Socioeconomic Status and Bullying: A Meta-Analysis

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We examined whether socioeconomic status (SES) could be used to identify which schools or children are at greatest risk of bullying, which can adversely affect children's health and life.

We conducted a review of published literature on school bullying and SES. We identified 28 studies that reported an association between roles in school bullying (victim, bully, and bully-victim) and measures of SES. Random effects models showed SES was weakly related to bullying roles. Adjusting for publication bias, victims (odds ratio [OR] = 1.40; 95% confidence interval [CI] = 1.24, 1.58) and bully-victims (OR = 1.54; 95% CI = 1.36, 1.74) were more likely to come from low socioeconomic households. Bullies (OR = 0.98; 95% CI = 0.97, 0.99) and victims (OR = 0.95; 95% CI = 0.94, 0.97) were slightly less likely to come from high socioeconomic backgrounds.

SES provides little guidance for targeted intervention, and all schools and children, not just those with more socioeconomic deprivation, should be targeted to reduce the adverse effects of bullying. (*Am J Public Health.* 2014;104:e48–e59. doi:10.2105/AJPH.2014.301960)

BULLYING IS DEFINED AS REpeated, harmful behavior, characterized by an imbalance of power between the victim and perpetrator(s).[1] There is compelling evidence that school bullying affects children's health and well being, with the effects lasting long into adulthood.[2,3] Victims of school bullying are at greater risk of physical and mental health problems,[4,5] including depression,[6,7] anxiety,[8,9] psychotic or borderline personality symptoms,[10,11] and are more likely to self-harm and attempt suicide.[12,13] A small proportion of victims are classified as bully-victims, children who are victimized by their peers, but who also bully other children. Bully-victims are at even greater risk for maladjustment,[5] exhibiting attention and behavioral difficulties,[4,14] displaying poor social skills,[15,16] and reporting increased levels of depression and anxiety through adolescence and into adulthood.[2] By contrast, the negative outcomes of bullying perpetration are less clear. Bullies have been found more likely to engage in delinquent or antisocial behavior[17,18]; however, once other family and childhood risk factors are taken into account, they do not appear to be at any greater risk for poorer health, criminal, or social outcomes in adulthood.[3]

Up to one third of children are involved in bullying, as bully, victim, or bully-victim,[19,20] and when considered alongside the damaging effects on physical and mental health, bullying can be seen as a major public health concern.[21] Identifying risk factors for bullying aids potential efforts in targeting resources, which can prevent youths from becoming involved in bullying, but also limits the impact it has on their health and well being. Traditional risk factors, such as age and gender, show a clear association[22,23]; however, there are a range of other potential determinants whose relationship to bullying remain unclear. One such determinant is socioeconomic status (SES), which shows some links to bullying, but at present, research findings are inconsistent regarding roles (i.e., bully, victim, or bully-victim).

SES is an aggregate concept comprising resource-based (i.e., material and social resources) and prestige-based (individual's rank or status) indicators of socioeconomic position, which can be measured across societal levels (individual, household, and neighborhood) and at different periods in time.[24] It can be assessed through individual measures, such as education, income, or occupation,[25,26] but also through composite measures that combine or assign weights to different socioeconomic aspects to provide an overall index of socioeconomic level. There is no standard measure of SES; indicators are used to measure specific aspects of socioeconomic stratification.[26] Accordingly, different measures of SES may show varying effects, which can result from differing causal pathways, or through interactions with other social characteristics, such as gender or race.[27] The multifaceted nature of SES has resulted in a lack of consistency in how researchers measure its relationship to bullying, and although several studies provide individual assessments of this relationship, as yet there is no clear consensus over whether roles in bullying are associated with individual socioeconomic measures, or in general, with SES.

Currently, the literature suggests some link between low SES and victims or bully-victims at school.[28,29] Specifically, being a victim has been reported to be associated with poor parental education,[30,31] low parental occupation,[32] economic disadvantage,[33,34] and poverty.[35] In addition, several studies found that bully-victims are also more likely to come from low socioeconomic backgrounds,[29,30] including low maternal education[28] and maternal unemployment.[36] However, others found little or no association between SES and victims or bully-victims.[37–39] The type of bullying may matter in relation to SES. Victims of physical and relational bullying have been found to more often come from low affluence families, whereas victims of cyber bullying have not.[40]

Compared with victimization, few studies have explored the link between SES and bullying others. Some studies found bullying others to be associated with low SES, including economic disadvantage,[34] poverty,[35] and low parental education.[30] Additionally, where composite measures have been used, children from low socioeconomic backgrounds have been found to bully others slightly more often.[29,41] By contrast, others found no association between bullying perpetration and measures of SES.[38,39,42]

There is a small but growing body of literature that examines the relationship between bullying and SES, and although findings tend to suggest that victims, bully-victims,

and bullies are more likely to come from low socioeconomic backgrounds, the results are far from conclusive. First, studies differ in their approach to measuring SES; some use composite measures, combining multiple indicators such as parental education, wealth, and occupation, whereas others concentrate on a single socioeconomic indicator, most often parental education, affluence, or occupation. How bullying relates to SES may differ according to which socioeconomic indicator is used; therefore, in interpreting results, one must consider not only how bullying relates to SES in general, but also which socioeconomic indicator was used, and how this may have influenced the result. Furthermore, although several studies indicate an association between bullying and low SES, the reported effect sizes vary greatly across studies, with some reporting weak and others moderate to strong associations. So far, the associations between bullying and SES have not been quantified across a range of studies in a systematic way. To address this gap in the literature, we conducted a systematic review and meta-analysis that aimed to determine more precisely the exact nature and strength of the relationship between SES and bullying. We systematically investigated the association between the role taken in school bullying (victim, bully, or bully-victim) and measures of SES.

METHODS

Our study was conducted in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA) checklist (data available as a supplement to this article at http://www.ajph.org).[43] To identify studies that reported an association between SES and bullying, we performed a systematic search of the literature using 5 psychological and medical databases: Web of Knowledge, Scopus, PubMed, PsycINFO, and Embase. Our search focused on identifying cross-sectional or prospective longitudinal studies published between January 1970 and November 2012; we used the keywords "bully," "bulli*," or "peer victim" in combination with the search terms "socioeconomic," "economic*," "affluence," "inequality," "standard of living," "poverty," "deprivation," "disadvantaged," "social class," "educational status," "educational level," "educational attainment," "level of education," "employment," "unemployment," "labor," "occupation," "profession," "vocation," "income," "salary," "wage," "wealth," "financial," and "welfare." Search terms for SES were identified using Medical Subject Headings. To identify any publications missed through the database search, we used additional hand searches in the back catalogs of 4 journals that regularly publish studies on bullying: *Journal of Child Psychology and Psychiatry*, *Journal of School Violence*, *Aggressive Behavior*, and *Developmental Psychology*.

Inclusion and Exclusion Criteria

We screened abstracts for all search results for relevancy using the following inclusion criteria. First, to be included in our review, studies had to be written in English, and published as an article, book, or book chapter. Theses and unpublished conference papers were not considered. Furthermore, the study had to report primary research that employed a cross-sectional or prospective longitudinal design. Second, the study population had to focus on children and adolescents between the ages of 4 and 18 years. Third, the study had to include measures of peer victimization and SES. All forms of bullying, ranging from physical or relational to cyberbullying, were suitable for inclusion, and could be measured using self, peer, parent, or teacher reports. For SES, studies had to report composite measures related to overall SES, or individual socioeconomic indexes, such as parental education, affluence, parental occupation, disadvantage, or income. Finally, studies had to provide, or were able to provide after request, sufficient statistical information to enable calculation of effect size. This could be reported as raw data (e.g., numbers [percentages] or means ±SD) or as calculated effect sizes (e.g., odds ratios [OR], *F* values, or correlation coefficients).

All abstracts were independently screened by 2 raters using the previously described inclusion and exclusion criteria. To assess agreement, both raters screened a subsample of studies (n = 847, 26%), giving an agreement percentage of 97.9% (Cohen $\kappa = 0.82$). Disagreements were resolved through discussions with a trained supervisor, and minor modifications were made to the inclusion and exclusion criteria. Both raters then screened a further sample of studies (n = 908, 27.6%), giving an agreement percentage of 99.2% (Cohen $\kappa = 0.91$).

Coding of Studies

Each study was independently screened by 2 researchers and coded on the basis of bullying role (victim, bully, or bully-victim) and socioeconomic measure. A range of socioeconomic measures were reported, and were grouped into 6 broader categories: affluence (family affluence scale, wealth), parental education (mother's or father's educational attainment), disadvantage (deprivation, financial difficulties, socioeconomic disadvantage), income (annual household income, combined parental income), occupation (mother's or father's occupation, parental unemployment), and SES (individual, multiple, or composite measures of SES, social class).

Moderator variables were created based on 5 key study characteristics: study design (cross-sectional or longitudinal), country (Europe, North America, other or cross-national), individual's age (child: ages < 11 years, adolescent: ages 11–18 years, or both), type of measure (dichotomous, categorical, or continuous), and socioeconomic measure (affluence, education, disadvantage, income, occupation, or SES).

Data Analysis

All analyses were conducted using Comprehensive Meta-Analysis (CMA) version 2.2.[44] ORs were chosen as the main unit of analysis because this was appropriate when comparing 2 independent groups on a dichotomous outcome,[45] and the majority of studies compared victims, bullies, or bully-victims with non-involved children on a categorical measure of SES (e.g., low vs medium SES, poor vs average parental education). Only 8 studies reported SES as a continuous measure. The remaining 20 studies used a dichotomous or categorical measure of SES, or used a scale that could be easily categorized. When studies directly reported ORs and 95% confidence intervals (CIs), these were input into CMA. In addition, some studies reported log ORs and SEs, which were then transformed into ORs.[46] When ORs were not reported, these were estimated by constructing 2×2 contingency tables from the raw data and

converted into ORs using CMA.[44] Several studies reported effect sizes for multiple levels of an outcome variable (e.g., reporting ORs for both low vs medium SES and low vs high SES), in which case, the effect sizes were combined using CMA to form pooled ORs.[46] In addition, some studies reported multiple effect sizes among 2 or more independent groups (e.g., for males and females), in which case, individual ORs were extracted, and a pooled OR was constructed.[46]

We computed overall effect sizes by combining socioeconomic indexes that were broadly related to affluence, parental education, disadvantage, income, occupation, and singular, or composite measures of SES. To assess the relationship with bullying across the socioeconomic spectrum, we performed 2 separate analyses; the first compared the lowest socioeconomic group with all others, whereas the second compared the highest socioeconomic group with all others. Exposure groups were constructed by using the role in school bullying (victim, bully, or bully-victim) compared with noninvolved individuals; therefore, separate meta-analyses were performed for victims, bullies, and bully-victims.

For each study included, we compared the individual ORs and 95% CIs with the overall weighted effect size across studies according to SES. We assessed the summary effect sizes using the random effects model, computed through the DerSimonian and Laird Method.[47] This approach incorporates the heterogeneity of effects into the overall analysis; therefore, it provides a stricter effect size than would be found using a fixed-effects model. Overall effect sizes were reported using ORs and 95% CIs.

Because a wide variety of socioeconomic measures were used in this study, we anticipated heterogeneity in the results. We examined the distribution of effect sizes using the Q and I^2 statistics. A P value of less than 0.05 indicated significant heterogeneity.[46] To examine variability in the effect size across studies, additional moderator analysis was performed (data available as a supplement to this article at http://www.ajph.org). The 5 moderator categories used (study design; country; individual age; type of measure; socioeconomic measure) were previously described. For each category of a moderator variable, a within-groups Q statistic (Qw) and between-groups Q statistic (Qb) were calculated. A significant within-group difference indicated that effect sizes within a category were heterogeneous, whereas a significant between-group difference indicated that effects sizes significantly differed across categories of the moderator variable.[46]

To assess publication bias, we computed the Rosenthal fail-safe number for each effect size to identify the number of studies that would be required to make the effect nonsignificant.[48] We calculated a tolerance level by multiplying the number of effect sizes within the analysis (k), and adding 10 (5k + 10 benchmark). A fail-safe number that exceeded this tolerance level indicated the presence of a statistically significant meta-analytic effect.[48] To identify the association between the standardized effect sizes and the variance of these effects, we used the Begg and Mazumdar rank correlation test, using the Kendall τ.[49] A significant effect indicated that small studies with undesirable results were less likely to be published, whereas a nonsignificant association suggested that there was no underlying publication bias. We then used the Egger linear regression test to identify whether there was a tendency for studies to be published selectively, based on the nature and direction of their results. The intercept in the regression corresponded to the slope in a weighted regression of the effect size on the SE. The farther the intercept value deviated from the zero, the less symmetrical the study findings.[50] Finally, to assess and adjust for the potential influence of publication bias, we used the "trim and fill" method of Duval and Tweedie.[51] This method initially trimmed the asymmetric studies from one side to identify the unbiased effect, and then filled the plot by reinserting the trimmed studies and their imputed counterparts.

RESULTS

The electronic database search yielded 1740 results from the Web of Knowledge, 1000 from Scopus, 4110 from PubMed, 1994 from PsycINFO, and 317 from Embase. In total, 9111 items were retrieved from the 5 databases (Figure 1). There was an overlap of 5817 articles that were subsequently removed, giving a total of 3294 items retrieved through the database search. Of the 3294 items retrieved, 3136 were excluded from the analysis because they did not fit the inclusion criteria. Reasons for exclusion were not written in English (n = 48), not a book, book chapter, or peer-reviewed article (n = 36), sample not between ages 4 and 18 years (n = 1276), no measures of bullying reported (n = 724), or no measures of SES (n = 1052).

In total, 158 abstracts were identified that met all of the inclusion criteria, and these were carried forward to full text screening, where they were assessed using the inclusion or exclusion criteria described previously. A further 130 studies were excluded from the analysis, the reasons for which were full text not available in English (n = 4), item did not present primary research (n = 5), no independent measures of bullying reported (n = 10), no reported measures of SES (n = 33), and no direct relationship between bullying and SES reported (n = 75). Four articles did not provide sufficient data that could be used to calculate the effect size, in which case the authors were contacted, and the missing information was requested. One author was able to provide missing data. However, 2 authors could not be reached, and 1 was unable to provide additional data; therefore, another 3 studies were excluded. Following abstract and full text screening, a total of 28 studies were identified that met the inclusion criteria (see Table 1 for descriptions of studies).

Victims and Socioeconomic Status

In total, 22 studies reported an association between SES and victimization. Sixteen of these provided data relating to low SES, whereas 11 provided data on high SES. Overall, results indicated that victimization was positively associated with low SES (OR = 1.52; 95% CI = 1.36, 1.71; Figure 2) and negatively related to high SES (OR = 0.73; 95% CI = 0.63, 0.86; Figure 3). Significant heterogeneity was found among studies (data available as a supplement to the online version of this article at http://www.ajph.org). Those reporting on low SES differed by country (Qb = 15.24; $P < .05$), type of measure (Qb = 21.79; $P < .005$), and socioeconomic

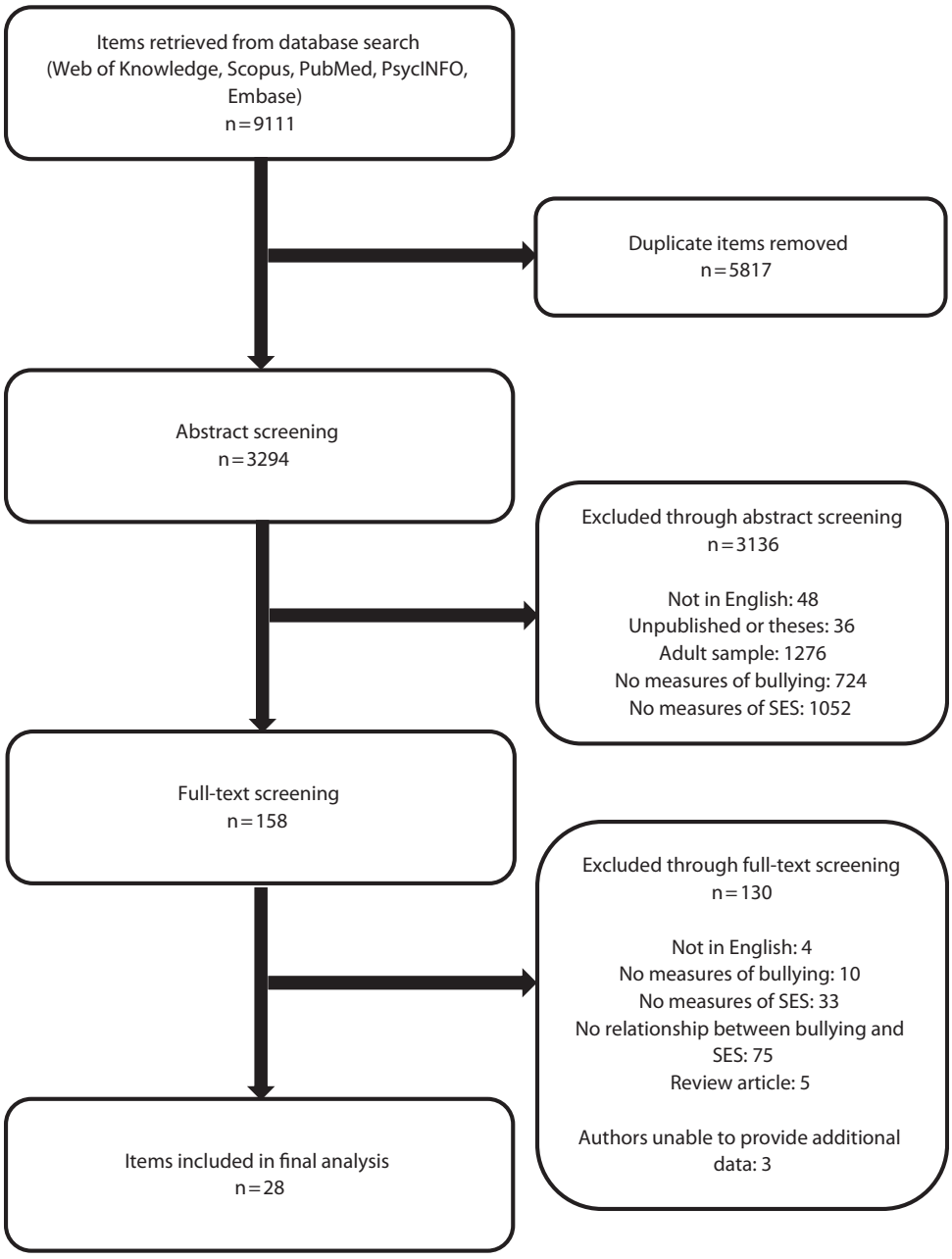


FIGURE 1—Flow diagram showing study eligibility: Socioeconomic Status and Bullying Meta-Analysis.

measure (Qb = 73.12; $P < .005$). This indicated that stronger relationships between low SES and victimization were reported in cross-national studies (mean effect size = 1.57; n = 3), in studies which used scale measures of SES (mean effect size = 2.04; n = 2), and in studies which used measures pertaining to either affluence (mean effect size = 1.84; n = 3) or overall SES (mean effect size = 1.95; n = 3). For studies that reported associations between victimization and high SES, differences were observed according to design (Qb = 30.40; $P < .005$), country (Qb = 1085.33; $P < .005$), and measure of SES (Qb = 903.86; $P < .005$), indicating a stronger association between victimization and high SES in cross-sectional studies (mean effect size = 0.92; n = 11), in cross-national research (mean effect size = 0.32; n = 2), and in studies which used either measures of affluence (mean effect size = 0.36; n = 2) or parental education (mean effect size = 0.50; n = 4).

No evidence of publication bias was found for either the high or low socioeconomic models using the 5k + 10 benchmark, or through the Begg and Mazumdar rank correlation test or Egger's test. Duval and Tweedie's trim and fill analysis slightly reduced the overall effect sizes, but the associations with both low (OR = 1.40; 95% CI = 1.24, 1.58) and high SES (OR = 0.95; 95% CI = 0.94, 0.97) retained their significance (Table 2).

Bullies and Socioeconomic Status

Nineteen studies reported an association between SES and bullying perpetration. Of these, 10 provided data relating to low SES, whereas 13 provided data on high SES. Overall, results indicated that bullying perpetration was positively associated with low SES (OR = 1.14; 95% CI = 1.02, 1.27; Figure 4) and negatively related to high SES (OR = 0.89; 95% CI = 0.83, 0.95; Figure 5). Significant heterogeneity was found in the sample (data available as a supplement to this article at http://www.ajph.org). Studies that reported on low SES differed by design (Qb = 11.66; $P < .05$), country (Qb = 17.61; $P < .005$), age group (Qb = 24.62; $P < .005$), type of measure (Qb = 14.45; $P < .005$), and socioeconomic measure (Qb = 23.60; $P < .005$). This indicated that stronger relationships between low SES and bullying perpetration were reported in longitudinal studies (mean effect size = 1.47; n = 1), in studies conducted outside of

TABLE 1—Summary of Studies: Socioeconomic Status and Bullying Meta-Analysis

Study	Age	No.	Dataset	Country	Design	Type of Bullying	Bullying Role	Measure of SES
Alikasifoglu et al. [28]	Adolescents	4153	HBSC1997/1998	Europe	Cross-sectional	General	Victims, bullies, bully-victims	Affluence parental education
Analitis et al.[20]	Children and adolescents	16 210	Kidscreen 2003	Cross national	Cross-sectional	General	Victims	Affluence parental education
Barboza et al.[52]	Adolescents	9816	HBSC 1997/1998	North America	Cross-sectional	General	Bullies	Income parental education
Barker et al.[53]	Children	1970	Quebec Longitudinal Study of Child Development 1997/1998	North America	Longitudinal	General	Victims	Income parental education
Bowes et al.[34]	Children	2232	E-risk study 1994/1995	Europe	Longitudinal	General	Victims, bullies, bully- victims	Disadvantage
Christie-Mizell et al.[54]	Adolescents	687	NLSY 1979	North America	Longitudinal	General	Bullies	Income parental education
Due et al.[55]	Adolescents	142 911	HBSC 2001/2002	Cross national	Cross-sectional	General	Victims	Affluence
Due et al.[56]	Adolescents	614	Danish Longitudinal Health Behavior Study	Europe	Longitudinal	General	Victims	SES
Elgar et al.[57]	Adolescents	66 910	HBSC 2006	Cross national	Cross-sectional	General	Bullies	Income
Flouri and Buchanan[58]	Adolescents	1147	Unique	Europe	Cross-sectional	General	Bullies	Disadvantage
Garner and Hinton[37]	Children	77	Unique	North America	Cross-sectional	General	Victims, bullies	Income
Glew et al.[35]	Children and adolescents	3530	Unique	North America	Cross-sectional	General	Victims, bullies, bully-victims	Disadvantage
Jansen et al.[29]	Adolescents	1959	TRAILS 2001/2002	Europe	Longitudinal	General	Victims, bullies, bully-victims	SES
Jansen et al.[30]	Children	11 419	Rotterdam Youth Health Monitor	Europe	Cross-sectional	General	Victims, bullies, bully- bictims	Parental education Parental occupation
Kim et al.[59]	Adolescents	1666	Unique	Other	Cross-sectional	General	Victims, bullies, bully- victims	SES
Lemstra et al.[32]	Children and adolescents	4197	Unique	North America	Cross-sectional	Physical, verbal, social, cyber	Victims	Parental education Parental occupation
Lumeng et al.[33]	Children and adolescents	821	Study of Early Child Care and Youth Development	North America	Longitudinal	General	Victims	Disadvantage
Ma[38]	Children and adolescents	13 751	Unique	North America	Cross-sectional	General	Victims, bullies	SES
Magklara et al.[36]	Adolescents	5614	Unique	Europe	Cross-sectional	General	Victims, bullies, bully victims	Disadvantage Parental education
Nordhagen et al.[31]	Children and adolescents	17 114	Unique	Europe	Cross-sectional	General	Victims	Parental education
Pereira et al[60]	Children	4092	Unique	Europe	Cross-sectional	General	Victims, bullies	SES
Ranta et al.[61]	Adolescents	3156	Unique	Europe	Cross-sectional	Overt, covert	Victims	Parental occupation
Shetgiri et al.[42]	Children and adolescents	13 710	HBSC 2001/2002	North America	Cross-sectional	General	Bullies	Affluence
Veenstra et al.[39]	Children and adolescents	1065	TRAILS	Europe	Longitudinal	General	Victims, bullies, bully-victims	SES
Wang et al.[40]	Children and adolescents	7182	HBSC 2005/2006	North America	Cross-sectional	Physical, verbal, relational, cyber	Victims, bullies, bully- victims	Affluence

Continued

TABLE 1—*Continued*

Wilson et al.[62]	Adolescents	1427	Global School-based Student Health Survey	Other	Cross-sectional	General	Victims	Disadvantage
Wolke et al.[41]	Children	3915	Unique	Europe	Cross-sectional	General	Victims, bullies	SES
Zimmerman et al.[63]	Children	1266	NLSY 1979	North America	Longitudinal	General	Bullies	Parental education

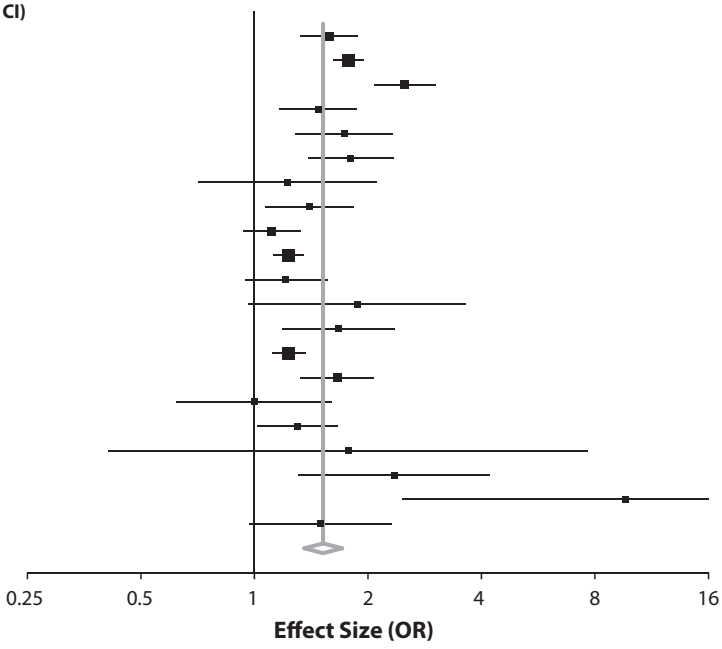
Note. HBSC = Health Behaviour in School-Aged Children; NLSY = National Longitudinal Survey of Youth; SES = socioeconomic status; TRAILS = Tracking Adolescents' Individual Lives Survey.

North America and Europe (mean effect size = 3.45; n = 1), and in studies which used a child sample (mean effect size = 1.37; n = 4). Furthermore, stronger associations were found in which scale measures of SES were used (mean effect size = 1.47; n = 1), and in studies which used overall measures of SES (mean effect size = 1.90; n = 2). For the association between bullying perpetration and high SES, differences were observed according to design (Qb = 6.62; $P < .05$), country (Qb = 12.40; $P < .05$), age group (Qb = 24.97; $P < .005$), type of measure (Qb = 8.76; $P < .05$), and socioeconomic measure (Qb = 40.40; $P < .005$). This indicated that stronger associations between bullying perpetration and high SES were found in longitudinal studies (mean effect size = 0.97; n = 6), in studies based in North America (mean effect size = 0.98; n = 8), and in studies using a child population (mean effect size = 0.32; n = 2). In addition, stronger effects were found in studies which used binary measures of SES (mean effect size = 0.72; n = 1) and in studies which used parental education as an indicator of SES (mean effect size = 0.59; n = 3).

Some evidence of publication bias was found for the association between low SES and bullying perpetration, whereby the fail-safe number did not exceed the benchmark figure, indicating that future studies might alter the observed effect. A significant result was also found using Egger's test, which suggested that nonsignificant findings were less likely to have been published. Duval and Tweedie's trim and fill analysis reduced the effect size between bullying perpetration and low SES, resulting in this becoming nonsignificant (OR = 1.00; 95% CI = 0.97, 1.03). However, no evidence of publication bias was observed for the association between bullying perpetration and high SES; therefore, this association remained significant (OR = 0.98; 95% CI = 0.97, 0.99; Table 2).

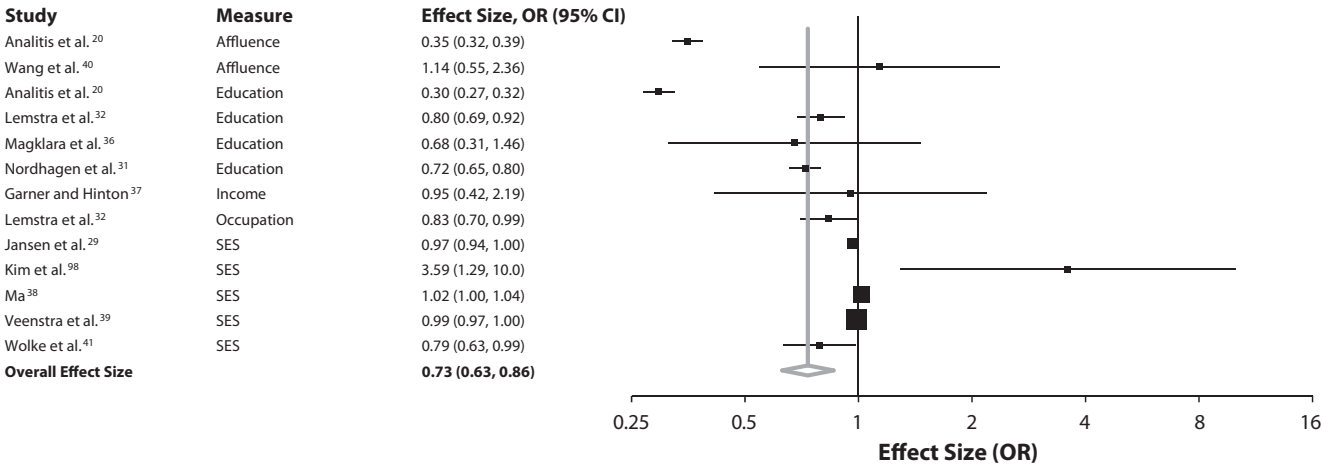
Bully-Victims and Socioeconomic Status

Nine studies reported an association between SES and bully-victims; 6 of these provided data relating to low SES, and 5 provided data on high SES. Results showed that being a bully-victim was positively associated with low SES (OR = 1.71; 95% CI = 1.22,



Note. CI = confidence interval; OR = odds ratio; SES = socioeconomic status.

FIGURE 2—Forest plot showing association between victimization and measures of low socioeconomic status: Socioeconomic Status and Bullying Meta-Analysis.



Note. CI = confidence interval; OR = odds ratio; SES = socioeconomic status.

FIGURE 3—Forest plot showing association between victimization and measures of high socioeconomic status: Socioeconomic Status and Bullying Meta-Analysis.

2.39; Figure 6), but was not related to high SES (OR = 0.98; 95% CI = 0.93, 1.04; Figure 7). Significant heterogeneity was found among studies (data available as a supplement to the online version of this article at http://www.ajph.org). Those reporting on low SES differed by design (Qb = 32.88; $P < .005$), age group (Qb = 11.16; $P < .05$), type of measure (Qb = 36.70; $P < .005$), and socioeconomic measure (Qb = 25.31; $P < .005$). This indicated that stronger relationships between low SES and bully-victims were reported in longitudinal studies (mean effect size = 3.95; n = 1), among child populations (mean effect size = 2.02; n = 3), in studies that used scale measures of SES (mean effect size = 3.95; n = 1), and in studies that used measures pertaining to either disadvantage problems (mean effect size = 2.66; n = 3) or overall SES (mean effect size = 6.45; n = 1). For studies that reported associations between bully-victims and high SES, differences were only observed according to country (Qb = 14.50; $P < .05$), with a stronger association found in studies conducted outside of Europe or North America (mean effect size = 0.77; n = 1).

Publication bias was found for the high socioeconomic model, whereby the fail-safe number did not exceed the 5K + 10 benchmark; however, the Begg and Mazumdar rank correlation test and Egger's test did not reach significance. Duval and Tweedie's trim and fill analysis slightly reduced the effect size for the association with low SES (OR = 1.54; 95% CI = 1.36, 1.74); however, this remained significant (Table 2).

TABLE 2—Publication Bias Analysis: Socioeconomic Status and Bullying Meta-Analysis

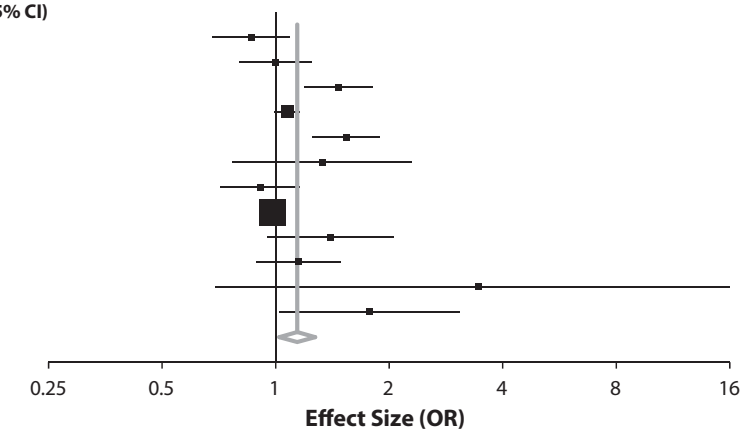
Subgroup/Outcome	Fail-Safe No.	5k + 10 Benchmark	Kendall τ	*P*	Egger Test, b (95% CI)	*P*	Trim and Fill, OR (95% CI)
Victims							
Low	1343	115	0.15	.35	0.89 (−0.98, 2.73)	.34	1.40 (1.24, 1.58)
High	972	75	0.09	.67	−5.54 (−12.68, 1.59)	.12	0.95 (0.94, 0.97)
Bullies							
Low	39	70	0.17	.45	1.61 (0.11, 3.10)	.04	1.00 (0.97, 1.03)
High	81	85	−0.06	.77	−1.32 (−3.20, 0.57)	.16	0.98 (0.97, 0.99)
Bully-victims							
Low	98	50	0.43	.14	2.15 (−2.81, 7.12)	.33	1.54 (1.36, 1.74)
High	0	35	0.30	.46	1.10 (−2.50, 4.71)	.40	0.98 (0.96, 1.00)

Note. CI = confidence interval; OR = odds ratio.

DISCUSSION

To our knowledge, this is the first systematic review and meta-analysis to explore the association between SES and school bullying. The results indicated significant, but weak associations between measures of SES and bullying roles. Victimization was positively related to low SES, and negatively associated with high SES. Bully-victim status was related to low SES, but not to high SES. Bullying perpetration was the most weakly related, indicating that bullies were only slightly less likely to come from higher socioeconomic backgrounds after adjusting for publication bias. Although significant, these effects, particularly for bullies, were small, suggesting that roles in bullying showed some, but generally weak relationships to SES.

First, considering children who were victimized at school, both victims and bully-victims were

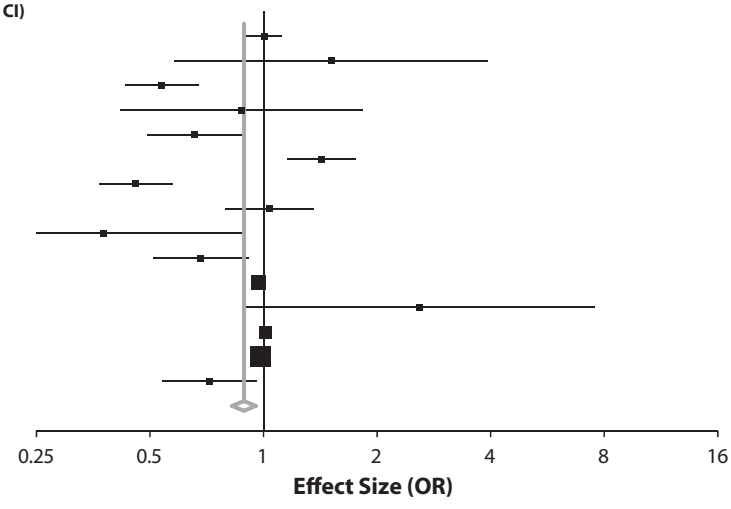


Note. CI = confidence interval; OR = odds ratio; SES = socioeconomic status.

FIGURE 4—Forest plot showing association between bullying perpetration and measures of low socioeconomic status: Socioeconomic Status and Bullying Meta-Analysis.

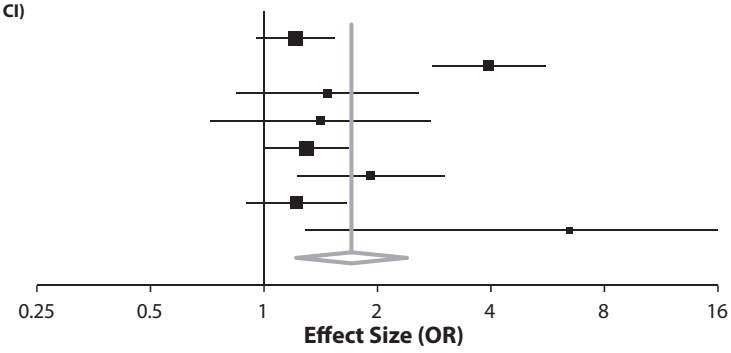
more likely to come from low socioeconomic backgrounds. At face value, these findings might be indicative of a direct relationship, whereby low SES itself was a cause for victimization. Being different from the peer group appeared to be a main motivator for victimization,[1,64] and simply coming from a lower socioeconomic background or being unable to afford lifestyle goods or resources available to the rest of the peer group might have singled out children for victimization by their peers. In addition, higher SES was accompanied by greater access to intellectual resources, including general and specific knowledge, norms and values, and problem solving skills,[26,27] all of which could aid in the development of social skills and coping strategies,[30] and reduce the likelihood of children experiencing problematic peer relationships.

Alternatively, our findings might be explained by considering how children's development and experiences differed across socioeconomic strata. Children from low socioeconomic families were found to experience more adverse home environments, including facing harsher punishment,[65–67] restrictive and authoritarian parenting practices,[68–70] experiencing greater levels of sibling violence,[71] and being more often exposed to incidents of domestic violence.[72,73] From a social learning theory perspective,[74] children's early relationships at home shape how they interact with others later in life. Experiencing violence or abuse at home can affect children's ability to form and maintain peer relationships,[75,76]



Note. CI = confidence interval; OR = odds ratio; SES = socioeconomic status.

FIGURE 5—Forest plot showing association between bullying perpetration and measures of high socioeconomic status: Socioeconomic Status and Bullying Meta-Analysis.

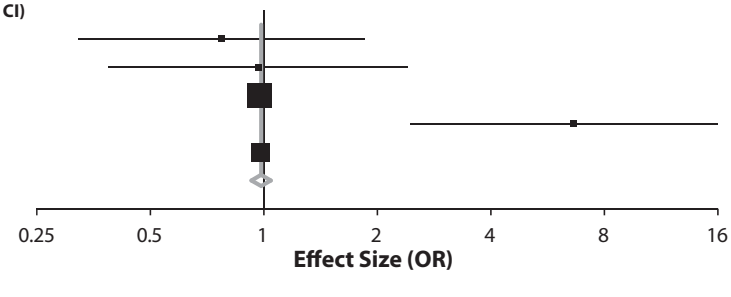


Note. CI = confidence interval; OR = odds ratio; SES = socioeconomic status.

FIGURE 6—Forest plot showing association between bullying-victimization (bully-victims) and measures of low socioeconomic status: Socioeconomic Status and Bullying Meta-Analysis.

and both victims and bully-victims were found to have experienced harsher parenting,[77] abuse[78,79] and sibling violence[80] (also N. Tippett and D. Wolke, unpublished data, 2014) more often than children not involved in bullying. Although some family factors showed moderate or strong relationships to bullying,[77,78] the association between low SES and victims or bully-victims was weak according to statistical conventions,[81] suggesting that the results might not reflect a direct association between bullying and SES, but rather an indirect relationship that was mediated by the child's home environment. Accordingly, it might be that factors associated with low SES, such as how children are parented, get on with their siblings, or observe domestic violence, were better suited to predicting victim and bully-victim roles than socioeconomic level.

Second, the relationship between bullying perpetration and SES was notably weaker than that found for victims and bully-victims, showing no association with low SES, and indicating that bullies were only slightly less likely to come from high socioeconomic households after adjusting for publication bias. This might seem somewhat surprising considering that low SES was strongly linked with behavioral difficulties in children, particularly aggression and antisocial behavior.[82–87] Furthermore, the risk for maladjustment and behavioral difficulties increased the lower the SES.[88,89] If bullies were simply those children who exhibited high aggression and behavioral difficulties, then a strong link between bullying and SES might be expected; however, no such association was observed. In explaining this, it was important to consider bullying not as an individual trait, but rather as a social strategy to achieve peer acceptance, social dominance, and ultimately, access to resources.[90,91] Bullies were not highly aggressive "oafs" who exhibited behavioral difficulties and lacked social skills or understanding; rather they were reported to be intelligent, skilled manipulators[92,93] with good emotional understanding of others,[94] who used bullying as a means of raising their social profile and attaining dominance over their peers.[95,96] Furthermore, there appeared to be few costs associated with bullying others; aside from the immediate risk of being caught and punished, bullies did not appear at any greater risk of negative health, social, or criminal outcomes in adolescence or adulthood.[2,3] Bullying has been described as an evolutionary strategy,[97] and accordingly, bullying perpetration would be expected in any socioeconomic strata in which there are potential gains to be made. This was compatible with recent research, which suggested that it was



Note. CI = confidence interval; OR = odds ratio; SES = socioeconomic status.

FIGURE 7—Forest plot showing association between bullying-victimization (bully-victims) and measures of high socioeconomic status: Socioeconomic Status and Bullying Meta-Analysis.

not the absolute level of SES that predicted bullying, but rather the degree of social inequality that exists within society. Higher rates of bullying were found in countries where social inequality is greatest.[55,57] This was interpreted that in highly unequal societies in terms of resources, there was greater acceptance of getting ahead by any means and for bullies to make greater gains without experiencing any particular costs. The relationship between SES and bullying perpetration might therefore be better understood at a societal rather than individual level. Social inequality and its relationship to bullying might warrant future research on whether and why children engage in school bullying.

Study Limitations

Although our study provided the first systematic assessment of the relationship between bullying and SES, there were a number of limitations. First, significant heterogeneity was found between studies. Moderator analysis indicated significant variations according to which socioeconomic indexes were used, with composite measures of SES tending to report stronger effect sizes than individual socioeconomic indicators. The association with bullying might differ according to socioeconomic measure; however, there was insufficient research to determine how individual indicators, such as affluence or parental education, were specifically related to bullying. We had to acknowledge that the strength of association with bullying roles and underlying causal mechanisms might differ between socioeconomic indexes. Additionally, moderator analysis found some evidence of heterogeneity according to study design, country, sample age, and type of measure; however, no clear trends were observed because of the small number of studies included. To address this lack of homogeneity, we used a random-effects model throughout the analysis that countered the assumption that all studies in the meta-analysis were identical. Second, the majority of studies only reported effects using general measures of bullying. Where studies included measures of different types of bullying (e.g., physical, relational, cyber), these were combined using pooled ORs. There was some indication that the effect of socioeconomic factors might differ between forms of bullying,[40] but there was insufficient data available to explore this further. Third, only 1 study reported separate effects for males and females; therefore, it was not possible to establish whether gender moderated the relationship between bullying and socioeconomic factors. Finally, there was some evidence of publication bias in favor of publications that found a significant association of bullying and SES. When these studies were adjusted for publication bias, effect sizes declined further.

Conclusions

We found a significant, albeit weak association between bullying and SES. Low SES was associated with increased odds of being a victim or bully-victim, and the early experiences faced by children living in low socioeconomic households might contribute toward the risk of being victimized. By contrast, SES was a poor predictor of bullying others, suggesting that bullying perpetration did not appear to be socially patterned and occurred across all socioeconomic strata at fairly similar rates. Thus, socioeconomic factors, based on current evidence, provided little additional information for targeting efforts in preventing bullying. Rather, to reduce bullying perpetration and the adverse impact that it can have on children's health, interventions should target all children, and not just those that experience greater socioeconomic deprivation. ■

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Contributors

N. Tippett conducted the analysis and led the writing. D. Wolke devised and supervised the project and contributed toward the writing.

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Human Participant Protection

Human participant protection was not required because no human participants were used in this study.

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