period as children enter adolescence (Hazler, 1996; Rios-Ellis, Bellamy, & Shoji, 2000). Moreover, bullying is not an isolated problem unique to specific cultures but is prevalent worldwide, as evidenced by a large international research base (Carney & Merrell, 2001; Cook, Williams, Guerra, & Kim, 2009; Eslea et al., 2004; Kanetsuna & Smith, 2002).

Clayton R. Cook, College of Education, University of Washington; Kirk R. Williams, Department of Sociology and Presley Center for Crime and Justice Studies, University of California, Riverside; Nancy G. Guerra, Tia E. Kim, and Shelly Sadek, Department of Psychology, University of California, Riverside.

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Correspondence concerning this article should be addressed to Clayton R. Cook, College of Education, University of Washington, Box 353600, Seattle, WA 98195-3600. E-mail: cook2142@u.washington.edu

Concerns about prevalence are magnified by concerns about the consequences of bullying for children's adjustment. Adverse behavioral and psychological outcomes have been found across the three bully status groups. For instance, studies have shown that bullies are significantly more likely to be convicted of a criminal offense when they are adults than their noninvolved peers (Olweus, 1997; Sourander et al., 2006). Bullies appear to be at heightened risk for experiencing psychiatric problems (Kumpulainen et al., 1998), difficulties in romantic relationships (Craig & Pepler, 2003; Pepler et al., 2006), and substance abuse problems (Hourbe, Targuinio, Thuillier, & Hergott, 2006).

Victims of bullying often suffer long-term psychological problems, including loneliness, diminishing self-esteem, psychosomatic complaints, and depression (Hawker & Boulton, 2000; Kaltiala-Heino, Rimpela, Rantanen, & Rimpela, 2000; Parker & Asher, 1987; Salmon, James, & Smith, 1998). They also have heightened risk of suicidal ideations and even suicide attempts in extreme cases (Kaltiala-Heino, Rimpela, Marttunen, Rimpela, & Rantanen, 1999; Rigby & Slee, 1999). Fear of being bullied can result in victims dropping out of school, setting in motion a downward spiral of adversity (Sharp, 1995). Schafer et al. (2004) found that victims who are bullied during school often continue to be bullied in the workplace. The risk of adversity has been found to be greater for bully victims than either bullies or victims, including carrying weapons, incarceration, and continued hostility and violence toward others (DeMaray & Malecki, 2003; Ireland & Archer, 2004; Juvonen, Graham, & Schuster, 2003; Nansel et al., 2001).

The success of intervention programs to prevent or mitigate bullying in childhood and adolescence has been limited (e.g., Merrell, Gueldner, Ross, & Isava, 2008; Olweus, 1999). Even when programs have an impact, the improvement appears to be in changing children's knowledge and perceptions, not bullying behavior. J. D. Smith, Schneider, Smith, and Ananiadou (2004) concluded, "the majority of programs evaluated to date have yielded nonsignificant outcomes on measures of self-reported victimization and bullying" (p. 547). Given the limited efficacy of current bullying intervention programs, closer attention to the multiple predictors of bullying, both individual and contextual, is critical. Such predictors can provide a basis for designing interventions to

prevent or reduce bullying among children and adolescents (Tolan et al., 1995; Goldstein, Whitlock & DePue, 2004), and is consistent with the risk and protective logic embedded within the widely endorsed public health model of prevention (Greenberg, Domitrovich, & Bumbarger, 2001; Walker et al., 1996).

The Present Study

The purpose of this study was to conduct a meta-analysis to examine factors that predict bullying and victimization in childhood and adolescence across multiple investigations. A sufficient number of studies have been conducted to support systematic review of predictors. Thirteen predictors were identified in the extant literature. Eight represented characteristics of individuals, and five represented contextual factors (see Table 1 for a detailed description of these predictors along with specific study characteristics). Although not exhaustive, these 13 predictors provided sufficient coverage of constructs examined in previous bullying research most relevant for the development of prevention and intervention programs.

The emphasis of previous research on bullying has been on individual-level predictors. However, by definition, bullying occurs in a social context where individuals are engaged in ongoing relationships. Without a social context, *repeated* aggressive acts toward others are not possible (Olweus, 1991; Swearer & Doll, 2001). Hence, a related focus of the present meta-analysis was to evaluate the relative strength of effect sizes across individual and contextual predictors.

Several individual-level predictors have received attention in the literature, which include gender, externalizing behaviors, internalizing behaviors, self-related cognitions, other-related cognitions, social problem solving, and academic performance (Hawker & Boulton, 2000; Kaltiala-Heino et al., 2000; Rigby & Slee, 1999). Also, researchers adopting a social-ecological lens in their work have examined a range of contextual factors that relate to bullying and victimization (Espelage & Swearer, 2003). These have included family and home environment, school climate, community factors, peer status, and peer influence. In total, we were interested in examining the extent to which 13 individual- and contextual-level predictors similarly or differentially predict the bully status groups (i.e., bully, victim, and bully victim).

Table 1
Rationale/Definition and Coding Procedures for Study Variables

Variable	Rationale/definition and coding procedures
Study characteristics	
Publication year	Publication year was recorded to examine the temporal distribution of included studies ($\kappa = 1.00$).
Gender composition	Gender composition of each sample was categorized depending on whether it was all male, all female, or mixed. The number of studies that focused on all-male or all-female samples was extremely low and could not be used in the analysis of effect sizes ($\kappa = 1.00$).
Age of sample	Age of sample was coded according to the following categories: 3–4 years old (early childhood), 5–11 years old (middle childhood), 12–14 years old (early adolescence), 15–18 years old (adolescence), and mixed ($\kappa = 0.96$). The early and middle childhood group was combined to represent “childhood,” and the early adolescence and adolescence group was combined to represent “adolescence” ($\kappa = 1.00$).
Measurement approach	Measurement approach (how bullying was measured) involved classifying studies into two groups: bullying or aggression. Studies were coded as measuring bullying if they either made specific reference to bullying (“Have you ever bullied someone?” or “Have you ever been bullied by someone?”) or provided a definition and asked participants to report related behaviors (“This is what bullying is. Have you ever done that or has this ever happened to you?”). Studies were coded as measuring aggression if they used behavioral descriptors of aggression to measure bullying but did not make reference to bullying (“Do you tease others?” or “How often do you hit others?”). This variable was treated as a moderator to account for the variability around the average weighted effect size estimates for certain predictors ($\kappa = 0.87$).
Informant source	Informant source was coded as either self-report, peer report, teacher report, or parent report ($\kappa = 0.92$).
Location of study	Location of study was coded in three categories: United States, Europe, and other countries ($\kappa = 1.00$).
Individual predictors	
Externalizing behavior	Externalizing behavior was defined as actions that are undercontrolled in nature and characterized by a host of defiant, aggressive, disruptive, and noncompliant responses ($\kappa = 0.94$).
Internalizing behavior	Internalizing behavior was defined as actions that are overcontrolled in nature and directed inward, including withdrawn, depressive, anxious, and avoidant responses ($\kappa = 0.96$).
Social competence	Social competence was defined as an overall evaluative judgment of an individual’s social skills that enable him or her to interact effectively with others and to avoid or inhibit socially unacceptable behaviors ($\kappa = 0.88$).
Self-related cognitions	Self-related cognitions were defined as children’s thoughts, beliefs, or attitudes about themselves, for example, self-respect, self-esteem, and self-efficacy ($\kappa = 0.87$).
Other-related cognitions	Other-related cognitions were defined as children’s thoughts, beliefs, feelings, or attitudes about others, including normative beliefs about others, empathy, and perspective taking ($\kappa = 0.81$).
Academic performance	Academic performance included grade point average, standardized achievement test scores, and academic performance ratings ($\kappa = 1.00$).
Contextual predictors	
Family/home environment	Family/home environment was defined as aspects of the family and home environment, including parental conflict, family cohesiveness, parental monitoring, family socioeconomic status, and parenting styles ($\kappa = 1.00$).
School climate	School climate was defined as the degree of respect and fair treatment of students by teachers and school administrators as well as a child’s sense of belonging to school ($\kappa = 0.96$).
Community factors	Community factors were defined as characteristics of the communities or neighborhoods in which children and youth lived, including socioeconomic indicators, rates of violence or crime, and drug trafficking ($\kappa = 0.98$).
Peer status	Peer status was defined as the quality of relationships children and adolescents have with their peers, including rejection, isolation, popularity, and likeability ($\kappa = 0.92$).

(table continues)

Table 1 (continued)

Variable	Rationale/definition and coding procedures
Peer influence	Peer influence was defined as the positive or negative impact of peers on the adjustment of children, such as deviant peer group affiliations, prosocial group activities, and reinforcement for (in)appropriate behaviors ($\kappa = 0.88$).

Note. The sign of the effect size indicates whether the predictor should be interpreted as positive or negative. For example, a negative effect size for family/home environment would indicate that negative family/home environment is associated with more bullying. Therefore, most of the obtained effect sizes would be predicted to be negative. In contrast, positive effect sizes for externalizing or internalizing behaviors would be predicted and, thus, would indicate the greater the externalizing or internalizing behaviors, the greater the likelihood of involvement in bullying.

Another objective was to evaluate whether certain moderators significantly account for differences found across studies. Two factors were considered: age of the sample and measurement of bullying and victimization. Research has shown that prevalence rates and predictors of bullying can vary as a function of age (Nansel et al., 2001; Pellegrini & Long, 2002; Swearer & Cary, 2003). Dramatic changes in biology and social functioning occur when individuals transition from childhood to adolescence (Crockett, Losoff, & Petersen, 1984; Dornbusch, 1989; Ford & Lerner, 1992). Given such changes, certain individual or contextual factors may predict involvement in bullying to a greater or lesser degree during childhood or adolescence, providing age-specific leads for prevention and intervention efforts.

How bullying is measured may also influence study results (Crothers & Levinson, 2004; Espelage & Swearer, 2003). Typically, assessments have used either a label or definition of bullying. This procedure has been debated, with some researchers contending a definition is crucial (e.g., Solberg & Olweus, 2003), and others claiming it will prime individuals unintentionally, biasing responses. However, without explicit reference to bullying (e.g., do you bully other kids by calling them names?), the distinction between bullying and aggression more broadly defined is blurred. Of course, if the same factors predict both bullying and aggression, the distinction becomes irrelevant for designing and recommending preventive interventions.

Method

The leading experts on the methods of meta-analysis informed our study (Cooper & Hedges, 1994; Hunter & Schmidt, 2004; Lipsey & Wilson, 2001). The first step was to locate the population of potential studies for inclusion in this meta-

analysis, which included those having quantitative information about bullying or victimization within a school setting and published in English from 1970 to mid-2006. Several methods were employed to ensure a representative sample of published studies. First, review articles published between 1970 and 2006 were reviewed to identify potential studies (Espelage & Swearer, 2004; Olweus, 1999; Salmivalli, 1999; P. K. Smith, 2004). Second, three electronic databases (PsychInfo, ERIC, and Medline) were searched, using the following descriptors: *bully*, *victim*, *bully victim*, *bullying*, *victimization*, *child*, *adolescence*, *student*, *school*, and *education*. As articles were retrieved, their references were reviewed for additional studies. Non-peer-reviewed papers (chapters and doctoral dissertations) were included to reduce the influence of publication bias (McLeod & Weisz, 2004; Sohn, 1996).

Specific Inclusion and Exclusion Criteria

The search process identified 1,622 citations. Studies were included on the basis of the following criteria: (a) focused on predictors of bullies, victims, or bully victims; (b) included quantitative information that could be computed into effect size estimates; and (c) included children in K–12 settings without intellectual disabilities. With regard to exclusion criteria, most were excluded because they did not meet criteria for the meta-analysis, including insufficient information (e.g., means and standard deviations) for calculating effect sizes, interventions to reduce bullying rather than predictors of this behavior, and adult participants or those with severe intellectual deficits. Applying these criteria reduced the number of articles from 1,622 to 153. Multiple articles published from the same data set were combined into a single study to avoid violating the independence of observations assumption, reducing the number

of studies from 175 to 153 (see Figure 1). Multiple articles were combined into a single study by aggregating all effect sizes for a given predictor into a single effect size estimate. Thus, predictors had only one effect size rather than multiple ones. A list of studies included in the meta-analysis is available online as supplemental material.

Study Coding Scheme and Reliability of Coding Practices

Three trained research assistants coded eligible studies. Prior to coding, all research assistants were trained on the specific coding criteria and provided opportunities to practice coding until they reached adequate reliability. Two of the coders were each given half of the studies to code. The third rater recoded all studies so estimates of reliability (kappas) could be calculated. According to Landis and Koch (1977), kappa values are categorized as low if 0.01–0.20, fair if 0.21–0.40, moderate if 0.41–0.60, substantial if 0.61–0.80, and perfect if 0.81–1.00. Kappa coefficients ranged from 0.81 (93% agreement) to 1.0 (100%

agreement). For list of the specific study characteristics, individual and contextual variables included in this study, and a description of the rationale and definition and coding procedures for each variable, see Table 1.

Effect Size Calculation

Effect sizes in the form of Pearson product-moment correlation coefficients were calculated. These coefficients are particularly useful because they are readily interpretable and bounded from –1.0 to 1.0, unlike the standardized mean difference effect size. Effect sizes were aggregated to produce both weighted and unweighted mean effect sizes, although primary interpretations hinged on the weighted mean effect size. To calculate a weighted mean effect size, each effect size was first converted to Fisher’s *Zr* and then weighted accordingly (weighting procedures discussed below). There is debate among leading meta-analysts about whether the *Zr* transformation formula produces a slight upward bias in the estimates (Cooper & Hedges, 1994; Hunter &

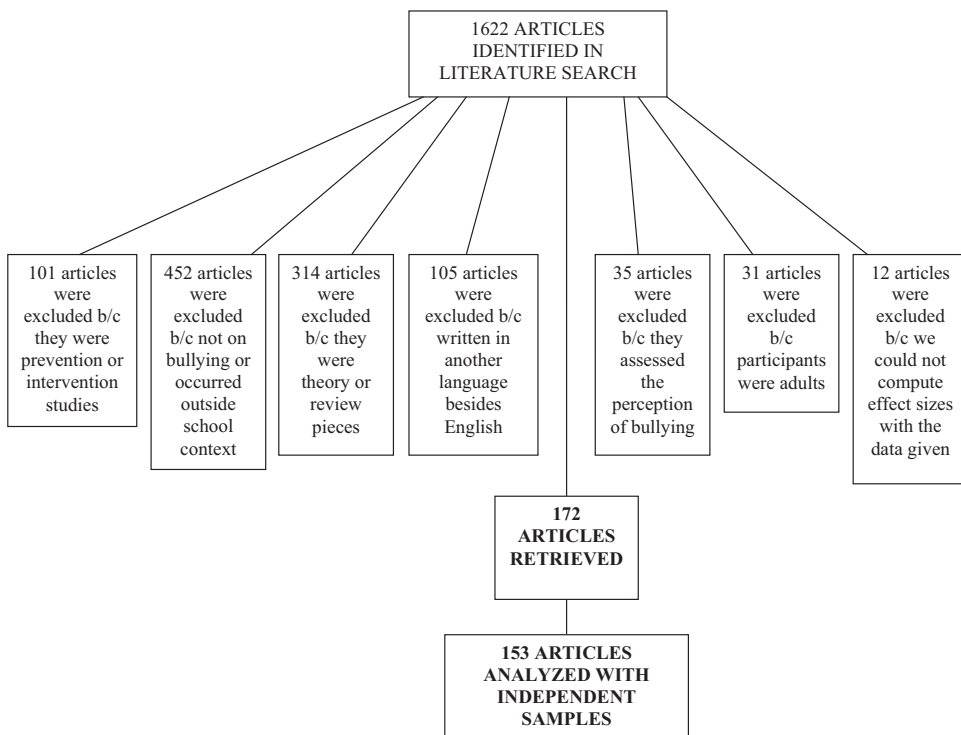


Figure 1. Flowchart illustrating the number of articles omitted for the various exclusion criteria.

Schmidt, 2004). Despite this debate, many of the leading experts in meta-analysis advocate for the use of the Fisher Z_r transformation for the following reasons: (a) It should result in a normally distributed correlation distribution, and (b) it allows one to compute the standard error directly from just the sample size (Hedges & Olkin, 1985; Rosenthal, 1991). For these reasons, we chose to aggregate and compare the correlations using Z_r transformations. These Z_r transformed values were summed to create a weighted grand mean Z_r that was reconverted back to r from Z_r . The 153 independent studies analyzed produced a total of 792 effect sizes that were coded consistent with the coding scheme described in Table 1. Moreover, each study could only contribute one effect size for a given predictor. If a study had multiple variables assessing a given predictor, the average effect size for those variables was included in the meta-analysis. These procedures were followed to avoid dependency in the data. Cohen's (1992) conventional guidelines of small ($r = .10$), medium ($r = .30$), and large ($r = .50$) were used to highlight the practical meaning of the average weighted effect size estimates.

The sign of the effect size was coded to denote the positive or negative valence of the predictor. For example, a significant negative effect size for social competence and bullying would indicate that being a bully is significantly related to social incompetence, whereas a positive effect would indicate that bullies tend to be socially competent.

Effect Size Adjustments

Effect sizes derived from small sample sizes have a positive bias. Thus, all effect sizes were multiplied by the small sample correction formula to adjust for this bias (Becker, 1988): $1 - (\frac{3}{4}n - 5)n$ represents the sample size for a given primary study. Moreover, all study effect sizes were weighted by their inverse variance to ensure that the contribution from each effect size was proportional to its reliability (Hedges & Olkin, 1985). After calculating all of the effect sizes, several outliers were noted. Outliers were identified as being greater than 2.5 standard deviations above the mean effect size for a particular variable. Given the potential of outliers to distort the analyses, they were winsorized to less extreme values (Lipsey & Wilson, 2001). Winsorization refers to the

process of altering the value of outliers to the next largest nonoutlying data point. Some study samples were abnormally large compared with others. Because the inverse variance estimate reflects the size of a study's sample, studies with extremely large samples were winsorized to avoid any negative influence on the analysis (Lipsey & Wilson, 2001).

Tests of Homogeneity and Random Versus Fixed Effects Analyses

Homogeneity analyses using Cochran's Q were conducted for each predictor to determine whether effect sizes for a given predictor were estimating the same population mean effect size (Hedges & Olkin, 1985): Cochran's $Q = \sum w_i(\hat{\theta}_i - \theta)^2$. A significant Q statistic indicates that the effect sizes are, in fact, heterogeneous, with other factors creating variability around the grand mean effect size. These analyses provided a basis for determining whether a random versus fixed effect analysis should be performed (Hedges & Vevea, 1998). Because multiple comparisons were made, the Simes-Hochberg correction (Hochberg, 1988; Simes, 1986) was used to maintain the familywise Type I error rate at an acceptable level. The Simes-Hochberg correction is in the class of sequential Bonferroni correction methods. This correction consists of arranging the obtained p values within a family of tests from largest to smallest and excluding tests on a sequential basis on whether they are associated with a p value that is less than a progressively adjusted α level. Therefore, all significant statistics reflect this correction.

Fixed effect models only account for the degree of uncertainty that comes from the specific samples included in specific studies for a specific meta-analysis. As a result, inference is conditional because it is based solely on the studies included in the meta-analysis. Random effects models make unconditional inferences about a population of study samples and characteristics that are more diverse than the finite number of studies included in a given meta-analysis. Random effects analyses were conducted because the majority of Q statistics rejected the assumption of homogeneity of effect sizes and so inferences beyond the included studies could be made.

Results

Table 2 provides an overview of the descriptive information for the 153 studies, Table 3 shows the distribution of studies by geographic location and age, and Table 4 shows the distribution of calculated effect sizes by individual and contextual predictors and bully status groups. The key results of the aggregated effect sizes for the individual and contextual predictors for each of the bully groups are presented in Tables 5 and 6. Given the breadth of predictors assessed, only the predictors with the two highest and two lowest effect sizes for each of the bully groups are discussed.

Individual Predictors of Bullying

The strongest individual predictors of being a bully were externalizing behavior ($r = .34$) and

other-related cognitions ($r = -.34$), as shown in Table 5. Both effect sizes were medium in strength according to Cohen’s (1992) guidelines. The three predictors with the weakest overall effect sizes were self-related cognitions ($r = -.07$), age ($r = .09$), and internalizing behavior ($r = .12$). However, all of these average weighted effect sizes were significantly different from zero given that neither of their 95% confidence intervals crossed zero.

Individual Predictors of Victimization

Peer status ($r = -.35$) and social competence ($r = -.30$) had the largest effect sizes with respect to being a victim of bullying, as shown in Table 6. The weakest effect sizes were noted for age ($r = -.01$), other-related cognitions ($r = .03$), and academic performance ($r = -.04$). All of these predictors had effect sizes that could not be significantly distinguished from zero.

Table 2
Descriptive Information of Studies Included in the Meta-Analysis

Descriptive variable	Frequency	%
Sample age		
3–4 years (early childhood)	3	2
5–11 years (middle childhood)	44	29
12–14 years (early adolescence)	35	23
15–18 years (adolescence)	14	9
Mixed	57	37
Study location		
United States	37	24
Europe	76	50
Other	40	26
Publication year		
1990–1995	25	16
1996–2000	23	15
2001–2005	92	61
2006	13	8
Measurement source		
Self-report	120	78
Peer report	24	16
Teacher report	6	4
Parent report	3	2
Measurement approach		
Measured bullying	73	48
Measured aggression	80	52
Studies on bully status groups		
Bullies	120	78
Victims	121	79
Bully victims	31	20

Note. Mean sample size = 1,021 (range = 44–26,430). Three studies had sample sizes greater than 13,000. For purposes of aggregation and analysis, these values were winsorized to the next highest sample size value of 8,000 participants.

Individual Predictors of Bully Victim Status

The two predictors with the largest effect sizes for bully victims were self-related cognitions ($r = -.40$) and social competence ($r = -.36$), as presented in Table 7. Three other individual predictors had effect sizes approaching or exceeding a medium effect ($r > .20$): externalizing behavior, internalizing behavior, and other-related cognitions. The weakest predictor, and only nonsignificant one, was age ($r = .01$). The predictor with the next weakest effect size was social problem-solving skills ($r = -.18$), albeit significantly different from zero. Only one of the included studies assessed the relationship between bully victim status and academic performance, but demonstrated a moderately strong effect between the two ($r = -.32$).

Contextual Predictors of Bullying

Across studies, variables measuring peer influence ($r = -.34$) and community factors ($r = -.22$) had the largest overall effect sizes with bullying behavior, as shown in Table 4. The two predictors with the weakest overall effect sizes for perpetration of bullying were family environment ($r = -.17$) and peer status ($r = -.010$), although both predictors were significant.

Table 3
Cross-Tabulation of the Number (Percentage) of Studies by Location of Study and Sample Age

	Location of study			Total
	U.S.	Europe	Other	
Sample age				
3–4 years (early childhood)	2 (5) ^a	1 (2) ^a	0 (0) ^a	3 (2) ^b
5–11 years (middle childhood)	11 (30)	25 (33)	8 (20)	44 (29)
12–14 years (early adolescence)	15 (41)	14 (18)	6 (15)	35 (23)
15–18 years (adolescence)	1 (3)	7 (9)	6 (15)	14 (9)
Middle childhood/early adolescence	7 (19)	11 (15)	9 (23)	27 (18)
Early adolescence/adolescence	1 (3)	7 (9)	8 (20)	16 (11)
All	1 (3)	10 (13)	3 (8)	14 (9)
Total location	37 (25) ^c	76 (50) ^c	40 (26) ^c	153 (100)

^a Percentage of studies within location. ^b Percentage of studies across locations. ^c Percentage of studies across sample age ranges.

Contextual Predictors of Victimization

As presented in Table 6, peer status ($r = -.35$) and school climate ($r = -.16$) had the largest effect sizes for victimization. Community factors had an average weighted effect size nearly equal to that of school climate ($r = -.15$). The predictors with the lowest overall effect sizes were peer influence ($r = .01$) and family/home environment ($r = -.10$), with only family/home environment being significantly different from zero.

Contextual Predictors of Bully Victim Status

With the exception of community factors, all of the contextual factors had significant effect sizes with bully victim status (see Table 7). In particular, peer status ($r = -.36$) and peer influence ($r = -.44$) had the largest overall effect sizes. Although they had statistically significant average weighted effect sizes, family/home environment ($r = -.20$) and school climate ($r = -.32$) had the weakest overall effect sizes. None of the included

Table 4
Number of Study Independent Effect Sizes (Number of Participants) Derived for Each Predictor by Bully Status Group

Predictor	Bully status			Row total
	Bully	Bully victim	Victim	
Individual				
Gender	65 (89,450)	8 (6,741)	66 (87,450)	139
Age	18 (19,010)	2 (470)	19 (20,282)	39
Externalizing	46 (55,987)	15 (18,637)	51 (62,468)	112
Internalizing	40 (40,436)	10 (9,269)	52 (53,078)	102
Self-related cognitions	29 (23,562)	4 (1,150)	29 (27,279)	62
Other-related cognitions	16 (13,912)	1 (466)	10 (10,649)	27
Social problem solving	20 (13,027)	4 (2,855)	21 (12,555)	45
Social competence	21 (27,952)	4 (3,588)	25 (25,505)	50
Academic performance	15 (13,433)	1 (201)	16 (52,265)	32
Contextual				
Family/home environment	28 (28,765)	5 (3,316)	22 (31,875)	55
School climate	18 (25,051)	2 (1,760)	19 (25,695)	39
Community factors	9 (10,025)	1 (198)	5 (8,303)	15
Peer status	20 (12,455)	5 (3,536)	27 (20,588)	52
Peer influence	13 (10,897)	2 (935)	8 (12,496)	23
Column total	319	58	333	792 ^a

^a Grand total for the number of effect sizes analyzed across studies and across bully status categories.

Table 5
Bully Group: Summary Table of Weighted and Unweighted Effect Sizes, 95% Confidence Intervals, and Tests of Homogeneity

Correlate	Effect size		95% confidence interval		Test of homogeneity
	Weighted	Unweighted	Lower	Upper	Cochran's <i>Q</i>
Individual predictors					
Gender	.18	.19	.15	.23	$\chi^2(65) = 515^*$
Age	.09	.05	.05	.12	$\chi^2(17) = 54^*$
Externalizing	.34	.39	.30	.38	$\chi^2(45) = 767^*$
Internalizing	.12	.10	.06	.17	$\chi^2(39) = 520^*$
Social competence	-.12	-.15	-.05	-.19	$\chi^2(20) = 312^*$
Self-related cognitions	-.07	-.09	-.02	-.14	$\chi^2(28) = 314^*$
Other-related cognitions	-.34	-.27	-.26	-.41	$\chi^2(15) = 313^*$
Social problem solving	-.17	-.18	-.11	-.22	$\chi^2(19) = 106^*$
Academic performance	-.21	-.18	-.17	-.25	$\chi^2(14) = 25^{ns}$
Contextual predictors					
Family/home environment	-.17	-.14	-.13	-.20	$\chi^2(27) = 192^*$
School climate	-.18	-.19	-.12	-.23	$\chi^2(17) = 184^*$
Community factors	-.22	-.19	-.14	-.29	$\chi^2(8) = 41^{ns}$
Peer status	-.10	-.12	-.06	-.14	$\chi^2(19) = 989^*$
Peer influence	-.34	-.27	-.26	-.42	$\chi^2(12) = 279^*$

Note. Individual predictors Simes–Hochberg adjusted $\alpha = .006$; contextual predictors Simes–Hochberg adjusted $\alpha = .01$. * *p* value < adjusted α .

studies evaluated the impact of community factors on being a bully victim.

Moderator Analyses

Based on the recommendations of Rosenthal (1991), we performed contrast analyses to test the effects of moderators, with all moderator variables dichotomized (Rosenthal, Rosnow, & Rubin, 2000). For example, a dichotomous variable was created to serve as the age moderator (children = 3 to 11 years and adolescents = 12 to 18 years), and measurement approach was dichotomized into studies that explicitly measured bullying and studies that measured behavioral descriptors of aggression. Moderator analyses were not performed for the bully victim group because there were too few effect sizes to permit adequate calculations.

A significant *Q* statistic associated with a predictor, indicating significant heterogeneity across effect sizes, was required for a moderator analysis of that predictor. Nearly all predictors across the three bully status groups had significant *Q* statistics. The results of moderator analyses for only four of the 13 predictors are reported (externalizing and internalizing behavior, family/home environment, and peer status). Only four of the 13

predictors were assessed in the moderator analysis for the following reasons: (a) limited statistical power, (b) purpose was to provide only a preliminary look at the moderating impact of measurement and age on the magnitude of derived relationships between predictors and bully status groups, (c) authors to conduct a follow-up study reflecting a more in-depth analysis of moderated relationships between predictors and bully status groups, and (d) space limitations. The four selected predictors were selected because of the relatively large number of effect sizes coded, thus maximizing the statistical power of the moderator analyses.

Age. For the bully group, age significantly moderated both of the individual predictors and one of the contextual predictors (see Table 8). For externalizing behavior, the magnitude of the relationship was significantly higher for children than adolescents, whereas the reverse was true for internalizing behavior. For example, the effect size for internalizing behavior was not significant for children but was for adolescents. Thus, although a stronger relation between externalizing behavior and bullying holds during the childhood years versus the adolescent years, the same is not true for internalizing behavior. Instead, internalizing behavior has a significantly greater relation with

Table 6

Victim Group: Summary Table of Weighted and Unweighted Effect Sizes, 95% Confidence Intervals, and Tests of Homogeneity

Correlate	Effect size		95% confidence interval		Test of homogeneity
	Weighted	Unweighted	Lower	Upper	Cochran's <i>Q</i>
Individual predictors					
Gender	.06	.08	.051	.10	$\chi^2(65) = 620^*$
Age	-.01	.02	.05	-.07	$\chi^2(18) = 383^*$
Externalizing	.12	.14	.10	.16	$\chi^2(50) = 238^*$
Internalizing	.25	.27	.20	.28	$\chi^2(51) = 845^*$
Social competence	-.30	-.29	-.22	-.38	$\chi^2(24) = 982^*$
Self-related cognitions	-.16	-.20	-.10	-.21	$\chi^2(28) = 232^*$
Other-related cognitions	.03	.02	-.02	.07	$\chi^2(9) = 56^*$
Social problem solving	-.13	-.15	-.06	-.18	$\chi^2(20) = 212^*$
Academic performance	-.04	-.08	-.01	-.08	$\chi^2(15) = 320^*$
Contextual predictors					
Family/home environment	-.10	-.11	-.07	-.13	$\chi^2(21) = 98^*$
School climate	-.16	-.15	-.10	-.21	$\chi^2(18) = 86^*$
Community factors	-.15	-.12	-.08	-.22	$\chi^2(4) = 40^{ns}$
Peer status	-.35	-.31	-.28	-.41	$\chi^2(26) = 110^*$
Peer influence	.01	.01	-.10	.11	$\chi^2(7) = 370^*$

Note. Individual predictor Simes-Hochberg adjusted $\alpha = .0055$; contextual predictors Simes-Hochberg adjusted $\alpha = .01$.
* *p* value < adjusted α .

being a bully during adolescence than childhood. As for family/home environment, identical effect sizes were obtained for child- and adolescent-age samples. A significant moderating effect of age was found for peer status, indicating a significant relation between bullying behavior and negative peer status during childhood but not adolescence. Thus, in spite of bullies being rejected, isolated, and disliked by their peers during childhood, by the time they enter adolescence, they appear to be as accepted and liked by their peers as other adolescents.

The moderator analyses for the victim group revealed that age significantly interacted with only one of the four predictors: internalizing behavior. Similar to the bully group, the strength of the relation between internalizing behavior and victimization increased significantly in adolescence. However, unlike the bully group, the average effect size for internalizing behavior and victimization was significant for children, but to a lesser extent than for adolescents. Hence, the relation between internalizing behavior and being bullied becomes stronger with age. Although only approaching statistical significance, the moderator analysis for externalizing behavior indicated that older victims were more likely to exhibit externalizing behavior than younger ones.

Measurement of bullying. When comparing the effect sizes between studies measuring bullying versus those measuring behavioral descriptors of aggression, only one significant difference was noted for both the bully and victim groups (see Table 8), that being the moderating effect of measurement approach for internalizing behavior within the bully group. The significant result indicated that for approaches to measurement that made explicit reference to bullying, a near zero effect size ($r = -.02$) was found, compared with the significant positive effect size ($r = .17$) found for approaches to measurement that assessed descriptors of aggression. Although not statistically significant, one other moderator analysis within the bully group approached statistical significance. For the variable peer status, measurement of bullying had a nonsignificant effect size, whereas measurement of aggression had a significant effect size, indicating that bullying has a nonsignificant relation to negative peer status when measured by methods measuring bullying explicitly. The remaining nonsignificant moderator analyses indicate that the predictors of bullying do not differ from the predictors of aggression.

Table 7
Bully Victim Group: Summary Table of Weighted and Unweighted Effect Sizes, 95% Confidence Intervals, and Test of Homogeneity

Correlate	Effect size		95% confidence interval		Test of homogeneity
	Weighted	Unweighted	Lower	Upper	Cochran's <i>Q</i>
Individual predictors					
Gender	.10	.08	.04	.12	$\chi^2(7) = 10^{ns}$
Age	.01	.01	.01	-.04	—
Externalizing	.33	.50	.18	.48	$\chi^2(14) = 1727^*$
Internalizing	.22	.30	.12	.33	$\chi^2(9) = 63^*$
Social competence	-.36	-.39	-.28	-.45	$\chi^2(3) = 16^{ns}$
Self-related cognitions	-.40	-.42	-.29	-.50	$\chi^2(3) = 12^{ns}$
Other-related cognitions	-.20	-.20	—	—	—
Social problem solving	-.18	-.20	-.06	-.30	$\chi^2(3) = 24^*$
Academic performance	-.32	-.32	—	—	—
Contextual predictors					
Family/home environment	-.20	-.23	-.11	-.29	$\chi^2(4) = 6^{ns}$
School climate	-.32	-.31	-.26	-.38	—
Community factors	—	—	—	—	—
Peer status	-.36	-.38	-.23	-.49	$\chi^2(4) = 41^*$
Peer influence	-.44	-.35	—	—	—

Note. Individual predictors Simes–Hochberg adjusted $\alpha = .0167$; contextual predictors Simes–Hochberg adjusted $\alpha = .025$. * *p* value < adjusted α .

Discussion

This study represents a comprehensive effort to synthesize systematically predictors of bullying and victimization drawing on research conducted over the past 30 years of literature. At the outset, the implications of this meta-analytic inquiry are constrained by the current landscape of the field. In particular, a greater number of studies focused on individual rather than contextual predictors of bullying, limiting inferences and suggestions for interventions based on changing developmental contexts. However, bullying by definition occurs within a social context and is jointly influenced by individual characteristics of the child and contextual characteristics of the setting. Therefore, examining the impact of individual characteristics apart from contextual influences offers a limited view of bullying, highlighting personal qualities instead of contextual features that facilitate bullying incidents. Research that extracts the person from the context will ultimately produce accounts of bullying having a “personalized” bias, both in terms of its etiology and its consequences. The application of more sophisticated research designs that take into account persons and their environments will provide a better understanding of the conditions under which bullying is likely to take

place and the consequences it may have for individuals and the settings in which it occurs (Espelage & Swearer, 2004).

Several significant individual and contextual predictors of the three bully status groups (bullies, victims, and bully victims) were identified that are relevant for prevention and intervention programs. Although some of these predictors had stronger associations with involvement in bullying than others, all of the predictors were significantly related to at least one of the bully status groups. Given the large number of predictors assessed, the presentation of results was focused on the individual and contextual predictors with the two largest and two weakest effect sizes for each bully status group. Although this approach provided an efficient presentation of the predictors, it did not provide a well-rounded characterization of each status group. To address this issue, the following is brief summary of all the significant predictors found for each bully status group:

- The typical *bully* is one who exhibits significant externalizing behavior, has internalizing symptoms, has both social competence and academic challenges, possesses negative attitudes and beliefs about others, has negative self-related cognitions, has trouble resolving problems with oth-

Table 8
Moderator Analyses of Individual and Contextual Predictors for Bully and Victim Groups

Moderator	Individual predictors								Contextual predictors							
	Externalizing behaviors				Internalizing behaviors				Family/home environment				Peer status			
	<i>n</i>	$\bar{X}r$	<i>SD</i>	<i>t</i>	<i>n</i>	$\bar{X}r$	<i>SD</i>	<i>t</i>	<i>n</i>	$\bar{X}r$	<i>SD</i>	<i>t</i>	<i>n</i>	$\bar{X}r$	<i>SD</i>	<i>t</i>
Bully group																
Age range																
3–11 years	24	.40	.22	2.01*	18	.03	.15	3.30**	12	-.12	.10	0.05	11	-.16	.12	2.72*
12–18 years	19	.29	.13		16	.19	.14		12	-.12	.08		6	-.01	.08	
Measurement approach																
Bullying	20	.40	.25	.24	14	-.02	.19	2.79**	14	-.12	.11	0.24	9	-.06	.21	1.69 ⁺
Aggression	26	.38	.31		24	.17	.14		12	-.11	.08		11	-.19	.14	
Victim group																
Age range																
3–11 years	24	.09	.15	2.00 ⁺	25	.23	.14	3.57***	10	-.10	.09	0.33	15	-.31	.15	0.14
12–18 years	20	.17	.11		18	.38	.13		9	-.11	.04		8	-.32	.21	
Measurement approach																
Bullying	23	.12	.13	1.00	23	.31	.19	0.84	11	-.10	.05	0.32	14	-.23	.23	0.98
Aggression	28	.15	.14		28	.27	.15		9	-.08	.12		13	-.30	.12	

Note. The bold values represent the average correlations.
⁺ *p* < .10. * *p* < .05. ** *p* < .01. *** *p* < .001.

ers, comes from a family environment characterized by conflict and poor parental monitoring, is more likely to perceive his or her school as having a negative atmosphere, is influenced by negative community factors, and tends to be negatively influenced by his or her peers.

- The typical *victim* is one who is likely to demonstrate internalizing symptoms; engage in externalizing behavior; lack adequate social skills; possess negative self-related cognitions; experience difficulties in solving social problems; come from negative community, family, and school environments; and be noticeably rejected and isolated by peers.

- The typical *bully victim* is one who has comorbid externalizing and internalizing problems, holds significantly negative attitudes and beliefs about himself or herself and others, is low in social competence, does not have adequate social problem-solving skills, performs poorly academically, and is not only rejected and isolated by peers but also negatively influenced by the peers with whom he or she interacts.

A summary of all the significant predictors for each of the bully status groups is shown in Table 9. Three predictors for the bully group

(externalizing, other-related cognitions, and negative peer influence), two for the victim group (internalizing and peer status), and seven for the bully-victim group (externalizing, social competence, self-related cognitions, academic performance, school climate, peer status, and negative peer influence) had medium effect sizes that, according to Cohen (1992), are strong enough to be noticeable in everyday life.

Beyond looking at the relative magnitude of effect sizes within each group, we were interested in looking at them comparatively across the groups. Thus, a related question was, Do the bully status groups share common predictors, or can they be differentiated by unique patterns of predictors? The straightforward answer to this question is that both shared and unique patterns of predictors were observed across the three groups.

Shared Predictors

Evidence of shared predictors supports the notion that bully status groups have a common etiology resulting in *multifinality*, referring to the developmental process of a common cause leading to multiple end points (Cicchetti & Rogosch, 1996). Boys appeared to be more involved in

Table 9
Effect Size Magnitude for the Significant Predictors for the Bully Status Groups

Predictors	Effect size magnitude			
	Weak ($r < .10$)	Small ($r = .10$ to $.20$)	Small to medium ($r = .20$ to $.29$)	Medium ($r > .29$)
Individual				
Gender	V	B, BV		
Age	B, V, BV			
Externalizing		V		B, BV
Internalizing		B	V, BV	
Social competence		B		V, BV
Self-related cognitions	B	V		BV
Other-related cognitions	V	BV		B
Social problem solving		B, V, BV		
Academic performance	V		B	BV
Contextual				
Family/home environment		B, V	BV	
School climate		B, V		BV
Community factors		V	B	
Peer status		B		V, BV
Peer influence	V			B, BV

Note. All of these represent effect sizes that are significantly different from zero. B = bullies; V = victims; BV = bully victims.

bullying than girls across all bully status groups. Although the strength of the gender effect depended on the specific bully group being assessed, boys were more likely to be involved in bullying as a bully, victim, or bully victim. Also, family/home environment, school climate, and community factors significantly predicted involvement for bullies and victims (although no effect sizes for community factors were coded for the bully victim group), indicating the important role social context plays in the development and maintenance of bullying.

Another common predictor across the three groups was poor social problem-solving skills. This personal challenge could place children on a developmental trajectory toward involvement in bullying, with the interaction of other individual and contextual predictors determining whether the child or youth will be involved as a bully, victim, or bully victim. Conversely, those children and youth who have adequate social problem-solving skills may be better able to negotiate confrontations with others skillfully, thereby avoiding bullying or victimization by peers (Crick & Dodge, 1994; Dodge & Coie, 1987).

Unique Predictors

Unique predictors were found that distinguished the three bully status groups. Although

poor academic performance appeared to be a significant predictor of children and youth who bully, the same cannot be said for children and youth who are bullied. This is consistent with literature showing a strong link between academic performance and externalizing behavior but a much weaker association between academic performance and internalizing behavior (Masten et al., 2005; Nelson, Benner, Lane, & Smith, 2004). Moreover, the sole academic performance effect size derived for the bully victim group indicated that children and youth performed academically more like bullies than victims. Surprisingly, academic performance has received scant attention in the literature, despite the heavy emphasis on bullying in schools. Future research, therefore, should not only examine how poor academic performance is related to bullying but how the prevalence of bullying may impair the larger academic environment, again suggesting the importance of research on Person \times Context interactions.

Unique relations were also found for the predictors of other-related cognitions and self-related cognitions. The effect sizes revealed that holding negative attitudes and beliefs about others was a significant predictor of being a bully (e.g., bullies and bully victims), but not a victim. Alternatively, the average effect sizes revealed that possessing negative attitudes and beliefs about one's self was

significantly related to being bullied (e.g., victims and bully victims), but only marginally so for being a bully. Thus, whereas bullies appeared to have demeaning attitudes and beliefs about others, victims have negative self-related cognitions.

When comparing the contextual predictors across the bully groups, the peer ecology predictors (i.e., peer status and peer influence) emerged as having fairly unique relations with bullying and victimization. Specifically, examination of these effect sizes revealed that bully victims experienced the worst of both worlds. That is, bully victims appeared to resemble victims by being rejected and isolated by their peers and to resemble bullies by being negatively influenced by the peers with whom they do interact. This is consistent with the deviant peer group hypothesis for children and youth with antisocial behavior patterns who actively pursue affiliation with other deviant peers (Dishion, McCord, & Poulin, 1999).

Unique associations were also noted for the predictor of social competence. Comparison of the weighted effect sizes indicated that bullies are more socially competent than their victimized counterparts, even though the effect sizes were significant in both groups. However, the combination of being a bully and being bullied by others was associated with having the most severe challenges in social competence of all the groups. Taken together, the findings from the predictors of peer status and social competence seem to indicate that one of the defining features of being bullied is social maladjustment characterized by challenges in establishing and maintaining satisfactory interpersonal relationships.

The evidence synthesized in this study suggests that bully victims face the most significant challenges of all children and youth involved in bullying, which is consistent with other reports (e.g., Juvonen et al., 2003). Bully victims had the greatest number of risk factors. Indeed, bully victims not only appeared to have the same individual and contextual risk factors associated with both bullies and victims, but they also appeared to have the strongest relationships with the investigated predictors. The main conclusion drawn from these findings is that children and youth who are involved in bullying and victimization by others are in the most need of prevention and intervention programs. However, a caveat should be kept in mind regarding this conclusion. The number of studies involving bully victims is relatively small, compared with those involving either bullies or

victims taken separately. Moreover, whether questions about victimization were asked in studies of bullies and whether questions about bullying were asked in studies of victims are unknown. Hence, the possibility of a greater number of bully victims within these studies cannot be ruled out. Clearly, more research on the distinctions among the bully status groups is needed.

Moderating Effects for Predictors of Bullying

Several interesting findings were revealed from the moderator analyses. Age significantly moderated the effect of three predictors assessed for the bully group (externalizing behavior, internalizing behavior, and peer status). These results indicated that internalizing behavior was only significantly related to being a bully in adolescence, but not in childhood. Also, although bullies appeared to be rejected and isolated by their peers during childhood, it appears that they may become more accepted and liked by peers as they enter adolescence. However, it is important to point out the distinction between perceived popularity and likability given that measures of both were combined in the peer status category in this meta-analysis. Researchers have shown that children who are perceived to be popular are not necessarily well liked and engage in more aggressive behaviors than children who are actually liked by their peers (Farmer & Xie, 2007). As for age, this variable significantly moderated the effect of internalizing behavior only for the victim group, with victims exhibiting more internalizing behaviors as they transitioned into adolescence.

An additional finding from the moderator analyses was that effect sizes were not influenced by measurement approach. In other words, the use of labels or definitions of bullying versus behavioral descriptions of aggression did not reliably moderate the derived relationships. These insignificant findings suggest that the measurement distinctions involving the use of labels, definitions, and behavioral descriptors in school settings did not appear to differentiate bullying and other forms of aggression in terms of predictors (although this distinction may have bearing on prevalence rates; see Cook et al., 2009). Conceptual clarification between serious violence, general aggression, and bullying is needed to add precision to the measurement of these forms of behavior. Such clarification should address the extent to which bully-

ing is distinct from other forms of violence and aggression, or whether it is merely a “symptom” of aggression in general. Whether children and youth solely engage in bullying or such behavior in combination with other forms of aggression and violence is an empirical question. However, this question can be addressed only if these behaviors are distinguished conceptually and measured precisely.

Using Predictors to Design Interventions

Given the findings of this meta-analytic review of research on bullying during childhood and adolescence, the next step is to link the findings to prevention and intervention programs. Making these linkages for all significant individual and contextual predictors revealed in this study, similar to approach taken in the FAST Track study (Conduct Problems Prevention Group, 1992), is beyond the resource capabilities of most clinicians, schools, and organizations. However, selecting the strongest individual and contextual predictors for the design of prevention and intervention programs may be the most promising strategy.

For example, the findings suggest that different social contexts (e.g., school, home, peer groups) covary significantly with involvement across bully status groups. Thus, a multicontext approach that targets various social environments may prove to be a successful strategy for addressing bullying. A plausible prevention or intervention program that fits this mold might consist of behavioral parenting training (Webster-Stratton & Hammond, 1990) combined with some form of positive peer-reporting intervention at school (Ruth, Miller, & Friman, 1996). Also, from a client-centered perspective, practitioners should consider personal characteristics of the child or youth when devising clinical strategies and supports, given the unique predictors discussed above. However, because the bully groups also shared certain predictors, this approach would likely result in intervention programs that have both shared and unique components across the three groups. For instance, problem-solving skills training would be a shared intervention component implemented across groups, whereas improving normative beliefs about others would be a unique component implemented specifically for bullies.

Examination of the literature on bullying intervention programs suggests that most of the current

programs emphasize the use of universal interventions that rely on contextual strategies to prevent and address the incidence of bullying. Universal interventions are practices that affect the entire population of children or youth within a particular context (e.g., a school). Examples of universal interventions relevant to bullying include well-enforced antibullying rules and peer-reporting systems of bullying incidents. Perhaps 80% to 90% of the population could be affected by universal interventions (Sugai, Horner, & Gresham, 2002). However, given the individual characteristics associated with bullying, it appears that bullies, victims, and bully victims present problems often requiring more than universal interventions. This claim does not invalidate the need for universal interventions; rather, they should constitute the first layer of support provided to prevent the onset of bullying, with more intensive tiers of support provided to meet the individualized challenges presented by bullies, victims, and bully victims.

Moreover, recall the insignificant moderator findings concerning the use of labels, definitions, and behavioral descriptors to measure bullying. If the predictors of bullying are indistinguishable from those of aggression, as implied by these findings, then interventions that effectively reduce aggression should also effectively reduce bullying. Focusing on interventions for aggression in general may be an important avenue for bullying prevention efforts because those designed specifically to address bullying have not convincingly demonstrated their effectiveness in decreasing actual bullying behaviors (Merrell et al., 2008; J. D. Smith et al., 2004). The next step may be to consider implementing interventions that are empirically supported to reduce aggression and violence for bullying, such as multisystemic therapy (Henggeler, Melto, Brondino, Scherer, & Hanley, 1997) aggression replacement training (A. P. Goldstein & Glick, 1994), cognitive problem-solving skills training (Kazdin, Siegel, & Bass, 1992), and cognitive-behavior therapy (Durlak, Fuhrman, & Lampman, 1991).

Paradoxically, although far less attention has been given to the contextual predictors of bullying and victimization, most of the bullying interventions currently being used emphasize changing contexts (e.g., Olweus & Limber, 1999). In contrast, the literature on interventions for general aggression reveals that most of the interventions are geared toward the individual. Altering the context without a focus on changing individuals and

vice versa is a limiting approach. It ignores the multiple individual and contextual factors that influence bullying. The most promising programs are those that focus on intervening at the levels of the individual, the peer ecology, and the broader contexts in which children and youth are nested. Indeed, to the extent that aggression and bullying are part of the normative context of development, it may be that only interventions addressing individual and contextual factors simultaneously will evidence positive effects (Guerra & Huesmann, 2004; Metropolitan Area Child Study, 2002).

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