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Direct and Indirect Aggression During Childhood and Adolescence: A Meta-Analytic Review of Gender Differences, Intercorrelations, and Relations to Maladjustment

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This meta-analytic review of 148 studies on child and adolescent direct and indirect aggression examined the magnitude of gender differences, intercorrelations between forms, and associations with maladjustment. Results confirmed prior findings of gender differences (favoring boys) in direct aggression and trivial gender differences in indirect aggression. Results also indicated a substantial intercorrelation ($\bar{r} = .76$) between these forms. Despite this high intercorrelation, the 2 forms showed unique associations with maladjustment: Direct aggression is more strongly related to externalizing problems, poor peer relations, and low prosocial behavior, and indirect aggression is related to internalizing problems and *higher* prosocial behavior. Moderation of these effect sizes by method of assessment, age, gender, and several additional variables were systematically investigated.

Child and adolescent aggression has received long-standing theoretical and empirical attention. The reason for this attention is clear: Aggressive behaviors, on average, are associated with maladjustment for both aggressors (Coie & Dodge, 1998; S. Feshbach, 1970; Ladd, 2005; Parke & Slaby, 1983; cf. Hawley, Little, & Rodkin, 2007) and victims (Card, 2003; Card, Isaacs, & Hodges, 2007). Historically, research has focused on direct forms of aggression, especially acts of physical aggression. Because boys typically enact more physical aggression than girls (Hyde, 1984; Maccoby & Jacklin, 1974), less research has focused on girls' aggression. Some studies have not included girls in their samples, and even studies that included boys and girls have not always analyzed potential gender differences (Björkqvist, 1994).

In the 1980s and 1990s (e.g., Björkqvist, Lagerspetz, & Kaukiainen, 1992; Cairns, Cairns, Neckerman, Ferguson, & Gariépy, 1989; Crick, 1995; Crick & Grotpeter, 1995; Lagerspetz, Björkqvist, & Peltonen, 1988; Lancelotta & Vaughn, 1989; for earlier work, see Buss, 1961; N. D. Feshbach, 1969), researchers began considering a wider range of aggressive behaviors, including forms of aggression that are more covert or indirect in nature and aimed at damaging the target's social relations (rather than, e.g., inflicting bodily harm). These forms of aggression have been given various names, including indirect, covert, relational, and social aggression. The term *indirect aggression* was introduced by N. D. Feshbach (1969) to refer to behaviors harming a target by rejection or exclusion. Lagerspetz et al. (1988) later used this term to refer to behaviors such as gossiping, befriending others, and exclusion that do not directly confront the victim. Shortly thereafter, the term *social aggression* was used by Cairns et al. (1989) to refer to children's descriptions of manipulations in group acceptance through ostracism or character attacks. Galen and Underwood (1997) used this same term to refer to behaviors such as rejection, negative nonverbal expressions, rumor spreading, or social exclusion aimed at damaging the victim's self-esteem or social status. Crick (e.g., 1995) used the term *relational aggression* to refer to harming others through manipulation of peer relationships (e.g., threatening to terminate friendship, excluding from group).

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When precisely applied, each term refers to slightly different behaviors (Xie, Cairns, & Cairns, 2005). Although the existing research lacks perfect correspondence between terminology used and operational definitions employed, the constructs converge around the common theme of behaviors that attack a victim's actual or perceived social relations with others, often (though not always) in a way that avoids direct confrontation. In practice, most researchers have accepted some blurring at the boundaries among these definitions (Archer & Coyne, 2005; Björkqvist, 2001; Underwood, Galen, & Paquette, 2001). This practice is supported by factor-analytic studies indicating two forms of aggressive behavior (e.g., Crick & Grotpeter, 1995; Grotpeter & Crick, 1996; Hart, Nelson, Robinson, Olsen, & McNeilly-Choque, 1998; Vaillancourt, Brendgen, Boivin, & Tremblay, 2003). One factor includes physical reacts such as hitting, pushing, and tripping as well as overt verbal attacks such as name calling, taunting, and threatening. The second factor includes hurtful manipulation of relationships (e.g., sabotaging the target's friendships or romantic relationships) and damaging the target's social position (e.g., spreading gossip, excluding from activities), often through indirect or covert means. In this article, we refer to these two broad forms of aggression as direct and indirect aggression, respectively, based on both historical precedence (N. D. Feshbach, 1969; Lagerspetz et al., 1988) and arguments supporting this terminology (Archer & Coyne, 2005; Björkqvist, 2001). The term *indirect aggression* is also limited in that it excludes more direct attacks on social well-being, but it is a reasonable representation of this heterogeneous class of behaviors. Therefore, we adapt an inclusive definition of these two forms, including both physical and verbal aggression within direct aggression and the various terms social, relational, covert, and indirect aggression within our consideration of indirect aggression.

Gender Differences in Direct and Indirect Aggression

Attention to these indirect forms has led to a resurgence of interest in potential gender differences in aggression. Some have argued that although boys enact more direct aggression than girls, the indirect forms of aggression may be more typical of girls than of boys (e.g., Björkqvist et al., 1992; Crick, 1997). Based on etiological explanations for aggressive behaviors, several explanations for why girls might be more indirectly aggressive than boys have been offered (Archer, 2004). One is based on sexual selection theory, suggesting that attacks aimed at girls' sexual reputations (e.g., gossip about promiscuity) and their social reputations are especially prominent in intrafemale competition (Artz, 2005). A related biological explanation is that females' lower physical strength necessitates girls' reliance on indirect means of aggression more so than boys (Björkqvist, 1994). Another explanation is based on findings that girls' peer groups are characterized by fewer, closer friendships relative to boys' more numerous, casual relationships (Maccoby, 1990, 1998), suggesting that indirect aggression is particularly hurtful among girls because it targets these relationships (Crick, Bigbee, & Howes, 1996; Galen & Underwood, 1997). Finally, explanations emphasizing socialization argue that differences in the degree to which parents and other adults discourage directly aggressive behavior of girls versus boys leads girls to use more covert forms of aggression (Underwood, 2003). Such differential socialization might further occur within children's sex-segregated peer groups (Maccoby, 1990, 1998), which provides models and reinforcements for appropriate forms of enacting aggression (e.g., indirect aggression within girls' peer groups).

Despite conceptual expectations that girls enact more indirect aggression than boys, the existing literature documenting these gender differences is inconsistent. Archer (2004) performed a meta-analytic review of 78 studies that compared indirect forms of aggression enacted by males versus females from childhood throughout adulthood. His results indicated that, averaged across age, females exhibit more indirect aggression than males when assessed using some methods (i.e., observations, peer ratings, teacher reports) but not others (e.g., peer nominations, self-reports), with the magnitude of these gender differences ranging from small to medium. Archer's results (by method of assessment) specific to childhood and adolescence did not indicate gender differences in indirect aggression, although the simultaneous disaggregation by reporting method and age may have limited the ability to detect such differences.

The first goal of the current meta-analytic review was to examine the magnitude of gender differences in both direct and indirect aggression among children and adolescents. Although this first goal partially overlaps with the previous meta-analysis by Archer (2004), the current meta-analysis extends our understanding in several ways. First, we focus more explicitly on childhood and adolescence. Second, we include more studies during this developmental period (as described below, our examination of gender differences includes 107 studies of samples younger than 18 years, whereas Archer's contained 52 studies assessing this age range), allowing for more precise results and stronger generalizations.

Third, we consider a wider range of methods in assessing aggression. Fourth, we analyze corrected effect sizes (see below) to gain a more accurate representation of true gender differences. Finally, we use random-effects models that allow greater generalization of findings than the fixed-effects models used by Archer.

In addition to examining the magnitude of gender differences in direct and indirect aggression, we evaluate several potential moderators of these differences. First, we consider age moderation. Although Archer (2004) failed to find evidence of age moderation, we expect gender differences to increase between childhood and adolescence due to (a) greater engagement in gender-typical behavior; (b) increasing time spent with peers, especially same-sex peers; (c) biological changes in puberty (e.g., greater gender differentiation in physical stature); and (d) possible increases in intrasex competition (Trivers, 1972; cf. Bjorklund & Pellegrini, 2000; Wilson & Daly, 1985). We also evaluate method of assessing aggression as a potential moderator. Expectations regarding this moderator are less clear. However, we hypothesize that adults' expectations for gender-stereotypic behavior would result in teachers and parents perceiving girls as more indirectly aggressive than boys more so than peer reports, self-reports, or observations. Although we do not have specific hypotheses, we also evaluate several additional moderators of gender differences. We consider two aspects of the context from which samples were drawn: the proportion of ethnic minorities in the sample and the country in which the study was conducted. We also evaluate moderation by the gender of the first author of the study in order to explore whether gender-linked expectations influence findings regarding gender differences. In addition, we consider whether a focus on gender in the study, operationalized by whether the term *gender* (or similar terms) appeared in the title. Finally, we consider publication status in order to evaluate potential biases in the results.

Intercorrelation Between Direct and Indirect Aggression

Although factor-analytic studies have supported the distinctiveness of indirect forms of aggression from direct forms, even a casual perusal of this literature suggests that these two forms of aggression are often highly intercorrelated. The second goal of this meta-analytic review, then, was to evaluate the magnitude of the correlation between direct and indirect aggression and to examine potential moderators of this interrelation. The magnitude of the correlation between these two forms speaks to the important issue of whether they should be viewed as different manifestations of a common underlying construct (if correlations are high) or as separate, independent constructs (if correlations are low). The magnitude of this correlation also speaks to, albeit indirectly, the potential origins of these forms: High correlations would imply common origins such as shared genetic contributions, common evolutionary functions, or common parental or peer socialization for the two forms. In contrast, modest correlations suggest differences in the origins of these two forms. Although our meta-analysis does not attempt to identify these shared versus unique antecedents, the magnitude of the association between direct and indirect forms of aggression can suggest in which direction we should look.

We consider several potential moderators of these correlations, although little prior evidence is available to suggest directions of these moderators. Against the viable alternative of no change, the two forms of aggression may become either more differentiated or more overlapping with age. On the one hand, several reasons for expecting decreasing correlations between direct and indirect aggression with age can be offered. With age, understanding of the outcomes of aggression (both rewards and consequences) and cognitive capacity to enact various forms of aggression may increase. Peer group pressure for ''gender normative'' forms of aggression may also increase with age. Increasing biological differences between boys and girls following puberty and increasing saliency of intrasexual competition (and the use of specific forms of aggression to achieve dominance) might also predict greater differentiation with age. Together, these possibilities suggest that older children and adolescents are more likely to enact a ''preferred'' form of aggression than would younger children, thus leading to a decrease in the magnitude of correlation between direct and indirect aggression with age (i.e., divergence). On the other hand, verbal skills and understanding of social dynamics increase with age (combined with the maintained capacity to enact physical aggression) making all forms available among older children. With increasing age, individuals with a propensity to behave aggressively (e.g., if a common genetic origin for aggressiveness exists) would increasingly use all available forms. This view suggests higher correlations between direct and indirect forms at higher ages (i.e., convergence). Because either possibility is plausible but prior research has not illuminated this issue, we investigate age moderation of this correlation.

Similarly, the prior literature provides little guidance to indicate whether measuring direct and indirect aggression via some sources results in different magnitudes of overlap than do other sources. Such differences, however, might be expected. For example, because trained observers should distinguish between these two forms precisely, observational measures may yield lower correlations between direct and indirect aggression than studies using other sources. In this meta-analysis, we compare the magnitudes of the correlations between direct and indirect aggression when assessed via self-, peer, teacher, and parent reports and observations.

We also examine gender moderation in the magnitude of the correlation between direct and indirect aggression. The direction of this potential moderator is likely to depend on the magnitude of any gender differences (see above). For example, if girls enact more indirect aggression than boys (whereas boys enact more direct aggression than girls), then the correlation between direct and indirect aggression may be similar for boys and girls (i.e., boys enact primarily direct aggression with some secondary indirect aggression, whereas girls enact primarily indirect aggression with some secondary direct aggression). If a gender difference in indirect aggression is not present, then these forms may be more highly intercorrelated among boys (for whom both forms are viable options) than girls (for whom direct aggression is a less viable option and therefore likely enacted by different individuals).

Finally, we systematically explore potential moderation of this intercorrelation by ethnic and national context, author gender, whether the study focused on gender, and publication status.

Associations of Direct and Indirect Aggression With Maladjustment

As noted, aggressive behaviors, on average, are associated with maladjustment. However, far less is known about the specific links that may exist between maladjustment and direct versus indirect forms of aggression. Research emerging in the past couple decades has examined these associations, but the current meta-analysis is the first to quantitatively summarize the associations of direct and indirect aggression with four indices of adjustment: internalizing problems, externalizing problems, prosocial behavior (an index of positive adjustment), and peer relations. Although these constructs represent a small sample of adjustment indices, they give a general indication of the psychosocial adjustment of directly and indirectly aggressive children.

An important question to consider regarding the distinction between direct and indirect aggression is whether these two forms *differentially* relate to maladjustment. Therefore, we examine the independent and differential magnitudes of association (defined below) of direct and indirect aggression with these four indices of adjustment to identify specific links. We expect that direct forms of aggression, which are often considered less socially acceptable than indirect forms of aggression, are more strongly linked to externalizing behavior problems, low prosocial behaviors, and poorer peer relations. In contrast, we expect indirect aggression to be more strongly linked to internalizing problems than direct aggression. The reason for this latter expectation is that aggression in general shares some antecedents with internalizing problems, such as aversive home environments, problematic peer relationships, and certain social cognitions (e.g., negative view of others). We expect that these potential links between internalizing problems and aggression would manifest primarily in the form of indirect aggression because children who suffer these internalizing problems may prefer the less risky, more covert nature of indirect forms if they are inclined to act aggressively.

The associations of direct and indirect aggression to maladjustment may also vary by age and gender. Although the empirical evidence for developmental trends is scarce (Baillargeon et al., 2007; Tremblay, 2000), some (e.g., Björkqvist, 1994) have suggested that direct aggression peaks during early childhood (this tendency actually differs for physical vs. verbal aspects of direct aggression, with the former peaking earlier than the latter). In contrast, Björkqvist (1994) suggested that indirect aggression peaks during later childhood and adolescence, paralleling the development of greater verbal abilities and social sophistication. Although this potential pattern does not imply that direct aggression is absent during adolescence or that indirect forms of aggression are not enacted by young children, it does suggests two possible directions of age moderation. First, engaging in forms of aggression that are developmentally less appropriate (i.e., direct aggression during adolescence and indirect aggression during early childhood) may be associated with greater maladjustment, perhaps because this aggression elicits harsher consequences (e.g., more severe consequences by parents and teachers and more rejection by peers). Alternatively, aggression that is developmentally normative may reflect a typical manifestation of maladjustment and therefore may be more strongly linked to maladjustment.

Gender is another potential moderator of the associations of direct and indirect aggression with adjustment. Our expectations of the direction of moderation are rooted in the concept of gender normative forms of aggression, namely, that direct aggression is normative for boys and indirect aggression is normative for girls (Crick, 1997). This concept does not imply that either form is used exclusively by either gender nor does it specify the forces that might differentially promote or inhibit these forms among one gender or the other. Nevertheless, the gender normative concept suggests two potential directions of gender moderation. First, engaging in gender nonnormative forms of aggression represents greater maladjustment and leads to greater social censure by adults or peers than does engaging in gender normative forms (Crick, 1997). This possibility would result in direct (more so than indirect) aggression being related to maladjustment among girls, whereas indirect (more so than direct) aggression would be related to maladjustment among boys. A second possibility is predicated on the existence of greater variability in gender normative than gender nonnormative aggression. This difference could lead to indirect aggression relating to maladjustment more strongly among girls, whereas boys may exhibit a pattern of direct aggression being more strongly related to maladjustment.

In addition to age and gender, we also systematically explore other moderators of these associations between the two forms of aggression and maladjustment. Specifically, we consider method of assessing aggression, sample ethnicity and nationality, author gender, whether the study title indicated a focus on gender, and publication status.

Summary of Goals

To summarize, we have three primary goals. First, we seek to examine potential gender differences in direct and indirect aggression during childhood and adolescence, a goal that overlaps with but expands upon prior reviews (Archer, 2004; Hyde, 1984; Maccoby & Jacklin, 1974). Second, we examine the magnitude of intercorrelation between direct and indirect aggression in order to determine the extent that these represent common manifestations of a single behavior (i.e., aggressiveness) versus distinct constructs. Third, we investigate the associations of direct and indirect aggression with several aspects of maladjustment, aiming especially to identify the unique, differential links each form has with maladjustment. As a secondary goal, we systematically investigate several potential moderators of these effect sizes.

Method

Selection of Studies

We obtained studies through five approaches. First, we conducted computerized literature searches of the PsycINFO, ERIC, and Proquest (for unpublished dissertations) databases using the keywords ''indirect aggression,'' ''relational aggression,'' ''social aggression,'' or ''covert aggression'' (last search performed August 2007; we did not include terms specific to direct aggression because we wanted to identify studies with both forms, as described below). Second, we examined references cited in other articles (i.e., ''backward search'' procedures). Third, we asked several experts in this area to examine earlier lists of reports and suggest other studies. Fourth, we e-mailed all first authors and dissertation supervisors of otherwise obtained reports to request additional studies. Finally, we requested additional studies through the Society for Research in Child Development (SRCD) Peer Relations listserve. The latter two approaches were designed to obtain unpublished studies that might not have been obtained through other means. We chose to be lenient in our initial review of studies in order to be as inclusive as possible, so we reviewed a total of 588 journal articles, chapters, books, dissertations, and unpublished studies in selecting studies for potential inclusion.

We included studies that met three criteria. First, they presented data on both direct and indirect forms of aggression that were relevant to any of the questions of interest in this meta-analysis (i.e., gender differences, intercorrelations, associations with maladjustment). Second, the sample consisted of children younger than 18 years (i.e., adult samples were excluded). Third, the sample could be considered normative (as opposed to including only children in psychiatric or criminal settings). Using these criteria, a total of 148 independent studies presented in 165 reports, consisting of 73,498 children, were included in the meta-analyses reported here.

Coding of Studies

For all studies, we coded sample size, internal consistencies of relevant scales (for correction of unreliability), whether continuous variables were artificially dichotomized (for correction of dichotomization), and effect sizes of interest (see below). We also coded nine variables as potential moderators of effect sizes. The first of these was the method of assessing direct and indirect aggression coded as self-reports, peer nominations, peer ratings, teacher reports, parent reports, or observations. We also coded several

characteristics of the sample, including the mean age of the sample, the percentage of ethnic minorities in the sample, and the country from which the sample was drawn (ultimately dichotomized into studies conducted within the United States vs. those conducted outside of the United States due to the low representation of individual countries besides the United States). When results were reported separately for boys and girls (for intercorrelations and associations with maladjustment), we coded these results both overall and by gender (to evaluate gender moderation). We also coded the gender of the first author of the study and whether the study included gender (or related terms such as *sex* or terms such as *boys* and *girls*) in the title, as these variables might be related to potential gender differences in results. To evaluate potential publication bias (described below), we coded two aspects of publication status: (a) whether the study was unpublished versus published and (b) a continuous variable of a potential hierarchy of publication quality: 1 = *unpublished, not dissertation*; 2 = *unpublished dissertation*; 3 = *published book chapter*; 4 = *published peer reviewed journal article*; and 5 = *published article in top-tier journal*, indexed as a top 20 developmental journal in impact factor according to Journal Citation Reports (e.g., *Child Development*, *Development and Psychopathology, Developmental Psychology, Journal of Abnormal Child Psychology, Journal of Clinical Child and Adolescent Psychology, Journal of Educational Psychology,* and *Journal of Experimental Child Psychology*). To assess accuracy of coding, two authors independently coded a sample of 77 studies; comparisons indicated more than 98% agreement.

We calculated effect sizes as correlations (a) of gender with each form of aggression (to evaluate gender differences), (b) between direct and indirect aggression (to evaluate intercorrelations between the two forms), or (c) of both forms of aggression with indices of psychosocial adjustment. We examined four types of adjustment indices. *Internalizing problems* included clinical or subclinical depression and anxiety. Externalizing problems included two aspects: (a) *emotional dysregulation and attention deficit hyperactivity disorder (ADHD) symptoms* such as impulsivity, frustration intolerance, tendencies to easily become angry or upset, inattention, and hyperactivity, and (b) *delinquent behaviors* such as oppositional or defiant behaviors, destruction of property, deceitfulness and theft, and rule violations. We considered these specific aspects of externalizing problems rather than a general externalizing construct to avoid overlap in behaviors that define aggression and the externalizing problem. *Prosocial behavior* included behaviors such as helping others, sharing, and cooperating. Finally, sociometric status included two aspects: *peer acceptance* (i.e., being liked by many peers) and *peer rejection* (i.e., being disliked by many peers).

Statistical Analysis

Effect size calculations. We represented most effect sizes (gender differences in direct and indirect aggression, intercorrelations between the two forms, and associations of each form of aggression with maladjustment) as Pearson correlations, *r*. For studies reporting results in other metrics (e.g., other effect sizes such as Cohen's *d*, results of significance tests such a *t* tests, and descriptive data such as means and standard deviations), these data were transformed to *r* using standard procedures (e.g., Rosenthal, 1991). Studies reporting only a significant association (at a certain *p* or assumed to be .05 if not otherwise stated) were given the minimum *r* that would achieve that level of significance given the sample size, and studies reporting only that a particular effect size was not significant (with no other information from which to compute an effect size) were assigned $r = 0$. These standard practices represent a conservative approach and may lead to slight underestimation of overall effect sizes.

In order to obtain accurate effect sizes among the constructs of interest, we corrected for two study artifacts that attenuate effect sizes, using the general equation $r_{\text{corrected}} = r/a$ (where a is the total artifactual correction, computed as the product of the following individual corrections; see Hunter & Schmidt, 2004). The first of these corrections was for unreliability of measures, in which we estimated artifactual corrections based on reported reliabilities of both variables composing the correlation, $a_{\text{reliability}} = \sqrt{\alpha_X \alpha_Y}$ (with α_x and α_Y representing the internal consistencies of variables X and Y in the correlation; Hunter & Schmidt, 2004, p. 35). For studies that did not report internal consistencies of measures, we used the mean reliability obtained from meta-analysis (Rodriguez & Maeda, 2006) of studies reporting internal consistencies ($\overline{\alpha}$s = .85 and .82 for direct and indirect aggression, respectively; full results of these analyses are available from the first author). The second correction we made was for attenuation among studies that artificially dichotomized variables used in the effect size (e.g., median or 1 *SD* splits to group participants as aggressive vs. nonaggressive). We used the artifactual correction for this dichotomization ($a_{\text{dichotomization}} = \Phi(c)/\sqrt{PQ}$; for details, see Hunter & Schmidt, 1990, 2004, p. 36) for one or both dichotomized variables comprising the correlation.

To examine the unique relations of each form of aggression to maladjustment, it was necessary to

account for the magnitude of the correlation between direct and indirect aggression. To estimate the independent relation of each form of aggression (e.g., indirect aggression after controlling for direct aggression), we computed semipartial correlations (*sr*) from the (corrected) bivariate correlations of direct and indirect aggression with the adjustment variable and between direct and indirect aggression using the following formulas (Cohen & Cohen, 1983):

$$sr_{\text{direct}} = \frac{r_{\text{direct}} - r_{\text{indirect}} r_{\text{corr}}}{\sqrt{1 - r_{\text{corr}}^2}} \text{ and}$$
$$sr_{\text{indirect}} = \frac{r_{\text{indirect}} - r_{\text{direct}} r_{\text{corr}}}{\sqrt{1 - r_{\text{corr}}^2}}, \quad (1)$$

where r_{direct} is the correlation of direct aggression to the adjustment variable, r_{indirect} is the correlation of indirect aggression to the adjustment variable, and r_{corr} is the correlation between direct and indirect aggression.

To compare the relative magnitudes of the correlations of direct versus indirect aggression with the adjustment variables, we computed a *d* score for each study representing the difference in associations (*r*s) of direct and indirect aggression to the correlate. Adapting traditional methods of comparing dependent correlation coefficients (e.g., Cohen & Cohen, 1983), the following formula was used (Card & Little, 2006):

$$d = \frac{(r_{\text{direct}} - r_{\text{indirect}})\sqrt{(n-1)(1+r_{\text{corr}})}}{\sqrt{\frac{2(n-1)}{n-1}|R| + \bar{r}(1-r_{\text{corr}})^3}} \frac{1}{\sqrt{n-3}}, \quad (2)$$

where r_{direct} is the correlation of direct aggression to the correlate, r_{indirect} is the correlation of indirect aggression to the correlate; r_{corr} is the correlation between direct and indirect aggression, $|R| = 1 - r_{\text{direct}}^2 - r_{\text{indirect}}^2 - r_{\text{corr}}^2 + 2r_{\text{direct}}r_{\text{indirect}}r_{\text{corr}}$, $\bar{r} = (r_{\text{direct}} + r_{\text{indirect}})/2$; and n is the number of participants in study.

The semipartial correlations (*sr*) and the difference scores (*d*) both index the unique relations of direct and indirect aggression with adjustment but in different ways. The semipartial correlations indicate the direction and magnitude of the relations of each form of aggression to adjustment that are independent of the other form (specifically, the positive or negative square root of the variance in the adjustment variable that overlaps with that form of aggression only). These semipartial correlations, however, do not directly evaluate the differential relations direct and indirect forms of aggression have with the adjustment variable. This differential relation is instead captured by the difference score (*d*), which indexes the magnitude of the *difference* in the relations of each form of aggression with adjustment (but says nothing of the magnitude of association of either one of the forms of aggression with adjustment). Therefore, both the semipartial correlations and the difference scores are needed to evaluate the distinct associations direct and indirect aggression have with psychosocial adjustment.

Among studies reporting results separately for boys and girls, we were interested in whether these results differed by gender. To evaluate this potential gender moderation, we adapted traditional methods of comparing independent correlations (e.g., Cohen & Cohen, 1983) to yield the following equation:

$$d = \frac{2(Zr_{\text{boys}} - Zr_{\text{girls}})}{\left(\sqrt{\frac{1}{n_{\text{boys}}-3} + \frac{1}{n_{\text{girls}}-3}}\right)\left(n_{\text{boys}} + n_{\text{girls}} - 4\right)}, \quad (3)$$

where Zr_{boys} is the Fisher's Z transformation of correlation for boys, Zr_{girls} is the Fisher's Z transformation of correlation for girls, n_{boys} is the number of boys in study, and n_{girls} is the number of girls in study.

This formula was used to compare the magnitude of intercorrelation between direct and indirect aggression, as well as the associations of both forms of aggression with adjustment, across gender for those studies reporting these results separately for boys and girls. In order to evaluate whether the direction and magnitude of differential associations of direct and indirect aggression with adjustment differed (i.e., was moderated) by gender, *d* scores from Equation 2 were transformed to *Zr* (for boys and girls separately), and then applied within Equation 3.

Combining and comparing effects across studies. All effect sizes were combined using weighted random-effects analyses (e.g., Hedges & Vevea, 1998). This approach was preferred because, as will be seen below, all the meta-analyses performed indicated significant heterogeneity around the mean effect sizes (i.e., fixed-effects models were not appropriate).

Before combining effect sizes, we first transformed correlation metrics (*r* and *sr*) to Fisher's Z_r (or Z_{sr}) in order to provide an approximately normally distributed metric (averaged values of Z_r and Z_{sr} were transformed back into $\bar{r}$ and $\overline{sr}$ for reporting; Rosenthal, 1991). We analyzed difference scores in their *d* metric. We averaged multiple effect sizes (Z_rs, Z_{sr}s, or *d*s) from the same study in order to yield one effect size per study (for moderator analyses, one effect size for any given level of the moderator) in order to avoid

violating independence assumptions when testing significance and computing standard errors.

When averaging across multiple studies, we weighted effect sizes by an inverse variance weight using the general formula, mean ES = $\sum wES / \sum w$. Three components comprised this weight. The first component is a function of study sample size, where $w = n - 3$ for bivariate correlations; $w = n - 4$ for semipartial correlations (Hays, 1994); and $w = 1/[(4/df)(1 + (d^2/8))]$ for the differential index (Lipsey & Wilson, 2001, p. 49). The second component of this weight is an adjustment for artifact correction for the corrected effect sizes (as described by Lipsey & Wilson, 2001, pp. 110, 112). The third component of this weight is the estimated random between-study variance, τ^2 (Hedges & Vevea, 1998, pp. 491–492).

When sufficient studies existed and the overall effect sizes contained significant heterogeneity (as indexed by Q, which is distributed as χ^2 with $df = k - 1$; Lipsey & Wilson, 2001, p. 115), we systematically examined several potential moderators, including the methodology (method by which aggression was assessed), sample (sample age, gender, percentage of ethnic minorities, and country), author gender, and whether gender or similar terms appeared in the title. We also considered two publication status (dichotomous and continuous) variables as moderators in order to evaluate potential publication bias.

We evaluated categorical moderators (aggression reporter, country, first author gender, gender in title, and dichotomous publication status) using variance partitioning procedures analogous to analysis of variance (Lipsey & Wilson, 2001, pp. 135–138; Overton, 1998). Specifically, we divided heterogeneity of effect sizes (Z_rs, Z_{sr}s, or ds) among studies (Q_{total}) into within-moderator-groups (Q_{within}; e.g., among studies using teacher reports) and between-group ($Q_{between} = Q_{total} - \sum Q_{within}$) components. This between-group heterogeneity is distributed as χ^2 (with df = number of groups − 1) under the null hypothesis that population effect sizes are equal across moderator groups. Significant between-group heterogeneity is indicative of moderation.

To test continuous moderators (i.e., sample age, percentage of ethnic minorities, and publication quality), we used procedures analogous to weighted regression (for details, see Lipsey & Wilson, 2001, pp. 138–140; Overton, 1998). Specifically, we regressed the Z_rs, Z_{sr}s, or ds from each study onto the continuous moderator, weighted by the appropriate weights described above (note that the standard errors of this weighted regression were modified according to the procedures recommended by Lipsey & Wilson, 2001, p. 140). The heterogeneity among studies accounted for by the continuous moderator, $Q_{regression}$, is also distributed as χ^2 (with 1 df) under the null hypothesis that population effect sizes do not change linearly across levels of the moderator (e.g., across age). We interpreted significant relations between the moderators and the effect sizes using the effect size intercept and slope to obtain model-implied effect sizes at selected levels of the moderator (model-implied Z_rs were converted to implied rs for reporting).

As with our analyses of overall effect sizes, we modeled residual heterogeneity of effect sizes in our moderator analyses. Therefore, these analyses can be considered mixed-effects models in that the moderator variables were considered fixed, whereas effect sizes of individual studies were allowed to randomly vary (Hedges & Vevea, 1998; Overton, 1998).

Results

Before describing our results, we present general characteristics of the 148 studies included in these meta-analyses (Table 1). The studies varied considerably in terms of sample size and to a lesser extent age (with early childhood and older adolescence not well represented) and percentage of ethnic minorities in the sample (few studies had high percentages of minorities). Self-reports, peer nominations, and teacher reports were the primary methods of assessment; most studies were conducted in the United States; and most studies were published with females as first authors. Table 1 also indicates heterogeneity among studies in terms of whether the study was published (dichotomous) and publication quality.

We present the results of our meta-analyses in three parts. First, we report the magnitudes of gender differences in direct and indirect forms of aggression as well as potential moderators of these differences. Second, we investigate the intercorrelations between direct and indirect forms of aggression (and potential moderators of these intercorrelations). Third, we examine the associations of direct and indirect aggression with four indices of adjustment: internalizing problems, externalizing problems, prosocial behavior, and peer relations.

Gender Differences in Direct and Indirect Aggression

As displayed in Figure 1 (and listed in Table A1), 107 studies (consisting of 50,977 participants) reported results speaking to the magnitude of gender differences in direct and indirect aggression during childhood and adolescence. The additional studies included here but not in Archer (2004) were

Table 1
Summary of Characteristics of Studies Included in Meta-Analyses

				Percentile range[a]			
Continuous descriptors	*M*	*Mdn*	*SD*	10	25	75	90
Sample size (*N*)	574	254	1,360	74	121	526	926
Mean sample age (years)	9.8	10.0	3.34	4.4	7.6	12.0	14.0
% ethnic minority	32	28.5	23	7	15	45	66
Categorical descriptors	% Studies						
Reporter type[b]							
Self	26.4						
Peer nomination	48.6						
Peer rating	9.7						
Teacher	26.4						
Parent	7.6						
Observation	9.7						
Other	4.9						
Country[b]							
Australia	2.1						
Canada	11.8						
England	2.8						
Finland	5.6						
Germany	2.1						
United States	70.1						
Other (in less than three studies)	5.6						
Female first author	78.2						
Published	63.2						
Publication quality							
Unpublished (not dissertation)	4.2						
Unpublished dissertation	32.6						
Published book chapter	0.7						
Published journal article	43.1						
Published in top-tier journal	19.4						

[a]Values falling at 10th, 25th, 75th, and 90th percentiles. [b]Percentages do not necessarily sum to 100 because some studies included multiple categories.

predominantly published since 2000 or 2001, when the last searches for Archer's meta-analysis were performed. Table 2 summarizes the results of meta-analytic syntheses of these gender differences.

Overall, gender differences in direct aggression are generally consistent with prior reviews (e.g., Hyde, 1984; Maccoby & Jacklin, 1974). As shown in Table 2, we find significant heterogeneity among these studies in the magnitude of gender differences in direct aggression. Therefore, we conducted random-effects analyses to evaluate the typical magnitude of this gender difference and mixed-effects models when evaluating moderators. Overall, boys were more directly aggressive than girls, with an average effect that was medium in magnitude, $\bar{r} = .29$ (note that positive *r*s indicate higher levels of aggression for boys, whereas negative *r*s indicate higher levels of aggression for girls). To facilitate comparison to other meta-analyses of gender differences, this effect size is equivalent to $\bar{d} = .61$. Moderators of these effect sizes revealed several noteworthy findings. First, method of assessing direct aggression is related to the magnitude of gender differences, with parent reports and self-reports yielding the smallest gender differences, whereas peer reports (nominations or ratings) and observations yield the largest differences (see Table 2 for full details). The percentage of ethnic minorities in samples also relates to the magnitude of gender differences in direct aggression, such that smaller differences are found with increasing percentages of ethnic minorities. Furthermore, studies with the word *gender* (or similar terms) in the title yield slightly larger gender differences in direct aggression, although studies without this term in their title still exhibit significant, moderate magnitude differences. The mean age of the sample, country from which the

Gender Differences (r)		
Direct Aggression		Indirect Aggression
8	.9	
	.8	
	.7	
20	.6	
632100	.5	4
887663322111000	.4	0
998777766665443211 1000000	.3	245
998888776666555433322 1000	.2	066
9998877777664333332211	.1	0001112345
998766430	.0	00111112222334456888888
10	-.0	001133335566666666788889
	-.1	000112333334445778
	-.2	0011122345556688
	-.3	225
	-.4	138
	-.5	
.29	$\bar{r}$	-.03
869.2	$Q_{(106)}$	574.3

Figure 1. Stem-and-leaf plot of gender differences in direct and indirect aggression.

sample was drawn, and first author gender are not significantly associated with magnitudes of gender differences in direct aggression. In order to compare gender differences in physical versus verbal aspects of direct aggression, we conducted post hoc analyses of 27 studies that reported gender differences separately for these two aspects. Results indicate that gender differences are stronger for physical ($\bar{r} = .34$, equivalent $\bar{d} = .73$) than verbal ($\bar{r} = .19$, equivalent $\bar{d} = .38$) expressions of direct aggression.

We also find significant heterogeneity across studies for gender differences in indirect aggression. Similar to Archer's (2004) findings, our (random effects) results indicate a negligible, but statistically different from zero, average gender difference, with girls exhibiting more indirect aggression than boys, $\bar{r} = -.03$ (equivalent $\bar{d} = -.06$). As with direct aggression, this gender difference in indirect aggression varies by reporter. Specifically, parent and teacher reports yield gender differences of girls being higher than boys, whereas self-reports yield a slightly higher level for boys than girls. Other reports are not significantly different from zero (see Table 2 for details). However, the magnitude of these gender differences in indirect aggression is trivial regardless of reporter. Age, percentage of ethnic minorities in sample, country of sample, first author gender, and whether gender appeared in the title do not moderate gender differences in indirect aggression.

Table 2
Summary of Meta-Analytic Results of Gender Differences in Direct and Indirect Aggression

	Direct	Indirect
Heterogeneity (Q; $df = 106$)	869.2***	574.3***
Random-effects mean r	.29***	−.03*
95% CI	0.26:0.32	−0.05:−0.01
Equivalent d	.61	−.06
95% CI	0.55:0.67	−0.11:−0.02
Moderators		
Reporter ($Q_{b(5)}$)	80.17***	28.66***
Observation ($k = 14$)	$.37^{***}_{cd}$	$-.05_{ab}$
Parent ($k = 8$)	$.15^{***}_{a}$	$-.08^{***}_{a}$
Peer nomination ($k = 39$)	$.38^{***}_{d}$	$-.02_{ab}$
Peer ratings ($k = 12$)	$.37^{***}_{d}$	$.01_{ab}$
Self-report ($k = 33$)	$.21^{***}_{b}$	$.03^{*}_{b}$
Teacher ($k = 31$)	$.34^{***}_{bc}$	$-.07^{**}_{a}$
Age ($Q_{\text{regression}(1)}$)	0.01	0.22
β_{Zr}	−.001	.002
$\hat{r}$ at 5, 10, and 15 years	.29:.29:.29	−.04:−.04:−.03
% ethnic minority ($Q_{\text{regression}(1)}$)	4.70*	0.22
β_{Zr}	−.0016	.0003
$\hat{r}$ at 25%, 50%, and 75%	.30:.26:.22	−.05:−.04:−.03
Country ($Q_{b(1)}$)[a]	0.01	2.72
United States ($k = 72$)	.29***	−.01
Other countries ($k = 34$)	.29***	−.05**
First author gender ($Q_{b(1)}$)	3.59	2.48
Female ($k = 83$)	.31***	−.06***
Male ($k = 22$)	.25***	−.01
Gender in title ($Q_{b(1)}$)[b]	4.92*	0.09
No ($k = 72$)	.27***	−.04*
Yes ($k = 35$)	.34***	−.03

Note. Significant differences among reporters from follow-up comparisons are denoted by different alphabetic subscripts. CI = confidence interval.
[a]Due to low representation of individual countries outside of the United States, this variable was dichotomized to studies conducted within versus outside of the United States. [b]Dichotomous variable of whether the word *gender* (or similar terms such as *sex* or *boys* and *girls*) was in the title.
*$p < .05$. **$p < .01$. ***$p < .001$.

Intercorrelations Between Direct and Indirect Aggression

Figure 2 and Table A2 show the 98 studies reporting associations between direct and indirect aggression. As shown in Table 3, we find significant heterogeneity among these effect sizes. The

random-effects average corrected correlation between the two forms of aggression is $\bar{r} = .76$ (even uncorrected effect sizes representing correlations as found in studies is high, $\bar{r} = .60$; results involving uncorrected effect sizes mirror those presented here and are available from the first author). Although separable (i.e., the confidence interval of this correlation does not include 1.0), direct and indirect aggression are clearly strongly correlated.

Given the heterogeneity of effect sizes across studies, we examined moderators of this association (Table 3). Method of assessment significantly moderates this association, such that observational methods yield considerably lower correlations than other methods. Direct and indirect aggression are also more strongly correlated among boys than girls, as well as with increasing percentages of ethnic minorities in the samples. The mean age of the sample, country from which the sample was drawn, the gender of the first author of the study, and whether the source included the term *gender* in the title do not significantly moderate the magnitude of correlations between direct and indirect aggression.

	Direct-Indirect *r*
1.0	00
.9	122244556779
.8	00033445567899
.7	00012233344556666777889
.6	01222223345669999999
.5	0356888
.4	02556678
.3	1169
.2	4
.1	1149
.0	78
-.0	
$\bar{r}$	.76
$Q_{(72)}$	5416.13

Figure 2. Stem-and-leaf plot of intercorrelations between direct and indirect aggression.

Associations of Direct and Indirect Aggression With Maladjustment

We next consider the magnitudes of associations of direct and indirect aggression with four aspects of adjustment: internalizing problems, externalizing problems, prosocial behavior, and peer relations. We first present average bivariate correlations of each form of aggression with the adjustment index, then average independent (i.e., semipartial) correlations for each form and the differential association (i.e., *d*) that direct versus indirect aggression has with the adjustment index. As before, we systematically evaluate potential moderation of these effects.

Table 3
Summary of Meta-Analytic Results of Correlations Between Direct and Indirect Aggression

Heterogeneity (Q; $df = 97$)	5,416.13***
Random-effects mean *r*	.76***
95% CI	0.72:0.79
Moderators	
Reporter ($Q_{b(5)}$)	61.93***
Observation ($k = 9$)	.33***$_a$
Parent ($k = 7$)	.74***$_b$
Peer nomination ($k = 49$)	.84***$_c$
Peer ratings ($k = 7$)	.77***$_{bc}$
Self-report ($k = 22$)	.73***$_b$
Teacher ($k = 28$)	.66***$_b$
Age ($Q_{\text{regression}(1)}$)	1.36
β_{Zr}	.015
$\hat{r}$ at 5, 10, and 15 years	.73:.76:.79
Gender ($k = 43$) (d)[a]	.21***
Girls	.82***
Boys	.88***
% ethnic minority ($Q_{\text{regression}(1)}$)	5.24*
β_{Zr}	.0046
$\hat{r}$ at 25%, 50%, and 75%	.73:.78:.82
Country ($Q_{b(1)}$)[b]	0.00
United States ($k = 72$)	.76***
Other countries ($k = 26$)	.76***
First author gender ($Q_{b(1)}$)	0.79
Female ($k = 77$)	.74***
Male ($k = 21$)	.79***
Gender in title ($Q_{b(1)}$)[c]	1.31
No ($k = 69$)	.74***
Yes ($k = 29$)	.80***

Note. Significant differences among reporters from follow-up comparisons are denoted by different alphabetic subscripts. CI = confidence interval.
[a]See Equation 3 and accompanying text for description of how gender moderation was evaluated. [b]Due to low representation of individual countries outside of the United States, this variable was dichotomized to studies conducted within versus outside of the United States. [c]Dichotomous variable of whether the word *gender* (or similar terms such as *sex* or *boys* and *girls*) was in title.
*$p < .05$. ***$p < .001$.

Internalizing Problems (r)		
Direct Aggression		Indirect Aggression
	.5	
	.4	125
984	.3	347
950	.2	
991	.1	00038
9766540	.0	00245579
772110	-.0	0223
30	-.1	9
1	-.2	4
	-.3	5
0	-.4	
.07	$\bar{r}$	.10
468.47	$Q_{(25)}$	635.61

Figure 3. Stem-and-leaf plot of associations of direct and indirect aggression with internalizing problems.

Internalizing problems. Results of 26 studies (Figure 3 and Table A3) indicate significant heterogeneity in the bivariate, semipartial, and differential associations of direct and indirect aggression with internalizing problems (Table 4). Only indirect aggression exhibits significant bivariate and unique (i.e., semipartial) associations with internalizing problems as well as significant differential association between the two forms with internalizing problems. Moderator analyses reveal three differences. The first difference is by reporter, such that parent, teacher, and self-reported direct and indirect aggression exhibit the strongest associations with internalizing problems, although aggression reporter does not significantly moderate the differential association of direct versus indirect aggression with internalizing problems. The second significant moderator is the percentage of ethnic minorities in the sample, such that samples with higher percentages of ethnic minorities exhibit higher differential associations between direct versus indirect aggression. This effect is explained by nonsignificant trends of indirect aggression having stronger positive associations and direct aggression having stronger negative associations with higher percentages of minorities. The third significant moderator is whether the title of the work included *gender* or similar terms. Studies with *gender* in the title show stronger differential associations of the two forms of aggression with internalizing problems; specifically, studies with this term have positive unique (semipartial) associations of indirect aggression to internalizing problems and unique links of direct aggression to *lower* internalizing problems. Sample age, participant gender, country in which the study was conducted, and first author gender (with one exception) do not consistently moderate associations of direct or indirect aggression with internalizing problems.

Externalizing problems. As mentioned, we report results regarding two aspects of externalizing problems: emotional dysregulation/ADHD-type symptoms and delinquency/conduct problems. This focus on specific aspects of externalizing problems allows us to avoid a potential confound that would exist if we had considered general externalizing problems, which are often measured using items that also assess aggression. Of the 18 studies considering emotional dysregulation and ADHD-type symptoms, 12 specifically assessed symptoms of ADHD, 5 assessed ease of anger or frustration, and 1 assessed a more general emotional reactivity. Of the 14 studies of delinquency/conduct problems, 10 used established measures of conduct problems (e.g., Child Behavior Checklist conduct problems subscale) and 4 used specific behavioral descriptions. The scales used to assess each type of externalizing problems were generally well-established measures designed to specifically measure these constructs. For instance, the measures from Achenbach's system (i.e., Child Behavior Checklist, Youth Self Report, and Teacher Report Form), used in several of these studies, explicitly distinguish aggression from both delinquent behaviors (McMahon & Estes, 1997) and ADHD symptoms (Barkley, 1997). For these reasons, it is reasonable to consider associations of direct and indirect aggression with these conceptually distinct aspects of externalizing problems.

The 18 studies investigating associations with emotional dysregulation and ADHD-type symptoms (see left portion of Figure 4 and upper portion of Table A4) exhibit significant heterogeneity in their results (Table 5). Random-effects combination of these results indicates that both direct and indirect forms of aggression have large bivariate correlations to these symptoms. However, direct aggression is more strongly associated than indirect aggression (differential d in Table 5), and only direct aggression is uniquely related to these symptoms (semipartial correlations in Table 5). The source of aggression measurement moderates these associations, such that (a) parent-reported direct aggression is most strongly linked to these symptoms and (b) both parent and teacher reports exhibit the largest differential associations with direct being more strongly associated than indirect. We also find that studies with the term *gender* in the title exhibit greater differential

Table 4
Summary of Meta-Analytic Results of Associations of Direct and Indirect Aggression With Internalizing Problems

	Direct		Indirect		
	r	*sr*	*r*	*sr*	Differential *d*
Heterogeneity (Q; $df = 25$)	468.47***	165.80***	635.61***	316.60***	76.86***
Random-effects mean ES	.07	−.01	.10*	.08*	−.11**
95% CI	−0.02:0.15	−0.07:0.04	0.01:0.19	0.02:0.14	−0.19:−0.03
Moderators					
Reporter ($Q_{b(5)}$)	77.75***	29.42***	89.14***	38.40***	6.61
Observation ($k = 1$)	$-.10_{a}$	$-.16_{a}$	$.00_{a}$	$.12_{ab}$	−.30
Parent ($k = 1$)	$.32^{***}_{c}$	$.12^{***}_{b}$	$.40^{***}_{c}$	$.26^{***}_{c}$	−.18***
Peer nomination ($k = 8$)	$-.06_{a}$	$-.06_{a}$	$-.04_{a}$	$.01_{a}$	−.07
Peer ratings ($k = 1$)	$.00_{a}$	$.00_{a}$	$.00_{a}$	$.00_{a}$	.00
Self-report ($k = 7$)	$.12^{*}_{b}$	$-.02_{a}$	$.17^{*}_{b}$	$.13^{*}_{b}$	−.16*
Teacher ($k = 8$)	$.20^{**}_{b}$	$.03_{a}$	$.23^{***}_{b}$	$.14^{**}_{b}$	−.08
Age ($Q_{\text{regression}(1)}$)	0.79	1.03	0.28	0.08	0.14
β_{ES}	−.012	−.009	−.008	−.003	−.005
ES at 5, 10, and 15 years	.12:.06:.00	.03:−.02:−.06	.14:.10:.06	.09:.08:.06	−.08:−.11:−.13
Gender ($k = 10$) (d)[a]	.03	.07	.00	−.04	.00
Girls	−.02	−.05	.05	.07	−.01
Boys	.05	.04	.06	−.01	−.01
% ethnic minority ($Q_{\text{regression}(1)}$)	1.38	0.58	3.19	3.75	6.10*
β_{ES}	.0019	−.0007	.0032	.0022	−.0032
ES at 25%, 50%, and 75%	.05:.09:.14	−.02:−.03:−.05	.07:.15:.22	.06:.11:.17	−.09:−.16:−.24
Country ($Q_{b(1)}$)[b]	0.00	0.86	0.09	0.37	0.20
United States ($k = 22$)	.07	−.02	.10*	.09*	−.12**
Other countries ($k = 5$)	.07	.02	.06	.03	−.02
First author gender ($Q_{b(1)}$)	3.08	0.00	3.92*	3.55	2.01
Female ($k = 24$)	.08	−.01	.11*	.08*	−.11**
Male ($k = 3$)	−.02	−.01	−.01	.00	−.02
Gender in title ($Q_{b(1)}$)[c]	0.01	4.99*	2.15	5.97*	14.82***
No ($k = 17$)	.07	.02	.06	.02	−.01
Yes ($k = 10$)	.07	−.09*	.19**	.19***	−.31***

Note. Significant differences among reporters from follow-up comparisons are denoted by different alphabetic subscripts. ES = effect size; CI = confidence interval.
[a]See Equation 3 and accompanying text for description of how gender moderation was evaluated. [b]Due to low representation of individual countries outside of the United States, this variable was dichotomized to studies conducted within versus outside of the United States. [c]Dichotomous variable of whether the word *gender* (or similar terms such as *sex* or *boys* and *girls*) was in title.
*$p < .05$. ** $p < .01$. *** $p < .001$.

associations (with direct being more strongly associated than indirect) than studies without this term. However, the source of this moderation (i.e., studies with this term have stronger unique associations for direct aggression, whereas studies without this term had stronger unique associations for indirect aggression) is not readily explainable. Participant age and gender, percentage of ethnic minorities in sample, and author gender do not significantly moderate any of the associations (bivariate, semipartial, or differential) of these forms of aggression with emotional dysregulation/ADHD-type symptoms.

The results of 14 studies reporting associations of direct and indirect aggression with delinquency and conduct problems (shown in the right of Figure 4 and bottom of Table A4) are also significantly heterogeneous (Table 6). Random-effects meta-analyses indicate that both direct and indirect aggression have large bivariate correlations with these problems and that both are uniquely associated with these problems. The differential index indicates that direct is more strongly related to these problems than indirect aggression, as evidenced by the medium unique effect of direct in contrast to the small unique effect of indirect. These results are moderated by method of assessing aggression (Table 6). However, these reporter moderator effects are due primarily to the single study using parent-reported direct and indirect aggression

Emotional Dysregulation / ADHD Symptoms			Delinquency / Conduct Disorder		
Direct Aggression		Indirect Aggression	Direct Aggression		Indirect Aggression
0	.9		20	.9	
	.8	15		.8	
	.7			.7	019
955540	.6	3	9622	.6	2
21	.5	23	9.	5	07
60	.4	235	92	.4	12
84	.3	489	60	.3	45
84	.2	03	71	.2	0
	.1	3	8.	1	5
70	.0	08		.0	7
	-.0	0		-.0	4
	-.1			-.1	
.52	$\bar{r}$	.42	.58	$\bar{r}$	.45
505.14	$Q_{(17)}$	550.82	850.41	$Q_{(13)}$	371.40

Figure 4. Stem-and-leaf plot of associations of direct and indirect aggression with externalizing problems.

(Tiet, Wasserman, Loeber, McReynolds, & Miller, 2001). If this study is removed, there is no evidence of reporter moderation. The only other moderator of these results is the percentage of ethnic minorities in samples. Here, indirect aggression exhibits increasingly stronger (bivariate and semipartial) associations with conduct problems in samples with increasing percentages of ethnic minorities (this effect also results in smaller differentials between direct and indirect aggression in samples with higher percentages of ethnic minorities). Participant age and gender, country of sample origin, author gender, and whether *gender* appeared in the title do not moderate these results.

Prosocial behavior. Associations of direct and indirect aggression with prosocial behavior are significantly heterogeneous across the 31 studies reporting these effects (Table 7, Figure 5, and Table A5). Random-effects meta-analyses indicate that both direct and indirect aggression have negative bivariate correlations with prosocial behavior (Table 7). However, the differential association (*d*) is significant, and this difference can be seen clearly in the unique (semipartial) associations: Direct aggression is uniquely related to *low* prosocial behavior, whereas indirect aggression is uniquely related to *high* prosocial behavior.

Several features moderate these associations of direct and indirect aggression with prosocial behavior (Table 7). Age moderates the differential between direct and indirect aggression, such that the strongest differences (of direct aggression being associated with low prosocial behavior, whereas indirect aggression is associated with high prosocial behavior) are evident at younger ages. Method of assessing aggression consistently moderates these associations (Table 7). The country from which the sample was drawn also moderates effects, such that indirect aggression only exhibits unique (semipartial) associations to *high* prosocial behavior in the United States; samples drawn from other countries yield a negative semipartial correlation between indirect aggression and prosocial behavior.

Peer relations. Two aspects of peer relations have been examined with respect to direct and indirect aggression in a sufficient number of studies to allow meta-analytic examination: peer acceptance and peer rejection.

The 23 studies (see left portion of Figure 6 and top of Table A6) reporting associations of direct and indirect aggression with peer acceptance are significantly heterogeneous (Table 8). Both forms of aggression have small to moderate bivariate associations with low peer acceptance, but this association differs by form, and only direct aggression is uniquely associated with low peer acceptance. Moderator analyses yield only two findings. First, indirect aggression more strongly relates to low peer acceptance with increasing percentages of ethnic minorities in samples (this trend also results in changes in the direct vs.

Table 5
Summary of Meta-Analytic Results of Associations of Direct and Indirect Aggression With Emotional Dysregulation and ADHD Symptoms

	Direct		Indirect		
	r	*sr*	*r*	*sr*	Differential *d*
Heterogeneity (Q; $df = 17$)	505.14***	435.01***	550.82***	419.32***	213.53***
Random-effects mean ES	.52***	.31***	.42***	.06	.35***
95% CI	0.42:0.61	0.20:0.41	0.30:0.53	−0.06:0.17	0.17:0.52
Moderators					
Reporter ($Q_{b(4)}$)	18.16**	8.56	10.17*	6.28	108.44***
Observation ($k = 1$)	$.00_a$	.00	$.00_a$	.00	$.00_a$
Parent ($k = 3$)	$.89***_c$	.82**	$.46**_b$	−.22	$1.15***_c$
Peer nomination ($k = 3$)	$.41***_b$	.19	$.50*_b$	.23	$-.17_a$
Peer ratings ($k = 0$)	—	—	—	—	—
Self-report ($k = 5$)	$.51***_b$	.21**	$.51***_b$	.13*	$.08_a$
Teacher ($k = 8$)	$.53***_b$	.41***	$.33***_b$	−.03	$.66***_b$
Age ($Q_{\text{regression}(1)}$)	2.64	0.28	2.17	0.07	0.40
β_{ES}	.034	.010	.032	−.005	.017
ES at 5, 10, and 15 years	.43:.56:.66	.28:.32:.36	.33:.46:.58	.07:.05:.03	.29:.37:.46
Gender ($k = 7$) (d)[a]	.03	.19	.02	−.11	.03
Girls	.42***	.13	.32***	.08	.01
Boys	.48***	.31**	.38***	−.02	.05
% ethnic minority ($Q_{\text{regression}(1)}$)	1.65	0.50	0.19	0.67	2.59
β_{ES}	.0035	.0017	.0012	−.0019	.0055
ES at 25%, 50%, and 75%	.51:.57:.63	.33:.36:.40	.39:.41:.44	.03:−.02:−.06	.42:.58:.69
Country ($Q_{b(1)}$)[b]	0.01	0.27	0.01	0.05	0.51
United States ($k = 14$)	.55***	.33***	.44***	.07	.37***
Other countries ($k = 3$)	.53***	.28***	.43**	.05	.26***
First author gender ($Q_{b(1)}$)	1.86	2.28	0.98	0.17	0.87
Female ($k = 12$)	.57***	.36***	.46***	.08	.41**
Male ($k = 6$)	.41***	.20**	.37**	.04	.24*
Gender in title ($Q_{b(1)}$)[c]	0.61	2.01	0.62	4.04*	14.87***
No ($k = 10$)	.48***	.24***	.46***	.15*	.07
Yes ($k = 8$)	.57***	.39***	.36**	−.07	.75***

Note. Significant differences among reporters from follow-up comparisons are denoted by different alphabetic subscripts. ADHD = attention deficit hyperactivity disorder; ES = effect size; CI = confidence interval.
[a]See Equation 3 and accompanying text for description of how gender moderation was evaluated. [b]Due to low representation of individual countries outside of the United States, this variable was dichotomized to studies conducted within versus outside of the United States. [c]Dichotomous variable of whether the word *gender* (or similar terms such as *sex* or *boys* and *girls*) was in title.
*$p < .05$. **$p < .01$. ***$p < .001$.

indirect differential with ethnic composition; Table 8). Second, we find a similar moderator effect for whether the term *gender* appears in the title, such that stronger associations of indirect aggression with low peer acceptance are found for studies with this term. Other moderators (i.e., sample age, method of assessing aggression, gender, country, and author gender) do not moderate links of direct and indirect aggression with peer acceptance.

The 22 studies (see right of Figure 6 and bottom of Table A6) reporting associations of direct and indirect aggression with peer rejection are also heterogeneous (Table 9). Both forms exhibit significant bivariate and semipartial associations with peer rejection, although this link is stronger for direct than indirect aggression. We also find several moderators of these effects. Method of assessing aggression moderates some effects (Table 9) such that parent-, teacher-, and peer-reported aggression (direct and indirect) are more strongly linked than observations of aggression. Moderation by country is also evident for the bivariate (but not semipartial or differential) associations, such that both direct and indirect aggression are more strongly related to peer rejection within the United States than in other countries. Finally, female first authors find significant unique (semipartial) associations of indirect aggression with peer rejection, whereas male first authors do not find this effect

Table 6
Summary of Meta-Analytic Results of Associations of Direct and Indirect Aggression With Delinquent Behaviors

	Direct		Indirect		
	r	*sr*	*r*	*sr*	Differential *d*
Heterogeneity (Q; $df = 13$)	850.41\	365.57***	371.40***	151.20***	278.31***
Random-effects mean ES	.58***	.27***	.45***	.11**	.27*
95% CI	0.43:0.69	0.15:0.38	0.34:0.55	0.03:0.19	0.06:0.49
Moderators					
Reporter ($Q_{b(3)}$)	7.82*	64.75***	29.79***	42.49***	106.13***
Observation ($k = 0$)	—	—	—	—	—
Parent ($k = 1$)	$.59^{***}_{b}$	$-.32^{**}_{a}$	$.70^{***}_{b}$	$.49^{***}_{b}$	-1.26^{***}_{a}
Peer nomination ($k = 3$)	$.37^{***}_{a}$	$.13_{b}$	$.34^{***}_{a}$	$.07_{a}$	$.07_{b}$
Peer ratings ($k = 0$)	—	—	—	—	—
Self-report ($k = 6$)	$.48^{***}_{ab}$	$.27^{***}_{b}$	$.40^{***}_{a}$	$.10_{a}$	$.21^{**}_{b}$
Teacher ($k = 3$)	$.69^{**}_{b}$	$.42^{*}_{b}$	$.49^{***}_{a}$	$.07_{a}$	$.75^{*}_{b}$
Age ($Q_{\text{regression}(1)}$)	2.45	3.65	0.14	1.61	9.63**
β_{ES}	−.049	−.037	−.008	.016	−.107
ES at 5, 10, and 15 years	.74:.60:.42	.45:.30:.12	.49:.46:.43	.02:.10:.18	.90:.36:−.17
Gender ($k = 4$) (d)[a]	−.04	.12	−.09	−.09	.09
Girls	.47**	.08	.40**	.14	−.14
Boys	.45***	.18	.33	.07	.01
% ethnic minority ($Q_{\text{regression}(1)}$)	0.49	1.15	3.91*	4.72*	3.93*
β_{ES}	.0022	−.0021	.0042	.0028	−.0069
ES at 25%, 50%, and 75%	.56:.59:.63	.32:.28:.23	.39:.47:.55	.06:.13:.19	.44:.27:.10
Country ($Q_{b(1)}$)[b]	6.08*	1.95	2.70	0.59	1.07
United States ($k = 11$)	.63***	.31**	.49***	.13*	.34*
Other countries ($k = 3$)	.34***	.15**	.31***	.06	.11
First author gender ($Q_{b(1)}$)	0.02	0.07	0.03	0.00	0.01
Female ($k = 10$)	.57***	.28**	.46***	.12**	.24**
Male ($k = 4$)	.60**	.23*	.43**	.12	.28*
Gender in title ($Q_{b(1)}$)[c]	0.05	1.69	1.31	2.08	3.02
No ($k = 10$)	.56***	.34**	.40***	.06	.44**
Yes ($k = 4$)	.60**	.09	.56***	.23*	.16

Note. Significant differences among reporters from follow-up comparisons are denoted by different alphabetic subscripts. ES = effect size; CI = confidence interval.
[a]See Equation 3 and accompanying text for description of how gender moderation was evaluated. [b]Due to low representation of individual countries outside of the United States, this variable was dichotomized to studies conducted within versus outside of the United States. [c]Dichotomous variable of whether the word *gender* (or similar terms such as *sex* or *boys* and *girls*) was in title.
*$p < .05$. **$p < .01$. ***$p < .001$.

(resulting also in male first authors finding differential effects between direct and indirect aggression that are not found by female first authors).

Publication Bias

Publication bias is a threat to any meta-analytic review (for overviews, see Begg, 1994; Rothstein, Sutton, & Borenstein, 2005). The threat of this bias is that unpublished studies, relative to published studies, are more likely to have nonsignificant results (or otherwise smaller effects) and less likely to be included in a meta-analytic review. The result of this possibility is that the conclusions drawn from this biased sample are themselves biased, specifically with estimated effect sizes being larger than those that actually exist. The threat of publication bias can be managed in a number of ways. The most important way is to obtain unpublished studies, which we have done by including unpublished dissertations and requesting unpublished studies from researchers in the field. However, even this does not ensure that publication bias is not evident. Therefore, we statistically evaluate the potential presence of publication bias in three ways.

Differences by publication status. The first way we evaluated potential publication bias was to test whether obtained results differ by publication status. As mentioned above, we considered publication

Table 7
Summary of Meta-Analytic Results of Associations of Direct and Indirect Aggression With Prosocial Behaviors

	Direct		Indirect		
	r	*sr*	*r*	*sr*	Differential *d*
Heterogeneity (Q; $df = 30$)	422.70***	597.63***	403.90***	578.43***	246.59***
Random-effects mean ES	−.29***	−.27***	−.14***	.11**	−.42***
95% CI	−0.35:−0.22	−0.35:−0.20	−0.21:−0.08	0.03:0.18	−0.53:−0.31
Moderators					
Reporter ($Q_{b(5)}$)	17.90**	13.16*	13.93**	14.96**	23.19***
Observation ($k = 2$)	$-.04_{a}$	$.00_{a}$	$-.05_{a}$	$-.07_{ab}$	$.07_{a}$
Parent ($k = 2$)	$-.36^{***}_{b}$	$-.23^{***}_{bc}$	$-.28^{**}_{b}$	$-.09_{a}$	$-.16^{**}_{ab}$
Peer nomination ($k = 17$)	$-.31^{***}_{b}$	$-.24^{***}_{bc}$	$-.24^{***}_{b}$	$.07_{bc}$	$-.34^{***}_{b}$
Peer ratings ($k = 0$)	—	—	—	—	—
Self-report ($k = 6$)	$-.10^{*}_{a}$	$-.16^{**}_{b}$	$.10_{a}$	$.38^{**}_{d}$	$-.18^{**}_{ab}$
Teacher ($k = 12$)	$-.39^{***}_{b}$	$-.36^{***}_{c}$	$-.10_{a}$	$.15^{*}_{cd}$	$-.65^{***}_{c}$
Age ($Q_{\text{regression}(1)}$)	0.96	2.69	0.53	2.35	7.61**
β_{ES}	.011	.021	−.008	−.019	.049
ES at 5, 10, and 15 years	−.32:−.28:−.22	−.35:−.25:−.15	−.11:−.16:−.20	.18:.08:−.01	−.61:−.36:−.11
Gender ($k = 12$) (d)[a]	.04	.01	−.03	−.01	.01
Girls	−.18*	−.21*	.03	.16	−.28
Boys	−.15	−.23*	−.01	.17	−.23
% ethnic minority ($Q_{\text{regression}(1)}$)	0.28	0.67	1.19	0.78	1.02
β_{ES}	−.0008	−.0014	−.0017	.0015	−.0024
ES at 25%, 50%, and 75%	−.28:−.30:−.32	−.26:−.29:−.33	−.12:.−.16:−.20	.10:.14:.17	−.41:−.47:−.53
Country ($Q_{b(1)}$)[b]	0.70	3.03	0.95	8.64**	11.96***
United States ($k = 27$)	−.30***	−.30***	−.13***	.13*	−.51***
Other countries ($k = 4$)	−.25***	−.16**	−.19***	−.06*	−.12
First author gender ($Q_{b(1)}$)	4.97*	8.34**	0.82	0.09	9.88**
Female ($k = 26$)	−.32***	−.31***	−.16***	.11**	−.48***
Male ($k = 5$)	−.10	−.09	−.05	.08	−.14
Gender in title ($Q_{b(1)}$)[c]	0.66	1.11	13.81***	6.42*	3.74
No ($k = 21$)	−.27***	−.31***	−.07	.18***	−.47***
Yes ($k = 10$)	−.34***	−.19	−.31***	−.07	−.13

Note. Significant differences among reporters from follow-up comparisons are denoted by different alphabetic subscripts. ES = effect size; CI = confidence interval.
[a]See Equation 3 and accompanying text for description of how gender moderation was evaluated. [b]Due to low representation of individual countries outside of the United States, this variable was dichotomized to studies conducted within versus outside of the United States. [c]Dichotomous variable of whether the word *gender* (or similar terms such as *sex* or *boys* and *girls*) was in title.
*$p < .05$. **$p < .01$. ***$p < .001$.

status in terms of both a dichotomous unpublished versus published variable as well as a more continuous publication quality variable. As summarized in the first column of Table 10, we compared unpublished versus published studies as moderators of each of the 33 effect sizes considered in this review. We similarly evaluated publication quality (unpublished studies other than dissertations, dissertation, chapter, journal article, and article in top-tier journal) as a continuous moderator of these effects (second column of Table 10).

Of these 66 analyses, 11 are significant. Examination of Table 10 shows that these significant moderators involve associations of direct and indirect aggression with prosocial behavior and peer rejection. For prosocial behavior, bivariate and semipartial associations of direct aggression and bivariate associations of indirect aggression are moderated by both the dichotomous and the continuous publication status variable (the latter also moderates the differential association). However, the direction of moderation in each case is such that unpublished/low-status studies exhibit *stronger* associations with low prosocial behavior (i.e., more negative) than published/high-status studies. Similar directions are evident for peer rejection, in which the bivariate correlations for both direct and indirect aggression are greater for unpublished/low-status studies than for published/high-status

Prosocial Behavior		
Direct Aggression		Indirect Aggression
	.4	
	.3	13
5	.2	349
	.1	3
110	.0	0189
610	-.0	056
75321	-.1	789
955	-.2	015579
99754	-.3	16889
8510	-.4	04
9655310	-.5	7
	-.6	0
	-.7	
-.29	$\overline{r}$	-.14
422.70	$Q_{(30)}$	403.90

Figure 5. Stem-and-leaf plot of associations of direct and indirect aggression with prosocial behavior.

studies. Given the general lack of moderation by publication status, as well as the unexpected direction of those that do emerge, these analyses fail to indicate a threat of publication bias.

Sample size–effect size correlations. A second way we tested for publication bias is by examining correlations between sample sizes and effect sizes in studies. If publication bias—in the form of nonsignificant results being less likely to be included in analyses—exists, then one would expect a correlation between these two variables (a negative correlation if the overall effect size is positive and a positive correlation if the overall effect size is negative). The reason for this correlation would be that studies with small samples would need larger effect sizes to obtain statistical significance. Therefore, only those that happened to obtain these large effects would be published (or otherwise included in the meta-analysis), whereas those that found smaller effects would be unpublished/excluded from the meta-analysis. In contrast, studies with large sample sizes would be more likely to obtain significance regardless of effect size (assuming that the population effect size itself is nonzero). Thus, a correlation between study sample size and effect size can indicate the presence of publication bias.

We computed correlations between sample sizes and effect sizes for each of the 33 effects in our review. As can be seen in Table 10 (third column), the majority of these correlations are not significant. In fact, only two related sample size/effect size correlations are significant: (a) the semipartial correlation of direct aggression with peer rejection and (b) the differential association of direct versus indirect aggression with peer rejection. Visual inspection of funnel plots (available from first author upon request) suggests that two studies (Johnson, 2003; Nelson, Robinson, & Hart, 2005) primarily contributed to these correlations.

Failsafe numbers. A third method of evaluating the potential impact of publication bias is to compute failsafe numbers (Becker, 2005; Rosenthal, 1979). Failsafe numbers indicate the number of studies with average effect sizes equal to zero that would have to exist to conclude nonsignificant effects. This number is meant to index the number of studies with effect sizes of zero that could have been excluded from the meta-analysis before the conclusions of significance would be invalidated. If this failsafe number is small, then the findings are not robust because the possibility of just a small number of excluded studies could change the conclusions of the meta-analysis. However, if the number is large, then one can be confident that the findings of the review are robust even if a large number (i.e., the failsafe number) of studies, all with an average effect size of zero, were inadvertently excluded from the meta-analysis. A common rule of thumb applied to determining whether the failsafe number is adequately large is $N_{\min} = 5k + 10$ (where k is the number of studies currently in meta-analysis; Becker, 2005; Rosenthal, 1979).

We computed Rosenthal's (1979) failsafe N for all effect sizes that were statistically significant in our review (it is not relevant to compute this number for nonsignificant effects because addition of null findings would not change the nonsignificant result). We used the formula: $N = k(Z_s/Z_\alpha)^2 - k$, where k is the number of studies in the meta-analysis, Z_s is the summed significance level of studies in the meta-analysis ($Z_s = \sum Z_i/\sqrt{k}$), and Z_α is the critical Z value at $\alpha = .05$ (Becker, 2005; Rosenthal, 1979). As can be seen in Table 10 (fourth and fifth columns), the failsafe numbers exceed recommended minimums in all but one case (the failsafe number for the semipartial correlation of indirect aggression with prosocial behavior does not exceed this recommended minimum).

The results of all three approaches to evaluating publication bias converge to the general conclusion that publication bias is not a likely threat to the results of this review.

Table 8
Summary of Meta-Analytic Results of Associations of Direct and Indirect Aggression With Peer Acceptance

	Direct		Indirect		
	r	*sr*	*r*	*sr*	Differential *d*
Heterogeneity (Q; $df = 22$)	136.38***	160.14***	229.48***	321.81***	73.16***
Random-effects mean ES	−.17***	−.11**	−.12*	.01	−.15**
95% CI	−0.23:−0.10	−0.18:−0.04	−0.20:−0.03	−0.08:0.10	−0.25:−0.05
Moderators					
Reporter ($Q_{b(3)}$)	5.45	6.52	3.98	3.08	4.37
Observation ($k = 2$)	.04	.10	−.03	−.11	.24
Parent ($k = 1$)	−.31***	−.23***	−.22**	−.06	−.21
Peer nomination ($k = 17$)	−.15***	−.07	−.12*	.00	−.10
Peer ratings ($k = 0$)	—	—	—	—	—
Self-report ($k = 0$)	—	—	—	—	—
Teacher ($k = 7$)	−.18*	−.19**	−.06	.06	−.26***
Age ($Q_{\text{regression}(1)}$)	2.54	3.42	0.29	0.17	2.38
β_{ES}	.017	.019	.007	−.006	.023
ES at 5, 10, and 15 years	−.23:−.15:−.07	−.19:−.10:.00	−.15:−.11:−.07	.04:.01:−.02	−.25:−.13:−.02
Gender ($k = 13$) (d)[a]	−.09	−.12	−.04	.09	−.01
Girls	−.04	−.02	−.08*	−.04	.01
Boys	−.14**	−.12*	−.12**	.05	−.02
% ethnic minority ($Q_{\text{regression}(1)}$)	1.89	1.10	6.62*	3.51	12.19***
β_{ES}	−.0034	.0026	−.0082	−.0064	.0124
ES at 25%, 50%, and 75%	−.13:−.22:−.30	−.13:−.07:.00	−.04:−.24:−.43	.06:−.10:−.25	−.25:.06:.37
Country ($Q_{b(1)}$)[b]	0.35	0.06	0.74	0.96	2.68
United States ($k = 17$)	−.18***	−.11*	−.16***	−.03	−.09
Other countries ($k = 6$)	−.13*	−.12*	−.03	.12	−.31*
First author gender ($Q_{b(1)}$)	0.01	0.02	0.05	0.44	1.40
Female ($k = 18$)	−.17**	−.11**	−.11*	.00	−.13*
Male ($k = 5$)	−.16*	−.12*	−.13*	.07	−.27*
Gender in title ($Q_{b(1)}$)[c]	0.99	1.05	4.11*	3.32	7.10**
No ($k = 10$)	−.13*	−.15**	−.01	.12	−.31***
Yes ($k = 13$)	−.20***	−.08*	−.20***	−.07	−.03

Note. Significant differences among reporters from follow-up comparisons are denoted by different alphabetic subscripts. ES = effect size; CI = confidence interval.
[a]See Equation 3 and accompanying text for description of how gender moderation was evaluated. [b]Due to low representation of individual countries outside of the United States, this variable was dichotomized to studies conducted within versus outside of the United States. [c]Dichotomous variable of whether the word *gender* (or similar terms such as *sex* or *boys* and *girls*) was in title.
*$p < .05$. **$p < .01$. ***$p < .001$.

Discussion

Although developmental researchers have long understood the importance of studying childhood aggression, only recently has attention focused on the indirect forms this aggression can take. This meta-analysis synthesizes the available evidence to address three topics important to this focus: gender differences in direct and indirect aggression, the intercorrelation of these two forms, and the associations these two forms of aggression have with adjustment. Below, we discuss the findings of this meta-analysis, identify shortcomings of both this meta-analysis and the extant empirical literature, and suggest directions for future research.

Findings From the Current Meta-Analysis

Results regarding overall gender differences are consistent with prior reviews of the literature: Boys tend to enact more direct aggression than girls, but there is little gender difference in indirect aggression (our finding that girls enact more indirect aggression than boys was statistically significant but trivial in magnitude). Given the number of studies included here and in Archer's (2004) meta-analyses, the support for negligible gender differences in indirect aggression seems conclusive. This conclusion of trivial gender differences in indirect aggression challenges common portrayals of this form being more commonly enacted by girls than boys (e.g., Björkqvist

Peer Acceptance			Peer Rejection		
Direct Aggression		Indirect Aggression	Direct Aggression		Indirect Aggression
	.7			.7	
	.6		410	.6	2
	.5	7	630	.5	25678
	.4		66530000	.4	0578
	.3		200	.3	1346
4	.2		6	.2	05
71	.1	039	700	.1	66
70	.0	0	1	.0	045
776	-.0	189		-.0	5
8873	-.1	1235578		-.1	
321	-.2	1247		-.2	
964100	-.3	47		-.3	
43	-.4	25		-.4	
	-.5			-.5	
-.17	$\bar{r}$	-.12	.39	$\bar{r}$	.35
136.38	$Q_{(22)}$	229.49	250.50	$Q_{(21)}$	290.84

Figure 6. Stem-and-leaf plot of associations of direct and indirect aggression with peer relations.

et al., 1992; Crick, 1997). Instead, indirect aggression can be considered a form that is more equitably enacted by girls and boys than direct aggression (although the medium magnitude of gender differences in direct aggression should alert us to the fact that direct aggression is also a problem among girls). This gender similarity in indirect aggression generally held across methods of assessing aggression. Although reporter moderation was found, such that girls are viewed by teachers and parents as more indirectly aggressive than boys, and boys view themselves as more indirectly aggressive than do girls (no gender differences emerged for peer nominations or ratings or for observations), these differences were generally small.

The trivial gender difference in indirect aggression was also consistent across age, ethnicity, and country (i.e., no evidence of moderation). The failure to find age trends in gender differences is interesting in that it runs counter to expectations that socializing forces exacerbate gender differences with development (e.g., Baillargeon et al., 2007). We conclude that the general pattern is of *similarities* rather than differences among boys' and girls' use of indirect aggression. This conclusion raises questions regarding *why* the misperception that girls are more indirectly aggressive than boys is so pervasive. Evidence suggests that early-developing gender schemas guide biases in processing social information consistent with this misconception (Giles & Heyman, 2005). Recent popular accounts of indirect aggression among girls also likely contributes to a dualistic focus on gender differences (rather than similarities; Horn, 2004) among teachers, parents, and even researchers. More broadly, our conclusion of gender similarity in indirect aggression supports arguments that studying aggression among both genders, rather than focusing exclusively on boys, is an important endeavor (Pepler, Madsen, Webster, & Levene, 2005; Putallaz & Bierman, 2004; Underwood, 2003).

The second goal of this review was to examine the magnitude of intercorrelation between direct and indirect aggression. On average, this correlation was very high, suggesting that these two forms are overlapping manifestations of childhood aggression. At the same time, this correlation is not perfect, supporting factor-analytic studies showing the separability of these two constructs (Björkqvist et al., 1992; Crick & Grotpeter, 1995; Grotpeter & Crick, 1996; Hart et al., 1998; Macgowan, Nash, & Fraser, 2002; Vaillancourt et al., 2003). The average (corrected) correlation (.76) implies that about half (57%) of the variance in these

Table 9
Summary of Meta-Analytic Results of Associations of Direct and Indirect Aggression With Peer Rejection

	Direct		Indirect		
	r	*sr*	*r*	*sr*	Differential *d*
Heterogeneity (Q; $df = 21$)	250.50***	140.17***	290.84***	157.68***	58.97***
Random-effects mean ES	.39***	.20***	.35***	.09**	.10*
95% CI	0.32:0.46	0.14:0.26	0.27:0.43	0.03:0.15	0.02:0.18
Moderators					
Reporter ($Q_{b(3)}$)	41.49***	12.58**	33.60***	5.48	5.93
Observation ($k = 3$)	.17**$_a$	.16**$_a$	.10$_a$	.05	.14
Parent ($k = 1$)	.64***$_c$	.42***$_c$	.52***$_d$	.23***	.30*
Peer nomination ($k = 17$)	.41***$_b$	.22***$_{ab}$	.39***$_c$	.10*	.11*
Peer ratings ($k = 0$)	—	—	—	—	—
Self-report ($k = 0$)	—	—	—	—	—
Teacher ($k = 6$)	.36***$_b$	.34***$_{bc}$	.19*$_b$	−.03	.43**
Age ($Q_{\text{regression}(1)}$)	0.03	3.83	0.94	3.29	9.14**
β_{ES}	−.002	−.017	.013	.017	−.037
ES at 5, 10, and 15 years	.40:.39:.38	.27:.19:.10	.31:.36:.42	.02:.10:.19	.26:.07:−.11
Gender ($k = 10$) (d)[a]	.08	.06	.06	−.04	.00
Girls	.21**	.06	.23**	.11*	.00
Boys	.31***	.12*	.29***	.07	.00
% ethnic minority ($Q_{\text{regression}(1)}$)	1.17	1.29	1.21	0.08	0.86
β_{ES}	.0038	.0029	.0042	−.0008	.0033
ES at 25%, 50%, and 75%	.37:.45:.52	.17:.24:.31	.33:.42:.50	.11:.09:.07	.04:.13:.21
Country ($Q_{b(1)}$)[b]	4.78*	0.96	5.62*	0.43	0.01
United States ($k = 18$)	.42***	.22***	.38***	.10*	.10*
Other countries ($k = 4$)	.26***	.14*	.23***	.05	.09
First author gender ($Q_{b(1)}$)	0.01	2.63	0.94	4.55*	16.66***
Female ($k = 16$)	.39***	.16***	.38***	.14***	.01
Male ($k = 6$)	.40***	.32***	.26**	−.10	.49***
Gender in title ($Q_{b(1)}$)[c]	1.59	0.06	1.96	1.46	0.31
No ($k = 11$)	.35***	.21***	.29***	.05	.12*
Yes ($k = 11$)	.44***	.20***	.41***	.13**	.08

Note. Significant differences among reporters from follow-up comparisons are denoted by different alphabetic subscripts. ES = effect size; CI = confidence interval.
[a]See Equation 3 and accompanying text for description of how gender moderation was evaluated. [b]Due to low representation of individual countries outside of the United States, this variable was dichotomized to studies conducted within versus outside of the United States. [c]Dichotomous variable of whether the word *gender* (or similar terms such as *sex* or *boys* and *girls*) was in title.
*$p < .05$. **$p < .01$. ***$p < .001$.

two forms overlaps, whereas the remaining variance is unique. Therefore, researchers should consider both the overlapping and the unique aspects of direct and indirect aggression in future work and examining the antecedents of both aggressiveness in general and direct or indirect aggression specifically is clearly warranted.

The overlap between direct and indirect aggression varied across several moderators (i.e., age, information source, and gender). Observations yield more distinct measures of direct versus indirect aggression than do other reports. Here, distinguishing an aggressive act as direct versus indirect is not always clear for untrained reporters (e.g., teachers, peers), and the cleanest measures are obtained via trained observers. Alternatively, it may be more difficult to observe indirect forms of aggression during the limited sampling periods often used, so the truly high correlation between forms is missed when using this methodology. Given that observations of aggression are difficult and time consuming, future research should evaluate whether the high overlap that exists among other sources of information is due to fuzziness in classifying acts and, if so, how researchers can obtain clearer assessments using other reporters. Although our review indicates which methods yield lower or higher correlations between direct and indirect aggression, it does not address which method yields

Table 10
Summary of Analyses Evaluating Publication Bias

	Published[a]	Publication quality[b]				
	$Q_{(1)}$	$Q_{(reg)}$	B_{ES}	$r_{N,\ ES}$[c]	Failsafe N[d]	Failsafe N_{min}[e]
Gender differences ($k = 107$)						
Direct	0.04	0.17	−.01	−.13	99,408	545
Indirect	1.14	0.90	−.01	.03	1,123	545
Intercorrelation ($k = 98$)	2.64	3.83	−.06	.02	565,533	500
Internalizing problems ($k = 27$)						
Direct *r*	3.01	1.80	−.05	.23		
Direct *sr*	1.64	0.35	−.01	.17		
Indirect *r*	1.64	1.44	−.05	.24	1,187	145
Indirect *sr*	0.13	0.37	−.02	.18	699	145
Differential *d*	0.74	0.07	−.01	−.03	925	145
Emotional dysregulation ($k = 18$)						
Direct *r*	3.00	2.41	−.09	−.16	6,459	100
Direct *sr*	1.61	0.44	−.03	.00	2,407	100
Indirect *r*	0.91	1.44	−.07	−.21	3,823	100
Indirect *sr*	0.06	0.64	−.04	−.22		
Differential *d*	2.09	0.16	−.03	.05	4,216	100
Delinquent behaviors ($k = 14$)						
Direct *r*	0.05	0.47	.04	−.24	5,477	80
Direct *sr*	1.20	2.25	.06	−.12	1,237	80
Indirect *r*	1.43	0.34	−.03	−.13	3,793	80
Indirect *sr*	2.10	1.96	−.04	−.05	216	80
Differential *d*	2.50	3.78	.14	−.08	1,328	80
Prosocial behavior ($k = 31$)						
Direct *r*	9.42**	7.60**	.08	.05	5,537	165
Direct *sr*	5.38*	5.35*	.08	.14	3,478	165
Indirect *r*	6.09*	4.48*	.06	−.06	2,058	165
Indirect *sr*	0.37	0.49	−.02	−.14	61	165
Differential *d*	1.92	5.21*	.10	.13	9,609	165
Peer acceptance ($k = 23$)						
Direct *r*	3.80	2.41	.04	−.01	888	125
Direct *sr*	1.27	1.28	.03	.06	349	125
Indirect *r*	0.65	0.56	.03	−.05	452	125
Indirect *sr*	0.05	0.06	.00	−.04		
Differential *d*	1.86	2.40	.06	.04	609	125
Peer rejection ($k = 22$)						
Direct *r*	20.15***	5.72*	−.08	−.16	5,511	120
Direct *sr*	1.13	0.63	−.02	−.51*	1,220	120
Indirect *r*	28.36***	7.39**	−.10	.11	4,711	120
Indirect *sr*	3.48	3.05	−.05	.37	426	120
Differential *d*	1.93	1.41	.04	−.46*	325	120

[a]Comparison of unpublished versus published studies. Values that represent $Q_{(1)}$ are distributed as $\chi^2_{(1)}$ under the null hypothesis of no difference between unpublished and published studies. [b]Regression of effect sizes onto continuous publication quality variable. Values that represent $Q_{regression}$ are distributed as $\chi^2_{(1)}$ under the null hypothesis of no linear trend of effect sizes across publication quality. B_{ES} represents linear change in effect sizes with increasing publication quality. [c]Correlation between study sample sizes and effect sizes; expected to be zero when there is no publication bias. [d]Rosenthal's (1979) failsafe *N*, which represents the number of excluded studies with ES = 0 that would need to exist before the effect size would be reduced to nonsignificance. [e]Rosenthal's (1979) recommended minimum failsafe number, $5k + 10$. This number is used to interpret Rosenthal's failsafe *N*. If Rosenthal's failsafe *N* is larger than this number, results can be considered robust to the threat of excluded studies yielding a nonsignificant effect.
*$p < .05$. **$p < .01$. ***$p < .001$.

the ''true'' overlap between them. Perceptions of individuals not specifically trained to distinguish direct and indirect aggression (i.e., self-reports, peers, teachers) may be ''blurred,'' resulting in inflated estimates of this overlap. Alternatively, the limited sampling of aggressive acts witnessed in observational studies may deflate the true overlap of children's tendencies to enact both forms of aggression. Multimethod research (using multiple sources of information in different contexts) may help answer this question. Further research on factors that influence perceptions of behaviors and individuals as directly and indirectly aggressive (e.g., Card, Hodges, Little, & Hawley, 2005; Neese, 1997; Ostrov, Crick, & Keating, 2005) will also aid in understanding the sources of this correlation.

Our results also indicate greater overlap of direct and indirect aggression among boys than girls. The combination of gender differences favoring boys' use of direct aggression and the trivial gender differences in indirect aggression (discussed above) suggests that both direct and indirect types are common in boys' behavioral repertoire. Because either form of aggression is common among boys, they may view both as possible ways to aggress against potential victims. Therefore, boys who enact one form of aggression may be inclined to also enact other forms of aggression, more so than for girls. The underlying reason for this gender moderation, however, is unclear. For example, biological or social forces may jointly promote both forms of aggression among boys, but one form or the other among girls. We might also ask whether these differences are veridical or a function of differential measurement processes across gender.

Arguably, the most important set of findings from this meta-analysis are the associations with maladjustment. Our findings indicate that direct and indirect aggression differentially relate to various aspect of maladjustment. Specifically, and consistent with our expectations, direct aggression is more strongly, and uniquely, associated with emotional dysregulation, conduct problems, low peer acceptance, and peer rejection (although indirect aggression also had unique associations with conduct problems and peer rejection). In contrast, indirect aggression is more strongly and uniquely associated with internalizing problems, perhaps reflecting that children with such problems are more willing to engage in these indirect, covert means of aggression than direct, confrontational forms. Interestingly, direct aggression exhibits a unique association with low prosocial behavior, whereas indirect aggression has a unique association with *high* prosocial behavior. Children using indirect aggression, which often requires the involvement of other peers (e.g., to aid in exclusion or rumor spreading), must also use prosocial skills to garner the support and assistance of others. Given the high correlation between direct and indirect aggression, most individual studies would not have sufficient power to identify these independent and differential associations. Here, the statistical power of meta-analytically combining results from multiple studies elucidates these unique links between the form of aggression and the maladjustment.

We found some evidence of moderation of these links, although caution should be exercised in drawing conclusions given the potential confounds among moderators among the limited number of studies considered (Lipsey, 2003). Method of assessing aggression was a common moderator with parent, teacher, and peer reports (nominations and ratings) of aggression having the strongest associations with maladjustment. On the one hand, observable aggression consistently enacted may be a strong reflection of maladjustment. On the other, these observers may be attuned to children's maladjustment, which makes them more aware of (or biased in their perceptions of) children's aggressive behavior. Further studies using multiple informants of both forms of aggression and adjustment would help clarify these possibilities.

Interestingly, we found no evidence of age or gender moderation. Although one must be cautious not to over interpret null findings, the absence of age differences suggests that the associations we found generally hold across childhood and adolescence. In other words, we have no reason to believe that either form of aggression is *only* linked to maladjustment during certain periods of development (countering our expectations regarding age normative or nonnormative forms being differentially related to maladjustment). The absence of gender moderation of these effects is particularly informative in that it directly counters arguments that so-called gender nonnormative forms of aggression should be related to greater maladjustment (Crick, 1997). The lack of support for this hypothesis makes sense if one considers the trivial magnitude of gender differences in indirect aggression—this form is no more normative for one gender than the other given that boys and girls enact roughly equal levels of indirect aggression.

Limitations in Our Knowledge and Directions for Future Research

An inherent limitation of this study, as with all meta-analyses, is that the quality of conclusions must rely on the literature available. That is, a central concern in any meta-analysis is that the conclusions

are only valid to the extent to which the included studies represent the population of research. Our reliance on random-effects (and mixed-effects) models allows for greater generalizability of findings (more so than if we had relied on fixed-effects models; Hedges & Vevea, 1998; Overton, 1998). Nevertheless, these models still assume that the included studies are a random sampling of the population of studies; to the extent that they are not, our results may be biased. Along these lines, two particular limits of this meta-analytic review merit consideration.

First, our review considered only studies investigating both direct and indirect forms of aggression. Although this limited sampling met our goal of comparing these two forms, it does raise questions of whether our findings can be generalized to either form individually. We identified 13 studies that investigated the effects considered in this review using indirect aggression only (i.e., not assessing or reporting on direct aggression). Supplemental analyses indicated that including these additional studies do not alter any of the conclusions reached here (i.e., tests of main effects and moderators yield identical patterns of significance and virtually identical effect sizes). More difficult to evaluate is whether inclusion of the thousands of studies investigating direct aggression only (until recently, the only form of aggression considered) would have affected our conclusions regarding direct aggression. We also performed supplemental analyses in which we included a small number of these studies and did not find any evidence that these studies changed our results. These supplemental analyses provide evidence that our sample of studies of indirect *and* direct aggression can be generalized to the population of studies measuring indirect *or* direct aggression. Nevertheless, it is possible that the large body of research investigating only direct aggression differs from those included in our review, so appropriate caution should be placed in generalizing these results.

A second consideration is whether our obtained sample of studies was less likely to include some findings than others (e.g., nonsignificant results). This threat, commonly called the file drawer problem (Rosenthal, 1979), is that researchers' file drawers are filled with studies of nonsignificant (or otherwise different) results. This threat is also considered within the general term of *publication bias* to reflect the possibility that nonsignificant or otherwise unacceptable results are less likely to be published (and therefore less likely to be included in meta-analyses) than studies finding significant or commonly accepted results. Although this threat can never be ruled out, we believe that it is unlikely to have biased our results for several reasons. First, our search procedures included several ways of locating unpublished studies (i.e., searching dissertation databases, soliciting unpublished studies from researchers in the field). Second, our analyses of publication biases yielded little support that unpublished studies produced different effect sizes than published studies or that there was censoring of low effect sizes among smaller studies. Third, failsafe numbers indicated that an enormous number of studies with null results would have to exist to invalidate our results. In short, we view it as unlikely file drawers are teeming with enough studies discrepant from those included so as to invalidate our results.

A more viable limitation of our sample of studies is the adequacy of testing moderators of effect sizes. In contrast to the ample body of research from which to analyze main effects, analysis of moderators of these effects (e.g., method of assessing aggression, age, gender) were often hampered by incomplete coverage across levels of these moderators. Moreover, other aspects of the studies may have accounted for these moderator effects. For example, the method of assessing aggression is confounded by the context in which the aggression might occur (e.g., observational measures are necessarily limited to the context of observation, teacher and peer reports capture primarily in-school aggression, parent reports might capture more aggression in the home or neighborhood, and self-reports might be nonspecific to context). Similarly, the moderators examined here might themselves be confounded (e.g., researchers tend to rely more on teacher or parent reports among younger children but self- and peer reports among older children and adolescents). The question of whether reporter, age, gender, or contextual features were the "true" moderators, or simply correlated with other, unmeasured study features, is difficult to answer within a meta-analysis (Lipsey, 2003). We therefore urge caution in interpreting these moderator results, and encourage future primary work to include wider age ranges, multiple reports of aggression in multiple contexts, systematically evaluate gender moderation, and compare results across cultures and nations in order to fully evaluate these moderating effects.

Our review of the extant literature has also identified some important limitations in this area of research. First, it is critical to consider the contexts in which most studies in our review measured aggression: Most used samples drawn from schools; therefore, many of the conclusions of this meta-analysis refer primarily to aggression within the school context. Furthermore, the primary literature suffers from both a lack of variability and inadequacy in reporting important contextual features, such as

the size of groups in which children interact, the gender composition of these groups, the familiarity of individuals within and between these groups, and the settings (e.g., playground, classroom) and activities (e.g., structured vs. unstructured) in which aggression occurs. Future studies should closely consider, and compare, these contextual features.

A substantial limitation in our meta-analysis and the majority of research reviewed is the reliance on concurrent data. This problem is especially relevant to our understanding of the associations of direct and indirect aggression with maladjustment. As such, our analyses speak to the magnitude of association but say nothing about the direction of influence. Each aspect of maladjustment that we considered could be conceptualized as an antecedent or a consequence of direct and indirect aggression or simply as a correlation arising from common third-variable causes. Unfortunately, longitudinal investigations that evaluate these directions of influence are rare and those that do exist are so varied in terms of time span and other methodological features that meaningful meta-analytic combination is not yet possible. We strongly urge further experimental and longitudinal research using well-planned time spans (i.e., days or years, depending on presumed time span of effects), appropriate analytic strategies (at a minimum, controlling for initial levels of the presumed consequence), and wider sampling of ages and measurement strategies within these longitudinal investigations (Card & Little, 2007).

Finally, our meta-analytic review focused on the presence and magnitude of associations but did not evaluate the source of these associations. This criticism can also be leveled at most studies within the field. In addition to asking *whether* such associations exist, it is also important to ask *why* such associations exist. As indicated, longitudinal research begins to get at this question. However, a complete answer must recognize the mediating mechanisms among these effects, with emphasis on the shared versus unique mechanisms of direct versus indirect aggression. Similarly, it is important to understand when or *under what conditions* these associations exist (i.e., moderating processes). Although our analyses provided some evidence of these moderators, more work in the form of primary studies is needed to better understand the associations documented in this review.

Conclusions

Despite these limitations, this meta-analytic review does much to organize the existing literature so as to draw conclusions and guide future work. This work expands prior reviews of gender differences in aggression and is the first to examine (a) the intercorrelation between direct and indirect forms and (b) the associations these two forms have with maladjustment. In contrast to prior reviews showing that boys enact more direct aggression than girls (Hyde, 1984; Maccoby & Jacklin, 1974), our results (replicating those of Archer, 2004) generally demonstrate an absence of meaningful gender differences in indirect aggression. Although it can be argued that some methods of assessing indirect aggression yield some evidence of gender differences (also found by Archer, 2004), the magnitudes of these gender differences are uniformly small. We conclude that indirect aggression is *not* a ''female form'' of aggression.

Our finding that direct and indirect aggression shares about half of their variance has two implications. First, it highlights the need to consider commonalities between the two forms. Clearly, there are causes that explain children's aggression irrespective of form, and we should not lose sight of these commonalities in our quest to understand the differences. At the same time, there are differences, which are evident through the imperfect correlation between these two forms and our findings that direct and indirect aggression differentially relate to several aspects of maladjustment.

This meta-analytic review synthesizes the existing research on direct and indirect aggression during childhood and adolescence. This synthesis has resolved inconsistencies and misconceptions in the literature to reveal important information regarding gender similarities and differences, the commonality yet separability of these two forms, and their unique associations with maladjustment. However, the greater value of this work is in pointing to directions for future research. Clearly, research on these two forms of aggression has taken us well beyond the historic, narrow focus on boys' direct aggression. Just as clearly, more research on the indirect forms of aggression, among both boys and girls, is needed. This research should diverge from much of the prior work, however, to consider both the similarities and the differences in direct and indirect aggression and in recognizing that both forms are enacted by—and have similar correlates with maladjustment for—both genders.

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Appendix

Table A1
Studies Reporting Gender Differences in Direct and Indirect Aggression

Study	*N*	Age (years)	Reporter	Publication status[a]	Author gender	Country	% Ethnic minority	Direct (*r*)	Indirect (*r*)
Barton and Cohen (2004)	39	10.0	Peer nominations	4	M	United States	44	−.01	−.13
Berdugo-Arstark (2002)	128	8.8	Teacher	2	F	United States	0	.12	−.17
Björkqvist et al. (1992)	85	8.5	Peer rating	4	M	Finland	—	.19	−.13
Bosacki (2003)	239	10.8	Teacher	4	F	Canada	1	.23	.00
Brendgen et al. (2005)	468	6.1	Peer nominations	5	F	Canada	8	.49	.15
Brendgen et al. (2005)	468	6.1	Teacher	5	F	Canada	8	.22	−.14
Butovskaya, Timentschik, and Burkova (2007)	212	13.7	Peer rating	4	F	Russia	—	.29	−.20
Butovskaya et al. (2007)	212	13.7	Self	4	F	Russia	—	.12	−.21
Cairns et al. (1989)	215	12.2	Other (victim)	5	M	United States	12	.27	−.21
Campbell (1999)	139	10.0	Teacher	2	F	United States	42	.18	−.03
Card et al. (2005)	351	10.5	Peer nominations	4	M	United States	32	.36	−.26
Carpenter and Nangle (2006)	82	4.0	Teacher	4	F	United States	6	.17	.04
Côté, Vaillancourt, Barker, Nagin, and Tremblay (2007)	1,183	3.4	Parent	5	F	Canada	17	.12	−.09
Coyne and Archer (2005)	347	12.5	Peer nominations	4	F	England	—	.25	−.25
Craig (1998)	546	11.2	Self	4	F	Canada	29	.13	−.03
Crick (1995)	252	9.4	Peer nominations	5	F	United States	27	.27	.11
Crick (1997)	1,166	10.5	Peer nominations	5	F	United States	16	.37	−.08
Crick and Grotpeter (1995)	491	9.4	Peer nominations	5	F	United States	40	.36	−.14

Table A1
Continued

Study	*N*	Age (years)	Reporter	Publication status[a]	Author gender	Country	% Ethnic minority	Direct (*r*)	Indirect (*r*)
Crick et al. (1996)	162	10.0	Peer nominations	5	F	United States	49	.17	−.32
Crick, Casas, and Mosher (1997)	65	4.5	Peer nominations	5	F	United States	27	.00	.00
Crick et al. (1997)	65	4.5	Teacher	5	F	United States	27	.39	−.36
Crick, Grotpeter, and Bigbee (2002)—Study 1	121	9.0	Peer nominations	5	F	United States	38	.62	−.48
Crick et al. (2002)—Study 2	485	10.5	Peer nominations	5	F	United States	28	.39	−.08
Crick, Ostrov, and Werner (2006)	234	8.0	Peer nominations	5	F	United States	40	.30	−.13
Crick, Ostrov, Burr et al. (2006)	91	4.0	Observation	4	F	United States	43	.48	−.28
David (2001); David and Kistner (2000)	749	9.8	Peer nominations	5	F	United States	31	.41	.12
Delveaux (2003)	425	12.5	Peer nominations	2	F	Canada	0	.39	−.28
Estrem (2003)	100	4.2	Teacher	2	F	United States	11	.37	.08
Evans (2005)	133	12.4	Self	2	F	United States	100	.00	.08
Fite, Stauffacher, Ostrov, and Colder (2008)	69	12.9	Self	4	F	United States	28	.28	.02
Foo (2002)	101	9.0	Parent	2	F	United States	26	.40	−.37
Foo (2002)	101	9.0	Teacher	2	F	United States	26	.40	−.08
Foster (2001); Onyskiw (1999)	12,387	7.5	Parent	2	F	Canada	—	.15	−.07
Foster (2001); Onyskiw (1999)	2,654	10.5	Self	2	F	Canada	—	.27	.02
Gleason, Jensen-Campbell, and Richardson (2004)	59	12.3	Self	4	F	United States	32	.26	−.21
Goldstein (2003)	104	12.9	Self	2	F	United States	19	.25	−.06
Grotpeter (1997)	120	8.0	Peer nominations	2	F	United States	39	.53	−.24
Hart et al. (1998)	207	5.1	Teacher	5	M	Russia	—	.04	.05
Hawley (2003)	163	4.3	Teacher	5	F	United States	45	.00	−.32
Hawley, Little, and Card (2008)	1,723	14.0	Peer nominations	4	F	Germany	19	.26	−.09
Hawley et al. (2008)	1,723	14.0	Self	4	F	Germany	19	.17	.10
Hayward and Fletcher (2003)	363	11.3	Peer nominations	4	F	Australia	—	.56	.02
Hektner and Swenson (2005)	340	11.4	Self	1	M	United States	8	.19	−.10
C. Henington, Hughes, Cavell, and Thompson (1998)	904	7.5	Peer nominations	4	F	United States	53	.42	.15
Hunt (2002)	1,008	9.0	Self	2	F	United States	36	.11	.08
Johnson (2003)	65	6.0	Peer nominations	2	M	United States	65	.61	.58
Johnson (2003)	65	6.0	Teacher	2	M	United States	65	.38	.00
Juliano, Werner, and Cassidy (2006)	67	4.3	Observation	4	F	United States	16	.39	−.09
Juliano et al. (2006)	67	4.3	Teacher	4	F	United States	16	.23	−.10
Killeya-Jones and Costanzo (2008)	254	12.2	Peer nominations	1	F	United States	43	.28	−.06
Killeya-Jones and Costanzo (2008)	254	12.2	Self	1	F	United States	43	.13	−.18
Krause (2005)	230	11.9	Peer rating	2	F	United States	—	.09	−.20

(*Continued*)

Table A1
Continued

Study	*N*	Age (years)	Reporter	Publication status[a]	Author gender	Country	% Ethnic minority	Direct (*r*)	Indirect (*r*)
Lafferty (2003)	98	12.0	Peer rating	2	F	United States	67	.52	.35
Lagerspetz et al. (1988)	167	11.5	Peer rating	4	F	Finland	—	.40	−.26
Lancelotta and Vaughn (1989)	98	9.4	Peer nominations	5	M	United States	35	.34	.40
Landau, Björkqvist, Lagerspetz, Österman, and Gideon (2002)	630	11.8	Peer ratings	4	M	Israel	—	.41	−.05
Little, Jones, Henrich, and Hawley (2003)	1,723	13.7	Self	4	M	Germany	17	.16	.10
Long (2003)	68	9.9	Teacher	2	F	United States	55	.31	−.35
Loukas, Paulos, and Robinson (2005)	745	11.8	Self	4	F	United States	21	.34	.01
McCay (2004)	440	13.6	Peer nominations	2	F	United States	6	.41	−.22
McEvoy, Estrem, Rodriguez, and Olsen (2003)	59	4.8	Observation	4	F	United States	8	.92	.64
McEvoy et al. (2003)	59	4.8	Peer nominations	4	F	United States	8	.89	.77
McEvoy et al. (2003)	59	4.8	Teacher	4	F	United States	8	1.00	.02
McNeill (2001)	415	6.8	Teacher	2	F	United States	92	.25	−.11
McNeilly-Choque, Hart, Robinson, Nelson, and Olsen (1996)	196	4.9	Observation	4	F	United States	—	.24	−.20
McNeilly-Choque et al. (1996)	241	4.9	Peer nominations	4	F	United States	—	.32	.00
McNeilly-Choque et al. (1996)	181	4.9	Teacher	4	F	United States	—	.17	−.13
Meadow (2001)	115	11.5	Peer ratings	2	F	United States	11	.43	.01
Miller, Vaillancourt, and Boyle (in press)	749	7.5	Teacher	4	F	Canada	3	.23	−.08
Mizokawa (1999)	267	13.0	Parent	2	F	United States	6	.23	−.21
Mizokawa (1999)	267	13.0	Self	2	F	United States	6	.30	−.05
Murray-Close (2006)	77	10.0	Teacher	2	F	United States	20	.30	−.25
Murray-Close, Crick, and Galotti (2006)	639	9.5	Peer nominations	4	F	United States	73	.28	−.08
Murray-Close et al. (2006)	639	9.5	Teacher	4	F	United States	73	.06	−.21
Musher-Eizenman et al. (2004)	771	10.9	Self	4	F	United States	38	.13	−.03
Nelson et al. (2005)	325	4.8	Peer nominations	4	M	United States	14	.31	.00
Nelson et al. (2005)	277	4.8	Teacher	4	M	United States	14	.23	−.17
O'Shea (2004)	111	10.3	Other (neutral peer)	2	F	United States	71	.36	.09
O'Shea (2004)	111	10.3	Other (friend)	2	F	United States	71	.38	.21
O'Shea (2004)	111	10.3	Peer nominations	2	F	United States	71	.41	−.11
O'Shea (2004)	111	10.3	Self	2	F	United States	71	.24	−.06
Österman et al. (1994)	404	8.4	Peer rating	4	F	Multiple	—	.30	.03
Österman et al. (1994)	404	8.4	Self	4	F	Multiple	—	.14	.02
Ostrov (2006)	64	3.7	Observation	4	M	United States	54	.24	.01
Ostrov and Crick (2007)	132	3.7	Observation	4	M	United States	25	.26	−.25
Ostrov and Crick (2007)	66	4.7	Teacher	4	M	United States	25	.47	.14
Ostrov and Keating (2004)	40	5.3	Observation	4	M	United States	10	.22	−.15
Ostrov, Crick, and Stauffacher (2006)	50	3.9	Observation	4	M	United States	28	.36	−.17

Table A1
Continued

Study	*N*	Age (years)	Reporter	Publication status[a]	Author gender	Country	% Ethnic minority	Direct (*r*)	Indirect (*r*)
Ostrov, Woods, Jansen, Casas, and Crick (2004)	60	4.6	Observation	4	M	United States	20	.13	−.21
Pakaslahti and Keltikangas-Järvinen (1998)	839	14.5	Peer nominations	4	F	Finland	—		
Park et al. (2005)	207	8.0	Parent	4	F	United States	7	.14	−.09
Park et al. (2005)	207	8.0	Self	4	F	United States	7	.17	.09
Park et al. (2005)	207	8.0	Teacher	4	F	United States	7	.22	−.09
Peets and Kikas (2006)	319	11.4	Peer rating	4	F	Finland	—	.66	.35
Peets and Kikas (2006)	247	11.4	Self	4	F	Finland	—	.44	.05
Peets and Kikas (2006)	335	11.4	Teacher	4	F	Finland	—	.54	.28
Pepler, Craig, and Roberts (1998)	39	9.4	Observation	4	F	Canada	57	.03	.04
Phillipsen, Deptula, and Cohen (1999)	262	8.7	Peer nominations	4	F	United States	50	.07	.00
Prinstein, Boergers, and Vernberg (2001)	566	16.4	Self	5	M	United States	78	.30	.06
Rana and Malhotra (2005)	200	16.5	Self	4	—	India	—	.34	.26
Rielly (2003)	130	11.8	Self	2	F	Canada	—	.29	.20
Russell, Hart, Robinson, and Olsen (2003)	197	4.8	Teacher	4	M	Australia	3	.41	−.09
Russell et al. (2003)	213	4.8	Teacher	4	M	United States	14	.21	−.19
Rys and Bear (1997)	266	9.5	Peer nominations	4	F	United States	36	.33	−.03
Rys and Bear (1997)	266	9.5	Teacher	4	F	United States	36	.25	−.09
Salmivalli and Kaukiainen (2004)	526	12.5	Peer rating	4	F	Finland	—	.57	.13
Salmivalli and Kaukiainen (2004)	526	12.5	Self	4	F	Finland	—	.37	.07
Salmivalli, Kaukiainen, and Lagerspetz (2000)	209	15.5	Peer nominations	4	F	Finland	—	.48	−.41
Schmidt (2004)	164	14.4	Self	2	F	United States	42	.23	.21
Schmidt (2004)	164	14.4	Other (friend)	2	F	United States	42	.12	.07
Sebanc (2003)	97	3.9	Teacher	4	F	United States	26	.23	−.21
Selah-Shayovits (2004)	921	17.3	Self	4	M	Israel	—	.37	.13
Simon (2001)	135	4.6	Peer nominations	2	F	United States	24	.61	.58
Simon (2001)	54	4.6	Teacher	2	F	United States	24	.39	.03
C. E. Smith (2004)	78	8.8	Observation	2	F	Canada	30	.46	.49
R. G. Smith (2005)	258	11.4	Parent	2	F	United States	16	.06	−.06
R. G. Smith (2005)	258	11.4	Self	2	F	United States	16	.03	.01
R. G. Smith (2005)	258	11.4	Teacher	2	F	United States	16	.18	.02
R. L. Smith, Rose, and Schwartz-Mette (2008)	607	11.1	Peer nominations	1	F	United States	13	.46	−.06
Suarez (2001)	161	5.4	Observation	2	F	United States	31	.34	.00
Suarez (2001)	161	5.4	Peer nominations	2	F	United States	31	.48	.03
Sullivan, Farrell, and Kliewer (2006)	276	14.5	Self	5	F	United States	96	.08	−.08
Tapper and Boulton (2004)	74	9.1	Observation	4	F	England	—	.18	−.19
Tapper and Boulton (2004)	74	9.1	Peer rating	4	F	England	—	.08	−.07
Tapper and Boulton (2004)	74	9.1	Self	4	F	England	—	.07	−.22
Tiet et al. (2001)	198	12.9	Parent	4	M	United States	96	.30	.00

(*Continued*)

Table A1
Continued

Study	*N*	Age (years)	Reporter	Publication status[a]	Author gender	Country	% Ethnic minority	Direct (*r*)	Indirect (*r*)
Toldos (2005)	653	15.5	Peer rating	4	—	Spain	—	.31	.11
Tomada and Schneider (1997)	314	9.2	Peer nominations	5	F	Italy	—	.46	.14
Tomada and Schneider (1997)	314	9.2	Teacher	5	F	Italy	—	.07	.06
Underwood, Scott, Galperin, Bjornstad, and Sexton (2004)	292	12.5	Observation	5	F	United States	28	.14	−.03
Vaillancourt et al. (2003)	3,089	5.9	Parent	5	F	Canada	—	.11	−.06
Verlaan (1995)	406	11.7	Peer nominations	2	F	Canada	—	.32	.02
Weiner (2002)—Study 1	461	9.0	Self	2	F	United States	—	.19	.08
Weiner (2002)—Study 2	824	11.0	Self	2	F	United States	46	.17	.11
Werner and Nixon (2005)	1,208	10.9	Self	4	F	United States	18	.18	−.05
M. Willoughby, Kupersmidt, and Bryant (2001)	362	4.2	Teacher	5	M	United States	35	.13	.08
Wolke, Woods, Bloomfield, and Karstadt (2000)	1,982	7.6	Self	5	M	England	9	.20	.08
Woods, Wolke, Nowicki, and Hall (2008)	373	9.9	Peer nominations	1	F	England	—	.38	.26
Xie, Swift, Cairns, and Cairns (2002)	475	13.4	Other (victim)	4	F	United States	100	.06	−.22
Zahn-Waxler, Park, Essex, Slattery, and Cole (2005)	54	13.4	Self	4	F	United States	18	.42	−.10
Zimmer-Gembeck, Geiger, and Crick (2005)	458	9.5	Peer nominations	4	F	United States	26	.37	.00
Zimmer-Gembeck, Hunter, and Pronk (2007)	334	11.0	Peer nominations	4	F	Australia	—	.41	−.06
						Weighted random-effects average:		.29	−.03

Note. Effect sizes for gender differences are in the metric of Pearson's correlation (*r*) for comparability to other effect sizes in this report. Gender is coded so that positive correlations represent boys being more aggressive than girls, whereas negative correlations represent girls being more aggressive than boys. M = male; F = female.
[a]Publication status was coded as: 1 = *unpublished, not dissertation*; 2 = *unpublished dissertation*; 3 = *published book chapter*; 4 = *published peer reviewed journal article*; and 5 = *published article in top-tier journal* (see text for details).

Table A2
Studies Reporting Intercorrelations Between Direct and Indirect Aggression

Study	*N*	Age (years)	Reporter	Publication status[a]	Author gender	Country	% Ethnic minority	*r*	Corrected *r*
Andreou (2006)	403	11.2	Peer nominations	4	F	Greece	—	.47	.56
Arnold (1998)	110	7.5	Peer nominations	2	F	United States	54	.71	.84
Berdugo-Arstark (2002)	128	8.8	Teacher	2	F	United States	0	.55	.62
Blachman (2003)	228	9.2	Other (camp counselor)	2	F	United States	47	.59	.73
Brendgen et al. (2005)	468	6.1	Peer nominations	5	F	Canada	8	.41	.56
Brendgen et al. (2005)	468	6.1	Teacher	5	F	Canada	8	.43	.50
Butovskaya et al. (2007)	212	13.7	Peer rating	4	F	Russia	—	.58	.69
Campbell (1999)	139	10.0	Teacher	2	F	United States	42	.64	.70
Carpenter and Nangle (2006)	82	4.0	Teacher	4	F	United States	6	.27	.31
Cillessen and Mayeux (2004)	607	12.0	Peer nominations	5	M	United States	34	.64	.78
Cillessen, Jiang, West, and Laszkowski (2005)	224	16.0	Peer nominations	4	M	United States	0	.61	.73
Cillessen et al. (2005)	224	16.0	Self	4	M	United States	0	.69	.80
Côté et al. (2007)	1,183	6.4	Parent	5	F	Canada	17	.34	.50
Coyne and Archer (2005)	347	12.5	Peer nominations	4	F	England	—	.54	.58
Crain (2002)	134	10.2	Peer nominations	2	F	United States	46	.87	.91
Crick (1995)	252	9.4	Peer nominations	5	F	United States	27	.66	1.00
Crick (1996)	245	9.4	Peer nominations	5	F	United States	71	.77	.87
Crick (1996)	245	9.4	Teacher	5	F	United States	71	.77	.82
Crick (1997)	1,166	10.5	Peer nominations	5	F	United States	16	.63	.69
Crick et al. (1996)	162	10.0	Peer nominations	5	F	United States	49	.16	.36
Crick et al. (1997)	65	4.5	Peer nominations	5	F	United States	27	.42	.57
Crick et al. (1997)	65	4.5	Teacher	5	F	United States	27	.75	.79
Crick and Grotpeter (1995)	491	9.4	Peer nominations	5	F	United States	40	.54	.61
Crick, Ostrov, and Werner (2006)	245	8.5	Peer nominations	5	F	United States	40	.69	.76
Crick, Ostrov, Burr, et al. (2006)	91	4.0	Observation	4	F	United States	43	.19	.22
Crick, Ostrov, Burr, et al. (2006)	91	4.0	Peer rating	4	F	United States	43	.43	.49
Crick, Ostrov, Burr, et al. (2006)	91	4.0	Teacher	4	F	United States	43	.55	.63
Cristina (2000)	87	11.1	Peer nominations	2	F	Canada	—	.65	.74
Dane (2001)	242	11.1	Peer nominations	2	M	Canada	0	.21	.45
David and Kistner (2000)	859	9.6	Peer nominations	5	F	United States	31	.82	.88
Delveaux (2003)	425	12.5	Peer nominations	2	F	Canada	0	.43	.47
Dettling, Gunnar, and Donzella (1999)	66	5.7	Teacher	4	F	United States	—	.73	.87
Estrem (2005)	100	4.2	Teacher	2	F	United States	10	.72	.80
Evans (2005)	133	12.4	Self	2	F	United States	100	.76	.92
Finch (2001)	124	9.8	Peer nominations	2	F	United States	56	.88	.92
Foo (2002)	101	9.0	Parent	2	F	United States	26	.23	.33
Foo (2002)	101	9.0	Peer nominations	2	F	United States	26	.40	.48
Foo (2002)	101	9.0	Teacher	2	F	United States	26	.41	.45
Geiger (2003)	458	9.5	Peer nominations	2	F	United States	.26	.60	.66
Gleason et al. (2004)	74	12.3	Self	4	F	United States	.32	.61	.71
Hart et al. (1998)	207	5.1	Teacher	5	M	Russia	—	.62	.69
Hawley (2003)	163	4.3	Teacher	5	F	United States	45	.57	.70
Hawley, Little, and Card (2007)	929	14.7	Peer nominations	4	F	Germany	19	.67	.79
Hayward and Fletcher (2003)	363	11.3	Peer nominations	4	F	Australia	—	.60	.72
Hektner and Swenson (2005)	340	11.4	Self	1	M	United States	8	.58	.95
C. D. Henington (1996); C. Henington et al. (1998)	904	7.5	Peer nominations	4	F	United States	53	.64	.76
Johnson (2003)	65	6.0	Peer nominations	2	M	United States	65	.90	1.00
Johnson (2003)	65	6.0	Teacher	2	M	United States	65	.39	.44

(*Continued*)

Table A2
Continued

Study	*N*	Age (years)	Reporter	Publication status[a]	Author gender	Country	% Ethnic minority	*r*	Corrected *r*
Kaukiainen et al. (1999)	526	12.5	Peer ratings	4	M	Finland	—	.75	.80
Killeya-Jones and Costanzo (2008)	254	12.2	Peer nominations	1	F	United States	43	.69	.82
Killeya-Jones and Costanzo (2008)	254	12.2	Self	1	F	United States	43	.34	.50
Krause (2005)	230	11.9	Peer ratings	2	F	United States	—	.08	.08
Lafferty (2003)	98	12.0	Peer ratings	2	F	United States	67	.82	.86
Landau et al. (2002)	630	11.8	Peer ratings	4	M	Israel	—	.81	.99
Leff (1995)	151	9.5	Peer nominations	2	M	United States	33	.79	.94
Little et al. (2003)	1,723	13.7	Self	4	M	Germany	17	.83	.83
Lockwood (2002)	80	10.0	Peer nominations	2	F	United States	49	.86	.97
Long (2003)	91	9.9	Teacher	2	F	United States	55	.41	.46
Loukas et al. (2005)	745	11.8	Peer nominations	4	F	United States	21	.51	.69
Macgowan et al. (2002)	171	11.8	Teacher	4	M	United States	30	.45	.60
McNeilly-Choque et al. (1996)	241	4.9	Observation	4	F	United States	—	.16	.18
McNeilly-Choque et al. (1996)	181	4.9	Peer nominations	4	F	United States	—	.50	.69
McNeilly-Choque et al. (1996)	196	4.9	Teacher	4	F	United States	—	.64	.75
Meadow (2001)	115	11.5	Peer ratings	2	F	United States	11	.57	.62
Miller (2001)	150	16.0	Peer nominations	2	F	United States	44	.53	.62
Miller et al. (in press)	749	7.5	Teacher	4	F	Canada	3	.53	.63
Murray-Close and Crick (2006)	590	9.0	Peer nominations	4	F	United States	71	.70	.77
Nelson and Crick (2002)	115	9.0	Peer nominations	3	M	United States	31	.65	.78
Nelson et al. (2005)	325	4.8	Peer nominations	4	M	United States	14	.55	.66
Nelson et al. (2005)	277	4.8	Teacher	4	M	United States	14	.62	.74
Nelson, Hart, Yang, Olsen, and Jin (2006)	215	5.1	Peer nominations	5	M	United States	—	.84	.84
O'Donnell (2002)	8	10.5	Peer nominations	2	F	United States	38	.12	.15
O'Donnell (2002)	8	10.5	Other (camp counselor)	2	F	United States	38	.19	.23
Onyskiw (1999)	11,221	7.4	Parent	2	F	Canada	—	.43	.56
Onyskiw (1999)	2,921	10.5	Self	2	F	Canada	—	.50	.69
Osantowski (2001)	123	10.5	Peer nominations	U	F	United States	46	.67	.73
O'Shea (2004)	111	10.3	Peer nominations	U	F	United States	62	.61	.67
O'Shea (2004)	111	10.3	Self	U	F	United States	62	.40	.67
O'Shea (2004)	111	10.3	Other (neutral peer)	U	F	United States	62	.74	.83
O'Shea (2004)	111	10.3	Other (friend)	U	F	United States	62	.66	.81
Ostrov (2006)	64	3.7	Observations	4	M	United States	54	.21	.24
Ostrov (2008)	139	3.8	Observation	1	M	United States	42	.16	.19
Ostrov (2008)	139	3.8	Teacher	1	M	United States	42	.60	.70
Pakaslahti and Keltikangas-Jaervinen (2000)	2,002	14.5	Peer nominations	4	F	Finland	—	.58	.73
Pakaslahti and Keltikangas-Jaervinen (2000)	2,002	14.5	Teacher	4	F	Finland	—	.57	.74
Park et al. (2005)	207	8.0	Parent	4	F	United States	7	.50	.70
Park et al. (2005)	207	8.0	Self	4	F	United States	7	.66	.85
Park et al. (2005)	207	8.0	Teacher	4	F	United States	7	.63	.75
Pepler et al. (1998)	39	9.4	Observation	4	F	Canada	57	.08	.11
Prinstein et al. (2001)	566	16.4	Self	5	M	United States	78	.52	.66
Rockhill (2000)	360	9.5	Teacher	2	F	United States	4	.64	.69
Rose, Swenson, and Waller (2004)—Study 1	607	11.1	Peer nominations	5	F	United States	13	.65	.77

Table A2
Continued

Study	*N*	Age (years)	Reporter	Publication status[a]	Author gender	Country	% Ethnic minority	*r*	Corrected *r*
Rose et al. (2004)—Study 2	1,019	11.2	Peer nominations	5	F	United States	15	.70	.83
Salmivalli et al. (2000)	209	15.5	Peer nominations	4	F	Finland	—	.68	.75
Schmidt (2004)	164	14.4	Self	2	F	United States	42	.59	.81
Schmidt (2004)	158	14.4	Other (friend)	2	F	United States	42	.44	.61
Sebanc (1999)	98	3.9	Peer nominations	4	F	United States	26	.64	.96
Sebanc (1999)	98	3.9	Teacher	4	F	United States	26	.43	.46
Simon (2001)	54	4.6	Peer nominations	2	F	United States	24	.74	1.00
Simon (2001)	135	4.6	Teacher	2	F	United States	24	.60	.66
R. G. Smith (2005)	258	13.2	Parent	2	F	United States	16	.78	.93
R. G. Smith (2005)	258	13.2	Self	2	F	United States	16	.59	.70
R. G. Smith (2005)	258	13.2	Teacher	2	F	United States	16	.55	.66
Solis (1998)	145	14.0	Self	2	F	United States	18	.59	.73
Suarez (2001)	161	5.0	Observation	2	F	United States	31	.33	.94
Suarez (2001)	161	5.0	Peer nominations	2	F	United States	31	.82	.97
Sullivan et al. (2006)	276	14.5	Self	5	F	United States	98	.52	.64
Tiet et al. (2001)	308	12.9	Parent	4	M	United States	96	.76	.97
Tomada and Schneider (1997)	314	9.2	Peer nominations	5	F	Italy	—	.76	.83
Tomada and Schneider (1997)	314	9.2	Teacher	5	F	Italy	—	.55	.68
Underwood et al. (2004)	292	12.5	Observation	5	F	United States	28	.09	.11
Vaillancourt and Hymel (2006)	585	13.5	Peer nominations	4	F	Canada	7	.57	.63
Vaillancourt et al. (2003)	3,089	7.9	Parent	5	F	Canada	—	.45	.45
Verlaan (1995)	406	11.7	Peer nominations	2	F	Canada	—	.88	.92
Weiner (2002)—Study 1	461	9.0	Self	2	F	United States	—	.33	.39
Weiner (2002)—Study 2	824	11.0	Self	2	F	United States	46	.45	.55
Werner and Nixon (2005)	1,208	10.9	Self	4	F	United States	12	.56	.78
M. Willoughby et al. (2001)	362	4.2	Teacher	5	M	United States	35	.65	.65
T. Willoughby, Chalmers, and Busseri (2004)	7,290	15.6	Self	5	F	Canada	7	.60	.76
Xie, Cairns, and Cairns (2002)	510	10.2	Self	4	F	United States	23	.00	.00
Xie, Cairns, and Cairns (2002)	510	10.2	Other (victim)	4	F	United States	23	.12	.14
Zahn-Waxler et al. (2005)	54	13.4	Self	4	F	United States	18	.48	.62
Zimmer-Gembeck et al. (2007)	334	11.0	Peer nominations	4	F	Australia	—	.50	.58
					Weighted random-effects average:			.60	.76

Note. M = male; F = female.
[a]Publication status was coded as: 1 = *unpublished, not dissertation*; 2 = *unpublished dissertation*; 3 = *published book chapter*; 4 = *published peer reviewed journal article*; and 5 = *published article in top-tier journal* (see text for details).

Table A3
Studies Reporting Associations of Direct and Indirect Aggression With Internalizing Problems

Study	*N*	Age (years)	Reporter	Publication status[a]	Author gender	Country	% Ethnic minority	Direct		Indirect		Differential *d*
								r	*sr*	*r*	*sr*	
Carpenter and Nangle (2006)	82	4.0	Teacher	4	F	United States	6	.19	.21	−.02	−.09	.37
Crick (1997)	1,166	10.5	Peer nominations	5	F	United States	16	.07	.01	.10	.06	−.06
Crick et al. (1997)	65	4.5	Peer nominations	5	F	United States	27	−.06	.04	−.17	−.16	.23
Crick et al. (1997)	65	4.5	Teacher	5	F	United States	27	.05	−.24	.25	.35	−.66
Crick, Ostrov, and Werner (2006)	234	8.0	Peer nominations	5	F	United States	40	.11	.12	.05	−.06	.20
Delveaux (2003)	425	12.5	Peer nominations	2	F	Canada	0	−.07	.05	−.25	−.24	.34
Estrem (2003)	100	4.2	Teacher	2	F	United States	11	.19	−.09	.33	.28	−.42
Evans (2005)	133	12.4	Self	2	F	United States	100	.34	−.17	.45	.33	−.58
C. Henington et al. (1998)	904	7.5	Peer nominations	4	F	United States	53	−.07	−.22	.10	.23	−.49
Long (2003)	53	9.9	Teacher	2	F	United States	55	−.13	−.21	.13	.21	−.50
Loukas et al. (2005)	745	11.8	Peer nominations	4	F	United States	21	.20	−.11	.41	.37	−.58
McCay (2004)	440	13.6	Peer nominations	2	F	United States	6	−.21	−.10	−.19	−.05	−.06
McNeill (2001)	415	6.8	Teacher	2	F	United States	92	.39	.11	.42	.19	−.09
Meadow (2001)	115	11.5	Peer ratings	2	F	United States	11	.00	.00	.00	.00	.00
Murray-Close (2006)	77	10.0	Teacher	2	F	United States	20	.25	−.04	.37	.28	−.37
Onyskiw (1999)	7,399	9.7	Parent	2	F	Canada	—	.32	.12	.40	.26	−.18
Onyskiw (1999)	2,654	9.7	Self	2	F	Canada	—	.26	.09	.29	.15	−.06
Osantowski (2001)	123	10.5	Peer nominations	2	F	United States	46	.09	.03	.10	.04	−.01
Ostrov et al. (2004)	60	4.6	Observation	4	M	United States	20	−.10	−.16	.00	.12	−.30
Phillipsen et al. (1999)	262	8.7	Peer nominations	4	F	United States	50	−.40	−.21	−.35	−.07	−.17
Prinstein et al. (2001)	253	16.4	Self	5	M	United States	78	.04	.02	.05	.03	−.01
Rockhill (2000)	172	9.5	Teacher	2	F	United States	4	.06	.01	.07	.05	−.04
Simon (2001)	135	4.6	Teacher	2	F	United States	24	.38	.34	.19	−.09	.52
Verlaan (1995)	406	11.7	Peer nominations	2	F	Canada	—	.06	−.03	.09	.07	−.10
Wolke et al. (2000)	1,639	7.6	Self	5	M	England	8	−.02	−.01	−.02	.00	−.01
Xie, Farmer, and Cairns (2003)	300	12.0	Self	4	F	United States	100	.00	.00	−.03	−.03	.05
Xie et al. (2003)	300	12.0	Other (victim)	4	F	United States	100	−.03	−.03	.00	.00	−.05
Zahn-Waxler et al. (2005)	54	13.4	Self	4	F	United States	18	.00	.00	.00	.00	.00
Zimmer-Gembeck et al. (2007)	334	11.0	Peer nominations	4	F	Australia	—	.05	.05	.02	−.01	.07
					Weighted random-effects average:			.07	−.01	.10	.08	−.11

Note. M = male; F = female.
[a]Publication status was coded as: 1 = *unpublished, not dissertation*; 2 = *unpublished dissertation*; 3 = *published book chapter*; 4 = *published peer reviewed journal article*; and 5 = *published article in top-tier journal* (see text for details).

Table A4
Studies Reporting Associations of Direct and Indirect Aggression With Externalizing Problems

Study	*N*	Age (years)	Reporter	Publication status[a]	Author gender	Country	% Ethnic minority	Direct		Indirect		Differential *d*
								r	*sr*	*r*	*sr*	
Emotional dysregulation/ADHD symptoms												
Berdugo-Arstark (2002)	128	8.8	Teacher	2	F	United States	0	.51	.32	.42	.13	.24
Blachman (2003)	228	9.2	Parent	2	F	United States	47	.99	.76	.37	−.20	5.20
Blachman (2003)	228	9.2	Mixed	2	F	United States	47	.62	.92	.64	−.17	−.09
Crick (1997)	1,166	10.5	Peer nominations	5	F	United States	16	.38	.53	.00	−.36	1.14
Estrem (2003)	100	4.2	Teacher	2	F	United States	11	.34	.02	.43	.27	−.29
Little et al. (2003)	1,723	13.7	Self	4	M	Germany	17	.60	.28	.53	.07	.27
Long (2003)	53	9.9	Teacher	2	F	United States	56	.40	.39	.13	−.06	.57
McNeill (2001)	415	6.8	Teacher	2	F	United States	92	.52	.40	.34	−.08	.60
McNeilly-Choque et al. (1996)	241	4.9	Peer nominations	4	F	United States	—	.46	−.13	.81	.68	−1.51
Musher-Eizenman et al. (2004)	778	10.9	Self	4	F	United States	38	.28	.17	.23	.02	.16
Ostrov et al. (2004)	60	4.6	Observation	4	M	United States	20	.00	.00	.00	.00	.00
Rielly (2003)	130	11.8	Self	2	F	Canada	—	.70	.47	.52	−.01	.72
Russell et al. (2003)	375	4.8	Teacher	4	M	Mixed	9	.07	.01	.08	.04	−.03
Simon (2001)	135	4.6	Teacher	2	F	United States	24	.65	.52	.39	−.05	.82
Solis (1998)	145	14.0	Self	2	F	United States	18	.64	.04	.85	.55	−1.02
Tiet et al. (2001)	308	12.9	Parent	4	M	United States	96	.65	.14	.63	.03	.15
M. Willoughby et al. (2001)	362	4.2	Teacher	5	M	United States	35	.65	.53	.38	−.06	.85
Wolke et al. (2000)	1,639	7.6	Self	5	M	England	8	.24	.14	.20	.03	.12
Zalecki and Hinshaw (2004)	228	9.0	Parent	5	F	United States	47	.87	.94	.33	−.49	13.26
Zalecki and Hinshaw (2004)	228	9.0	Peer nominations	5	F	United States	47	.45	.10	.50	.25	−.18
Zalecki and Hinshaw (2004)	228	9.0	Teacher	5	F	United States	47	.83	.79	.42	−.32	2.57
Zalecki and Hinshaw (2004)	228	9.0	Other (camp staff)	5	F	United States	47	.35	−.09	.55	.43	−.67
					Weighted random-effects average:			.52	.31	.42	.06	.35
Delinquency/conduct disorder												
Blachman (2003)	228	9.2	Other (camp staff)	2	F	United States	47	.90	.47	.79	.19	.73
Costanzo, Killeya-Jones, Schmid, Mack, and Golonka (2007)	288	12.2	Peer nominations	1	M	United States	60	.17	.12	.13	−.03	.15
Costanzo et al. (2007)	288	12.2	Self	1	M	United States	60	.24	.12	.28	.18	−.07
Crick, Ostrov, and Werner (2006)	234	8.0	Peer nominations	5	F	United States	40	.49	.27	.41	.03	.29
Long (2003)	53	9.9	Teacher	2	F	United States	55	.18	.17	.07	−.02	.22
McNeill (2001)	415	6.8	Teacher	2	F	United States	92	.62	.23	.62	.24	−.01
Solis (1998)	145	14.0	Self	2	F	United States	18	.62	.15	.71	.38	−.35
Sullivan et al. (2006)	276	14.5	Self	5	F	United States	98	.69	.49	.50	.07	.63
Tiet et al. (2001)	308	12.9	Parent	4	M	United States	96	.59	−.32	.70	.49	−1.26

(*Continued*)

Table A4
Continued

Study	*N*	Age (years)	Reporter	Publication status[a]	Author gender	Country	% Ethnic minority	Direct		Indirect		Differential *d*
								r	*sr*	*r*	*sr*	
Verlaan (1995)	406	11.7	Peer nominations	2	F	Canada	—	.42	.01	.44	.16	−.16
M. Willoughby et al. (2001)	362	4.2	Teacher	5	M	United States	35	.92	.72	.57	−.04	2.03
T. Willoughby et al. (2004)	7,290	15.6	Self	5	F	Canada	7	.36	.16	.34	.10	.07
Wolke et al. (2000)	1,639	7.6	Self	5	M	England	8	.27	.24	.15	−.08	.35
Xie et al. (2003)	237	197.7	Self	4	F	United States	100	.30	.31	−.04	−.08	.55
Zahn-Waxler et al. (2005)	54	13.4	Self	4	F	United States	18	.66	.57	.35	−.07	.94
						Weighted random-effects average:		.58	.27	.45	.11	.27

Note. M = male; F = female; ADHD = attention deficit hyperactivity disorder.
[a]Publication status was coded as: 1 = *unpublished, not dissertation*; 2 = *unpublished dissertation*; 3 = *published book chapter*; 4 = *published peer reviewed journal article*; and 5 = *published article in top-tier journal* (see text for details).

Table A5
Studies Reporting Associations of Direct and Indirect Aggression With Prosocial Behavior

Study	*N*	Age (years)	Reporter	Publication status[a]	Author gender	Country	% Ethnic minority	Direct		Indirect		Differential *d*
								r	*sr*	*r*	*sr*	
Blachman (2003)	228	9.2	Parent	2	F	United States	47	−.46	−.31	−.38	−.16	−0.19
Blachman (2003)	228	9.2	Mixed	2	F	United States	47	−.63	−.49	−.41	−.10	−0.58
Carpenter and Nangle (2006)	82	4.0	Teacher	4	F	United States	6	−.48	−.57	.23	.39	−1.51
Cillessen et al. (2005)	224	16.0	Peer nominations	4	M	United States	0	−.15	−.23	.01	.17	−0.44
Cillessen et al. (2005)	224	16.0	Self	4	M	United States	0	−.10	−.16	.00	.12	−0.30
Crain (2002)	131	10.2	Peer nominations	2	F	United States	46	−.51	−.38	−.38	.19	−0.69
Crick (1996)	245	9.4	Peer nominations	5	F	United States	71	−.28	−.25	−.18	.13	−0.41
Crick (1996)	245	9.4	Teacher	5	F	United States	71	−.67	−.36	−.57	−.03	−0.46
Crick (1997)	1,166	10.5	Peer nominations	5	F	United States	16	−.40	−.27	−.29	−.02	−0.30
Crick et al. (1997)	65	4.5	Peer nominations	5	F	United States	27	−.20	−.15	−.13	−.02	−0.15
Crick et al. (1997)	65	4.5	Teacher	5	F	United States	27	−.30	−.18	−.24	−.01	−0.19
Finch (2001)	124	9.8	Peer nominations	2	F	United States	56	−.39	−.41	−.25	.28	−0.80

Table A5
Continued

Study	*N*	Age (years)	Reporter	Publication status[a]	Author gender	Country	% Ethnic minority	Direct		Indirect		Differential *d*
								r	*sr*	*r*	*sr*	
Geiger (2003)	458	8.0	Peer nominations	2	F	United States	26	−.41	−.27	−.31	−.05	−0.26
Hawley (2003)	163	4.3	Teacher	5	F	United States	45	−.01	−.31	.31	.44	−0.91
C. Henington et al. (1998)	904	7.5	Peer nominations	4	F	United States	53	.01	.33	−.27	−.43	0.90
Johnson (2003)	74	6.0	Peer nominations	2	M	United States	65	−.65	−.17	−.64	−.12	−0.06
Johnson (2003)	74	6.0	Teacher	2	M	United States	65	−.55	−.50	−.23	−.02	−0.68
Long (2003)	53	9.9	Teacher	2	F	United States	55	−.55	−.39	−.44	−.21	−0.26
Macgowan et al. (2002)	171	11.8	Teacher	4	M	United States	30	.25	.07	.33	.23	−0.19
McNeill (2001)	415	6.8	Teacher	2	F	United States	92	−.39	−.30	−.25	.06	−0.42
Miller (2001)	150	16.0	Peer nominations	2	F	United States	44	.00	.00	.00	.00	0.00
O'Donnell (2002)	8	10.5	Peer nominations	2	F	United States	38	−.06	.02	−.53	−.53	0.86
O'Donnell (2002)	8	10.5	Other (camp staff)	2	F	United States	38	−.48	−.46	−.20	−.13	−0.48
Onyskiw (1999)	7,399	9.7	Parent	2	F	Canada	—	−.27	−.19	−.20	−.06	−0.16
Onyskiw (1999)	2,654	9.7	Self	2	F	Canada	—	−.24	−.16	−.18	−.02	−0.16
Osantowski (2001)	123	10.5	Peer nominations	2	F	United States	46	−.56	−.17	−.60	−.28	0.14
O'Shea (2004)	111	10.3	Peer nominations	2	F	United States	71	−.47	−.44	−.21	.98	−0.72
O'Shea (2004)	111	10.3	Self	2	F	United States	71	.08	−.60	.78	.13	−9.38
O'Shea (2004)	111	10.3	Other (neutral peer)	2	F	United States	71	−.49	−.32	−.37	−.06	−0.32
O'Shea (2004)	111	10.3	Other (friend)	2	F	United States	71	−.44	−.26	−.36	−.10	−0.20
Ostrov et al. (2004)	60	4.6	Observation	4	M	United States	20	.01	.07	−.06	−.09	0.17
Pepler et al. (1998)	39	9.4	Observation	4	F	Canada	57	−.11	−.11	−.05	−.04	−0.09
Phillipsen et al. (1999)	262	8.7	Peer nominations	4	F	United States	50	−.06	−.20	.09	.21	−0.44
Rockhill (2000)	172	9.5	Teacher	2	F	United States	4	−.59	−.27	−.57	−.22	−0.07
Sebanc (1999)	98	3.9	Peer nominations	4	F	United States	26	−.10	−.62	.06	.61	−1.59
Sebanc (1999)	98	3.9	Teacher	4	F	United States	26	−.14	−.26	.20	.29	−0.68
Simon (2001)	54	4.6	Peer nominations	2	F	United States	24	−.31	−.29	−.29	.28	−0.63
Simon (2001)	135	4.6	Teacher	2	F	United States	24	−.39	−.49	−.04	.30	−0.99
Weiner (2002)	824	11.0	Self	2	F	United States	46	.00	−.06	.08	.10	−0.18
Wolke et al. (2000)	1,639	7.6	Self	5	M	England	8	−.17	−.02	−.20	−.11	0.09
Xie et al. (2003)	300	12.0	Self	4	F	United States	100	−.06	−.06	.03	.03	−0.13
Xie et al. (2003)	300	12.0	Other (victim)	4	F	United States	100	−.13	−.13	−.07	−.07	−0.09
Zimmer-Gembeck et al. (2007)	334	11.0	Peer nominations	4	F	Australia	—	−.37	−.31	−.21	.01	−0.39
						Weighted random-effects average:		−.29	−.27	−.14	.11	−0.42

Note. M = male; F = female.
[a]Publication status was coded: 1 = *unpublished, not dissertation*; 2 = *unpublished dissertation*; 3 = *published book chapter*; 4 = *published peer reviewed journal article*; and 5 = *published article in top-tier journal* (see text for details).

Table A6
Studies Reporting Associations of Direct and Indirect Aggression With Peer Relations

Study	*N*	Age (years)	Reporter	Publication status[a]	Author gender	Country	% Ethnic minority	Direct		Indirect		Differential *d*
								r	*sr*	*r*	*sr*	
Peer acceptance												
Blachman (2003)	228	9.2	Parent	2	F	United States	47	−.31	−.23	−.22	−.06	−0.21
Carpenter (2002)	75	4.1	Teacher	2	F	United States	9	−.30	−.27	−.11	−.02	−0.32
Crick and Grotpeter (1995)	491	9.4	Peer nominations	5	F	United States	40	−.17	−.10	−.15	−.06	−0.04
Crick et al. (1997)	65	4.5	Peer nominations	5	F	United States	27	.20	.13	.17	.07	0.07
Crick et al. (1997)	65	4.5	Teacher	5	F	United States	27	.12	−.10	.23	.22	−0.35
Cristina (2000)	39	9.3	Peer nominations	2	F	Canada	—	−.43	−.15	−.45	−.19	0.05
David (2001)	639	9.7	Peer nominations	5	F	United States	45	−.21	−.11	−.18	.02	−0.14
Geiger (2003)	458	8.0	Peer nominations	2	F	United States	26	−.13	−.07	−.12	−.05	−0.02
Hawley, Little, and Card (2007)	929	14.7	Peer nominations	4	F	Germany	19	−.07	.01	−.09	−.06	0.07
C. D. Henington (1996)	904	7.4	Peer nominations	4	F	United States	53	−.30	−.15	−.27	−.06	−0.10
Johnson (2003)	65	6.0	Peer nominations	2	M	United States	65	−.43	.19	−.45	−.22	0.46
Johnson (2003)	65	6.0	Teacher	2	M	United States	65	−.35	−.28	−.22	−.07	−0.26
Leff (1995)	151	9.5	Peer nominations	2	M	United States	33	−.34	−.42	−.21	.33	−0.86
Miller (2001)	150	16.0	Peer nominations	2	F	United States	44	.00	−.48	−.42	−.64	1.56
Nelson et al. (2005)	196	4.8	Peer nominations	4	M	United States	14	−.10	−.03	−.11	−.06	0.04
Nelson et al. (2005)	167	4.8	Teacher	4	M	United States	14	−.03	−.13	.09	.15	−0.31
Ostrov and Keating (2004)	42	5.3	Observation	4	M	United States	10	−.18	−.19	−.08	.09	−0.31
Ostrov et al. (2004)	60	4.6	Observation	4	M	United States	20	.24	.36	.00	−.27	0.72
Phillipsen et al. (1999)	262	8.7	Peer nominations	4	F	United States	50	.17	.11	.13	.00	0.12
Rys and Bear (1997)	266	9.5	Peer nominations	4	F	United States	36	−.22	−.18	−.14	.04	−0.25
Rys and Bear (1997)	266	9.5	Teacher	4	F	United States	36	−.22	−.15	−.16	.01	−0.18
Salmivalli et al. (2000)	209	15.5	Peer nominations	4	F	Finland	—	.07	−.11	.19	.21	−0.34
Simon (2001)	135	4.6	Teacher	2	F	United States	24	−.44	−.43	−.17	.15	−0.71
Tomada and Schneider (1997)	314	9.0	Peer nominations	5	F	Italy	—	−.35	−.26	−.25	.07	−0.37
Tomada and Schneider (1997)	314	9.0	Teacher	5	F	Italy	—	.00	.00	.00	.00	0.00
Vaillancourt (2001)	299	13.5	Peer nominations	2	F	Canada	7	.11	−.33	.57	.66	−1.46
Verlaan (1995)	406	11.7	Peer nominations	2	F	Canada	—	−.36	−.05	−.37	−.10	0.06
Zalecki and Hinshaw (2004)	228	9.0	Mixed	5	F	United States	47	−.23	−.08	−.24	−.10	0.03
						Weighted random-effects average:		−.17	−.11	−.12	.01	−0.15
Peer rejection												
Blachman (2003)	228	9.2	Parent	2	F	United States	47	.64	.42	.52	.23	0.30
Crick and Grotpeter (1995)	491	9.4	Peer nominations	5	F	United States	40	.30	.22	.20	.02	0.23
Crick et al. (1997)	65	4.5	Peer nominations	5	F	United States	27	.49	.29	.44	.20	0.11
Crick et al. (1997)	65	4.5	Teacher	5	F	United States	27	.30	.27	.17	−.11	0.43

Table A6
Continued

Study	*N*	Age (years)	Reporter	Publication status[a]	Author gender	Country	% Ethnic minority	Direct		Indirect		Differential *d*
								r	*sr*	*r*	*sr*	
Geiger (2003)	458	8.0	Peer nominations	2	F	United States	26	.50	.15	.55	.28	−0.17
Hawley, Little, and Card (2007)	929	14.7	Peer nominations	4	F	Germany	19	.10	−.05	.16	.14	−0.20
C. D. Henington (1996)	904	7.4	Peer nominations	4	F	United States	53	.32	.10	.34	.15	−0.06
Johnson (2003)	74	6.0	Peer nominations	2	M	United States	65	.57	.54	.53	−.50	1.62
Johnson (2003)	74	6.0	Teacher	2	M	United States	65	.54	.57	.07	−.18	1.07
Leff (1995)	151	9.5	Peer nominations	2	M	United States	33	.61	.09	.62	.12	−0.04
Miller (2001)	150	16.0	Peer nominations	2	F	United States	44	.46	.14	.56	.35	−0.28
Murray-Close and Crick (2006)	590	9.0	Peer nominations	4	F	United States	20	.53	.14	.58	.26	−0.15
Nelson et al. (2005)	180	4.8	Peer nominations	4	M	United States	14	.47	.54	.09	−.29	1.09
Nelson et al. (2005)	180	4.8	Teacher	4	M	United States	14	.33	.49	−.01	−.37	1.07
Ostrov (2008)	139	3.6	Observation	1	M	United States	42	.21	.18	.18	.14	0.04
Ostrov (2008)	139	3.6	Teacher	1	M	United States	42	.62	.36	.51	.12	0.34
Ostrov and Crick (2007)	132	4.1	Observation	4	M	United States	25	.17	.16	.05	.04	0.17
Ostrov et al. (2004)	60	4.6	Observation	4	M	United States	20	.10	.16	.00	−.12	0.30
Pakaslahti and Keltikangas-Järvinen (1998)	839	14.5	Peer nominations	4	F	Finland	—	.30	.10	.33	.15	−0.07
Phillipsen et al. (1999)	262	8.7	Peer nominations	4	F	United States	50	.01	.08	−.05	−.09	0.18
Rys and Bear (1997)	266	9.5	Peer nominations	4	F	United States	36	.47	.08	.56	.30	−0.28
Rys and Bear (1997)	266	9.5	Teacher	4	F	United States	36	.32	.10	.34	.14	−0.04
Salmivalli et al. (2000)	209	15.5	Peer nominations	4	F	Finland	—	.40	.32	.25	−.08	0.47
Tomada and Schneider (1997)	314	9.0	Peer nominations	5	F	Italy	—	.48	.40	.31	−.16	0.68
Tomada and Schneider (1997)	314	9.0	Teacher	5	F	Italy	—	.00	.00	.00	.00	0.00
Werner (2000)	881	8.5	Peer nominations	2	F	United States	37	.46	.15	.48	.19	−0.05
Werner and Crick (2004)	517	8.0	Peer nominations	4	F	United States	45	.45	.15	.47	.20	−0.06
Zalecki and Hinshaw (2004)	228	9.0	Mixed	5	F	United States	47	.60	.26	.57	.18	0.11
						Weighted random-effects average:		.39	.20	.35	.09	0.10

Note. M = male; F = female.
[a]Publication status was coded as: 1 = *unpublished, not dissertation*; 2 = *unpublished dissertation*; 3 = *published book chapter*; 4 = *published peer reviewed journal article*; and 5 = *published article in top-tier journal* (see text for details).