



Exposure to domestic violence: A meta-analysis of child and adolescent outcomes

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ABSTRACT

This study used meta-analysis to examine the relationship between childhood exposure to domestic violence and children's internalizing, externalizing, and trauma symptoms. Results from 60 reviewed studies revealed mean weighted effect size *d*-values of .48 and .47 for the relationship between exposure to domestic violence and childhood internalizing and externalizing symptoms, respectively, indicating moderate effects. A larger mean weighted effect size *d*-value of 1.54 was obtained for the relationship between exposure to domestic violence and childhood trauma symptoms, though this figure was based on only six studies. Moderator analyses for gender showed that the relationship between exposure to domestic violence and externalizing symptoms was significantly stronger for boys than for girls. Further analyses examining age, age by gender, and recruitment setting variables revealed no significant effects. Descriptive information obtained from this meta-analytic review suggests that more recent research within this area is beginning to address some of the significant methodological limitations of past research. Recommendations for future research in the area are discussed.

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1. Introduction

Each year, approximately 4.8 million acts of physical or sexual aggression are perpetrated against women while 2.9 million physically aggressive acts are perpetrated against men in the United States (Tjaden & Thoennes, 1998). What makes these figures even more disturbing is the realization that many of these incidents take place in the presence of children. In fact, researchers estimate that between three and 17.8 million children are exposed to at least one incident of domestic violence each year (Carlson, 1984; Holden, 1998; Straus, 1992). Moreover, studies using adults' retrospective reports indicate that 20% to 40% reported exposure to domestic violence during childhood or adolescence (Forsstrom-Cohen & Rosenbaum, 1985; Henning, Leitenberg, Coffey, Turner, & Bennett, 1996; Maker, Kemmelmeier, & Peterson, 1998).

Despite high prevalence of children exposed to domestic violence, researchers have only recently begun to investigate the effects of this exposure. While the first case study examining the negative impact of childhood exposure to domestic violence was published over thirty years ago (Levine, 1975), the first empirical studies did not appear until the early 1980's (Porter & O'Leary, 1980; Straus, Gelles, & Steinmetz, 1980). This "first generation" of research, published from 1980's to the early 1990's, was primarily concerned with documenting the association between male-perpetrated violence towards females and various types of childhood symptomatology (Graham-Bermann, 1998). In 1989, Fantuzzo and Lindquist published a qualitative review of this first generation of empirical literature. Their summary highlighted inconsistencies and methodological limitations, including little precision in describing the types of violence to which children were exposed, the use of unstandardized measures of exposure to domestic violence, and a failure to assess moderating variables such as age and gender (Fantuzzo & Lindquist, 1989). This review, along with the equivocal results of the previous literature, spawned a second generation of research, primarily published since 1990. These studies employed more sophisticated research designs and tested models that included mediating and moderating variables. The most recent empirical studies have continued these trends by extending investigations to young children and adolescents while continuing to address the limitations of the research methodologies employed in previous studies (Graham-Bermann, 1998).

1.1. Defining "exposure to domestic violence"

Different terms have been used to describe children who have been exposed to domestic violence. Early research often described children as being a "witness" or "observer" of such violence; more recently, however, researchers have begun to use the term "exposure" to domestic violence (Holden, 1998). Within the empirical literature, however, few studies articulate what is meant by "childhood exposure" and many do not report information about the type or extent of violence to which the child is exposed. Thus, to date, no standardized definition of childhood exposure to violence has emerged (Mohr, Lutz, Fantuzzo, & Perry, 2000). Despite such lack of consensus, most researchers agree that *exposure to domestic violence* occurs when children see, hear, are directly involved in (i.e., attempt to intervene), or experience the aftermath of physical or sexual assaults that occur between their caregivers (Edleson, 1999; Jouriles, McDonald, Norwood, & Ezell, 2001; Wolak & Finkelhor, 1998). Additionally, while much of the research surrounding childhood exposure to domestic violence has focused on male-perpetrated violence (Wolak & Finkelhor, 1998), researchers studying family violence must recognize that children may also be exposed to violence in which their mother is the perpetrator or to bidirectional acts of violence between caregivers.

1.2. Effects of exposure to domestic violence

Studies have found that children exposed to domestic violence experience a range negative outcomes, including increased internalizing and externalizing behaviors (Fantuzzo et al., 1991; Holden & Ritchie, 1991; Jaffe, Wolfe, Wilson, & Zak, 1986; Rossman, 1998; Sternberg et al., 1993). More specifically, children exposed to domestic violence report more depressive symptoms, anxiety, and worry than those who have never been exposed to such violence (e.g., Graham-Bermann, 1996; Spaccarelli, Sandler, & Roosa, 1994; Sternberg et al., 1993). These children also appear to be more prone to physical aggression and have higher levels of general behavior problems when rated by parents and teachers (Sternberg, Lamb, Guterman, & Abbott, 2006). Exposure to domestic violence may also lead to trauma symptoms in the form of intrusive re-experiencing of the events in dreams or flashbacks, hyperarousal or an exaggerated startle response, and emotional withdrawal (Graham-Bermann & Levendosky, 1998; Kilpatrick & Williams, 1998; Lehmann, 1997; Rossman, 1998; Margolin & Vickerman, 2007). Evidence for this connection comes from findings that children who have been exposed to domestic violence score higher on posttraumatic stress disorder (PTSD) scales (Rossman, 1998) and often meet diagnostic criteria for PTSD (Kilpatrick & Williams, 1998). Interestingly, despite these indications, to date, no meta-analyses have examined this relationship.

Despite findings such as those above, outcomes across studies have varied and not all studies have found associations between exposure to domestic violence and childhood adjustment problems (e.g. Rosenbaum & O'Leary, 1981). For example, some studies have found several different patterns of outcomes associated with exposure to violence, including: multiple symptoms (both internalizing and externalizing problems; Cummings & Davies, 1994), internalizing problems only (Hughes & Barad, 1983), externalizing problems only (Wolfe, Jaffe, Wilson, & Zak, 1985), and no problems in adjustment (Grych, Jouriles, Swank, McDonald,

& Norwood, 2000; Hughes & Luke, 1998). Finally, some inconsistencies in the literature may be due to methodological variations, such as sample composition and recruitment methods. For example, many first generation studies employed samples drawn from battered women shelters, which are likely to over represent more severe domestic violence. Additionally, residing in an unfamiliar environment such as a shelter may be a distressing experience in itself.

1.3. Developmental factors moderating the effects of exposure to domestic violence

Because a child's level of coping skills and perception of domestic violence may vary according to age, effects of exposure to domestic violence may manifest differently in children of different developmental stages. It should be noted that although research has been conducted on children in various developmental stages, no clear pattern of symptoms has emerged (Margolin, 1998). Furthermore, few longitudinal studies have been conducted on children exposed to domestic violence. Nevertheless, available findings provide some indication that although younger children may be most affected by exposure to domestic violence, they may also experience a decrease in symptoms as they mature (Sternberg, Lamb, Gutterman, Abbott, & Dawud-Noursi, 2006). However, with such few longitudinal studies, it is difficult to ascertain how the symptom picture may change over time as a child develops.

1.4. Gender as a moderator of the outcomes of exposure to domestic violence

Several studies suggest that exposure to domestic violence may affect boys and girls differently. In general, research suggests that boys demonstrate more externalizing behaviors while girls tend to display more internalizing behaviors (e.g., Carlson, 1991; Stagg, Wills, & Howell, 1989; Yates, Dodds, Sroufe, & Egeland, 2003). Some studies suggest, however, that this trend may change with age (Cummings, 1998). In adolescence, however, boys may tend to exhibit more feelings of sadness while girls will display more feelings of anger (Cummings, Ballard, & El-Sheikh, 1991; Spaccarelli et al., 1994).

In sum, most research to date has found that exposure to domestic violence impacts children negatively. More specifically, these reviews tend to conclude that exposure to domestic violence is associated with emotional and behavioral problems, as well as interpersonal problems (Carlson, 2000; Edleson, 1999; Margolin, 1998). However, narrative reviews are limited in that they lack empirical data and thus are subject to interpretive bias. While empirical studies largely suggest that exposure to domestic violence negatively impacts children, not all studies have found significant effects. Moreover, the age and gender of the child as well as the sampling source seem to play a role in study outcomes. Thus, use of quantitative, meta-analytic techniques is likely to further contribute to an understanding of the impact of childhood exposure to domestic violence.

1.5. Comparison of present study to previous meta-analytic reviews

To date, two published meta-analyses have reviewed the literature on the effects of exposure to domestic violence (Kitzmann, Gaylord, Holt, & Kenny, 2003; Wolfe, Crooks, Lee, McIntyre-Smith, & Jaffe, 2003). Wolfe et al. (2003) included 41 studies that compared exposed children to non-exposed children and assessed behavioral and emotional outcomes of child adjustment using standardized measures. However, that meta-analysis is less comprehensive than the present study in that it failed to include unpublished studies, which is necessary to offset the problem of publication bias (Begg, 1994; Rosenthal, 1998). On the other hand, Kitzmann et al. (2003) integrated results of 118 published and unpublished studies dating from 1978 to 2000 that examined associations between exposure to domestic violence and childhood outcomes, such as social problems, internalizing symptoms, and externalizing symptoms. However, several studies published after 1990 ($n=21$) were either not included or have been published since the cutoff date for inclusion in that meta-analysis. Thus, the present study includes these 21 additional studies and focused on studies published since 1990 due to the severe methodological limitations of the first generation studies (see Fantuzzo & Lindquist, 1989).

Though both prior meta-analyses examined the moderating roles of gender and age, each reached different conclusions. Whereas Wolfe et al. (2003) found that boys exposed to domestic violence experienced more externalizing symptoms than did girls, Kitzmann et al. (2003) found no such effects. Moreover, while Wolfe and colleagues found a significant effect for age, Kitzmann did not. In lieu of the discrepancies in prior meta-analyses, a further goal of the present study is to shed additional light on the potential moderating impact of age and gender. Finally, as noted previously, prior meta-analyses have not included trauma symptomatology despite individual studies and strong theoretical arguments identifying this as a prevalent outcome of exposure to violence (Margolin & Vickerman, 2007). The present study is the first to examine this association through meta-analysis.

2. Method

2.1. Literature search

Studies included in the present meta-analysis were identified using a variety of strategies. First, electronic literature searches of PSYCHINFO, PubMed, Social Services Abstracts, Family and Society Studies Worldwide, Sociological Abstracts, National Crime Justice Reference Service, Anthropological Literature Index, Dissertation Abstracts, and PapersFirst for the years 1990 through 2006 were performed using multiple combinations of the keywords, including: domestic violence, interparental violence, marital violence, battered women, children, adolescents, witnessing, and exposure. By restricting studies included in the current meta-analysis to those published after 1990 (those published in the second generation of literature), the methodological quality of the included studies was improved (Fantuzzo & Lindquist, 1989). Second, reference sections from all previous reviews of the research

on exposure to domestic violence were examined. Third, the authors manually searched the reference sections of studies identified using the first two methods. Finally, all identified studies were entered into the *Social Sciences Citation Index* to search for additional studies that may have cited the identified articles. A total of 1624 discrete articles were identified using all of these methods. Abstracts of these articles were then examined to isolate potentially appropriate studies based on the research questions and inclusion criteria described below. A total of 207 abstracts was considered potentially appropriate and were obtained and reviewed by the authors to determine if the study met the inclusion criteria as described below. Those articles that did not meet the inclusion criteria were eliminated, resulting in a total of 60 articles (encompassing 61 samples) that were included in this meta-analysis.

The distinguishing feature for inclusion in the meta-analysis was that the study examined the relationship between exposure to physical violence between intimate partners and child psychosocial outcomes, specifically child internalizing and externalizing problems, and trauma symptoms. Thus, studies examining childhood exposure to community violence, exposure to only verbal aggression or parent–sibling aggression were excluded. Moreover, studies were only included if child internalizing and externalizing problems were measured using a standardized instrument of known reliability and validity. Other inclusion criteria were: the study or dissertation must have been conducted between January 1990 and August 2006. By restricting this meta-analysis to studies that were published or conducted after 1990, the average design quality of the studies is likely to be improved (see [Fantuzzo & Lindquist, 1989](#) for a review). Second, the study must have been written in English. Third, the study must have reported sufficient data to permit the calculation of an effect size estimate using the formulas presented by [Lipsey and Wilson \(2001\)](#). Fourth, because this review focused on psychosocial outcomes of *children*, the study sample must have been restricted to youth 18 years old or younger. Finally, for dissertations that had subsequently been published, the published article was included in the meta-analysis and the dissertation excluded.

2.2. Coding procedures

A detailed coding form was developed that included variables related to the study characteristics (e.g., publication date, author, source of publication), sample characteristics (e.g., number, age, gender, ethnicity, recruitment setting), the instrument used to determine if the child had been exposed to domestic violence, the instrument used to measure internalizing and externalizing problems for children, and the statistics needed to compute effect size estimates. All 61 eligible studies were coded twice: once by one of the primary authors and once by a trained research assistant. A coding manual was developed to assist in the training of the research assistants and improve intercoder agreement. The three research assistants received multiple 2-hour training sessions in which the coding form was explained in detail and the calculation of effect sizes was practiced. Intercoder agreement for all of the studies included in this meta-analysis was high, with kappas for all coded variables ranging from .71 to 1.00 (mean = 0.94).

3. Results

3.1. Calculation of effect sizes

The 60 studies included in the meta-analysis generated a total of 61 samples from which effect size estimates could be calculated (The article by [Jouriles et al., 1996](#) represents two independent empirical investigations; thus, a total of 61 articles/dissertations are included in this meta-analysis.). One hundred eighty-three effect sizes were calculated from the 61 samples. Multiple effect sizes for each study were calculated because studies frequently used multiple assessment measures to examine the same construct. For example, the Child Behavior Checklist ([Achenbach, 1991](#); [Achenbach & Edelbrock, 1983](#)) and the Child Depression Inventory ([Kovacs, 1992](#)) were frequently used to measure internalizing problems in children. Since the purpose of a meta-analysis is to determine the overall strength and magnitude of a relationship, the 183 effect sizes were combined as described below to best address the main research questions of this meta-analysis ([Lipsey, 2001](#)). When more than one effect size represented a particular construct within a study (i.e., internalizing or externalizing problems), a single effect size was created by averaging effect sizes within that study ([Lipsey & Wilson, 2001](#)). Such aggregation led to 58 effect sizes representing the relationship between exposure to domestic violence and internalizing problems, 53 effect sizes representing the relationship between exposure to domestic violence and externalizing problems, and six effect sizes representing the relationship between exposure to domestic violence and trauma symptoms. These numbers do not equal the total number of samples because not every study provided data on all three outcomes. Distribution of the averaged internalizing and externalizing effect sizes was examined to determine the presence of outliers. As suggested by [Lipsey and Wilson \(2001\)](#), a Windsorizing procedure was used to recode extreme values. Specifically, effect size estimates that were more than three standard deviations from the mean were recoded to the value at three standard deviations from the mean. Using this criterion, both the internalizing and externalizing effect size estimates of one study (i.e., [Coyne, Barrett, & Duffy, 2000](#)) needed to be Windsorized.

3.2. Exposure to violence and internalizing, externalizing, and trauma symptoms

[Table 1](#) presents a summary of all the meta-analytic results described in this section. The first research question evaluated whether exposure to domestic violence was systematically related to children's internalizing problems, externalizing problems, and trauma symptoms. Given the variability in the methods, settings, and recruitment procedures of the studies, it was assumed that study-level sampling error as well as subject-level sampling error was associated with the effect sizes. Thus, as suggested by [Lipsey and Wilson \(2001\)](#), a random effects model was used to examine this research question. Of the 61 samples, 58 samples provided outcome data related to internalizing problems. Aggregation of these 58 studies yielded a mean weighted effect size of

Table 1
Summary of meta-analysis results for internalizing and externalizing symptoms**

Variables	<i>k</i>	Total <i>N</i>	Internalizing mean ES	<i>k</i>	Total <i>N</i>	Externalizing mean ES
Entire sample	58	7602	.48	53	7200	.47
<i>Gender</i>						
Boys	15	1697	.44	16	1787	.46*
Girls	14	1758	.39	13	1572	.23*
<i>Age</i>						
Preschool	15	958	.47	15	1085	.47
School Age	35	4492	.51	32	3919	.50
Adolescent	7	1509	.51	7	1509	.40
<i>Gender × age</i>						
Preschool girls	2	56	.51	2	56	-.22
Preschool boys	2	162	.53	3	397	.35
School age girls	8	837	.41	7	641	.33
School age boys	9	839	.51	9	704	.61
Adolescent girls	4	784	.38	4	784	.18
Adolescent boys	4	597	.43	4	597	.40
<i>Recruitment setting</i>						
Shelter	19	2210	.51	15	1511	.45
Community	17	2875	.52	17	2950	.47
Clinical	13	1915	.37	14	2150	.43

Note: *Indicates significant difference between the groups.

**Due to the small number of articles with trauma data ($k=6$), only a total effect size could be calculated.

$d=.48$ ($SE=.04$), which as shown by its 95% confidence interval (.39 to .57) and associated significance test ($z=11.25$, $p<.01$), differed significantly from zero. This mean weighted effect size indicates a small to medium relationship between exposure to domestic violence and internalizing problems (Cohen, 1988). To determine whether the 58 effect sizes averaged into the weighted mean effect size all estimate the same population effect size, homogeneity analyses were conducted, $Q(56)=70.61$, $p>.05$, though no significant heterogeneity was found.

Analyses examining the relationship between exposure to domestic violence and externalizing problems yielded results similar to the analyses examining internalizing problems. Of the 61 samples, 53 samples provided outcome data related to externalizing problems. Aggregation of these 53 studies generated a mean weighted effect size of $d=.47$ ($SE=.05$), which as shown by its 95% confidence interval (.38 to .56) and associated significance test ($z=10.11$, $p<.01$), differed significantly from zero. This mean weighted effect size indicates a small to medium relationship between exposure to domestic violence and externalizing problems (Cohen, 1988). To determine whether the 53 effect sizes averaged into the weighted mean effect size all estimate the same population effect size, homogeneity analyses were conducted. Results of this homogeneity test indicated significant heterogeneity among the effect sizes, $Q(52)=80.35$, $p<.01$, suggesting that variability among the effect sizes is not due to sampling error alone and moderator analyses should be conducted.

Of the 61 samples, six provided outcome data related to trauma symptoms. Aggregation of these six studies generated a mean weighted effect size of $d=1.54$ ($SE=.59$), which as shown by its 95% confidence interval (.38 to 2.71) and associated significance test ($z=2.61$, $p<.01$), differed significantly from zero. This mean weighted effect size indicates a strong association between exposure to domestic violence and trauma symptoms (Cohen, 1988). To determine whether the six effect sizes averaged into the weighted mean effect size all estimate the same population effect size, homogeneity analyses were conducted. Results of the homogeneity test indicated significant heterogeneity among the effect sizes, $Q(5)=18.35$, $p<.01$, suggesting that variability among the effect sizes is not due to sampling error alone. However, given the small sample size and the lack of homogeneity, this effect size should be interpreted with caution. While moderator analyses would be helpful in determining the non-random sources of variance, the small sample size prevented an examination of these analyses.

3.3. Gender and age moderators

The second set of analyses investigated whether there were gender or age differences that moderated the relationship between exposure to domestic violence and child internalizing and externalizing problems. Several analyses were conducted and random effects models were used for all moderator analyses. Because only a few articles generated trauma effect sizes ($k=6$), moderator analyses were not run for trauma.

3.3.1. Gender effects

Effect sizes were grouped by gender and tests of homogeneity between boys and girls for each outcome (i.e., internalizing and externalizing problems) were conducted to determine if the mean effect size between boys and girls exposed to domestic violence significantly differed. With regard to internalizing problems, the mean weighted effect size for boys was $d=.44$ ($z=6.39$, $p<.01$),

whereas the mean weighted effect size for girls was $d = .39$ ($z = 5.32$, $p < .01$). These mean effect sizes did not significantly differ from each other, $Q_B(1) = .34$, $p = .56$. With regard to externalizing problems, the mean weighted effect size for boys was $d = .46$ ($z = 5.89$, $p < .01$), whereas the mean weighted effect size for girls was $d = .23$ ($z = 2.71$, $p < .01$). These mean effect sizes were found to be significantly different from each other, $Q_B(1) = 4.11$, $p < .05$, indicating that boys who have a history of exposure to domestic violence exhibited significantly more externalizing symptoms than did girls with a similar history. To further explore differences in the results of the current study when compared to the meta-analysis conducted by Wolfe et al. (2003), the three studies utilizing only boy samples were removed from the gender analyses of the present study. The change in mean effect sizes after excluding the three studies that only included boys was non-significant (d increased from .47 to .48 with regard to externalizing symptoms for boys after the exclusion of the three studies).

3.3.2. Age effects

Next, effect sizes were grouped into three categories based on age at the time of participation in the individual studies: preschool (birth to 5 years old), school age (6 to 12 years old), and adolescent (13 to 18 years old). Several studies (i.e., McFarlane, Groff, O'Brien, & Watson, 2003; Perks & Jameson, 1999) provided statistical information for more than one age group. With respect to internalizing problems, the mean weighted effect size of the preschool group was $d = .47$ ($z = 5.43$, $p < .01$), the school age group was $d = .51$ ($z = 9.57$, $p < .01$), and the adolescent group was $d = .51$ ($z = 4.21$, $p < .01$). Results of a homogeneity test revealed no significant differences among the three groups, $Q_B(2) = .17$, $p = .92$. For externalizing problems, the mean weighted effect size of the preschool group was $d = .46$ ($z = 6.02$, $p < .01$), the school age group was $d = .49$ ($z = 9.66$, $p < .01$), and the adolescent group was $d = .40$ ($z = 3.65$, $p < .01$). Homogeneity tests revealed that none of the groups were found to significantly differ from each other, $Q_B(2) = .59$, $p = .75$.

3.3.3. Gender \times age effects

Finally, to investigate if there were any interaction effects between age and gender, the simple effects for each group were tested. Specifically, each age group was divided into boys and girls and a test of homogeneity was conducted. For internalizing problems, the mean weighted effect size for preschool boys was $d = .53$ ($z = 2.232$, $p < .05$) and the preschool girl group was $d = .51$ ($z = 1.50$, $p = .13$). The test of homogeneity did not reveal any significant difference between the preschool boy and girl groups, $Q_B(1) = .00$, $p = .95$. The weighted mean effect size for the school age school age boys group was $d = .51$ ($z = 4.54$, $p < .01$) and the girl group was $d = .41$ ($z = 3.70$, $p < .01$). The test of homogeneity did not reveal any significant difference between these groups, $Q_B(1) = .43$, $p = .51$. The weighted mean effect size for the adolescent boy group was $d = .43$ ($z = 2.90$, $p < .01$) while the girl group was $d = .38$ ($z = 2.52$, $p < .01$). No significant differences were found between the adolescent groups, $Q_B(1) = .27$, $p = .87$.

With regard to externalizing problems, the mean weighted effect size for the preschool boys was $d = .35$ ($z = 1.80$, $p < .05$) while the mean weighted effect size for the preschool girl group was $d = -.22$ ($z = -.63$, $p = .52$). The test of homogeneity did not reveal any significant difference between the preschool boy and girl groups, $Q_B(1) = 3.27$, $p = .07$. The weighted mean effect size for the school age boys group was $d = .61$ ($z = 4.92$, $p < .01$) while the mean effect size for the school age girl group was $d = .33$ ($z = 2.56$, $p < .05$). The test of homogeneity did not reveal any significant difference between these groups, $Q_B(1) = 2.00$, $p = .16$. The weighted mean effect size for the adolescent boy group was $d = .40$ ($z = 2.41$, $p < .05$) while the weighted mean effect size for the adolescent girl group was $d = .18$ ($z = 1.06$, $p = .29$). No significant differences were found between the adolescent groups, $Q_B(1) = 1.14$, $p = .29$. This non-significant result between the adolescent boys and girl groups may be due to a lack of power. That is, because of the small sample size (see Table 1), the confidence interval around each effect size estimate is large and clearly overlaps, leading to the non-significant comparison.

3.4. Sample recruitment

The third research question examined whether similar estimates of effect sizes were obtained from studies that recruited participants from battered women shelters, those that recruited participants from the community or school setting, and those that recruited participants from clinical settings or agencies focused on child maltreatment. If the study recruited the exposure sample from more than one of the three mentioned settings, then that study was excluded from these analyses. Fifty-eight studies were included in the analyses related to internalizing problems. The mean weighted effect sizes for the studies that recruited participants from shelters, community/school settings, and clinical/child maltreatment agencies were $d = .51$ ($z = 7.60$, $p < .01$), $d = .51$ ($z = 7.79$, $p < .01$), and $d = .37$ ($z = 4.35$, $p < .01$), respectively. Homogeneity tests revealed that none of the groups were found to significantly differ from each other, $Q_B(2) = 2.20$, $p = .33$. Fifty-three studies were included in the analyses related to externalizing problems. The mean weighted effect sizes for the studies that recruited participants from shelters, community/school settings, and clinical/child maltreatment agencies were $d = .45$ ($z = 6.391$, $p < .01$), $d = .47$ ($z = 7.74$, $p < .01$), and $d = .42$ ($z = 5.74$, $p < .01$), respectively. Homogeneity tests revealed that none of the groups were found to differ from each other, $Q_B(2) = .38$, $p = .83$.

4. Discussion

Results of this meta-analysis support the hypothesis of an association between childhood exposure to domestic violence and internalizing, externalizing, and trauma symptoms in children. Mean weighted effects size estimates revealed d -values of .48 for the relationship between exposure to domestic violence and internalizing symptoms and .47 for the relationship between exposure to domestic violence and externalizing symptoms. The mean weighted effect size estimate revealed a d -value of 1.54 for the relationship between exposure to domestic violence and trauma symptoms, though follow-up analyses of homogeneity and

the relatively small number of articles included in the analyses ($k=6$) suggest that the d -value for trauma should be interpreted with caution. Effect size estimates for internalizing and externalizing symptoms indicate a moderate degree of association between childhood exposure to domestic violence and psychosocial problems in children, thus confirming the conclusions of many narrative reviews (e.g., Carlson, 2000; Edleson, 1999; Kolbo, Blakely, & Engleman, 1996; Margolin, 1998).

Despite methodological differences between the present study and prior meta-analyses in the area, the results across all three studies are quite consistent with regard to the potential effects of witnessing domestic violence. For example, when examining the mean effect sizes for specific psychosocial outcomes, Kitzmann et al. (2003) reported $d=-.50$ for internalizing symptoms and $d=-.43$ for externalizing symptoms when studies employed a group design comparing witnesses to non-witnesses. Similarly, Wolfe et al. (2003) reported an aggregate weighted mean correlation of $z_r=.19$ for internalizing symptoms, which translates to $d=.38$. Wolfe also reported $z_r=.21$ for externalizing symptoms, which is equivalent to $d=.42$. The converging results across these studies strengthen confidence in the conclusion that mere exposure to violence between caregivers within the home is associated with an increased risk of emotional and behavioral problems during childhood and adolescence.

Although the present study supported the general view that exposure to domestic violence negatively impacts children, an additional goal was to resolve discrepancies in prior narrative and meta-analytic reviews regarding to the moderating roles of gender, age, and sample recruitment. Present findings converged with Wolfe et al. (2003) in revealing that the relationship between exposure to domestic violence and externalizing symptoms is stronger in boys than it is in girls. Also consistent with Wolfe, we did not find the associations between childhood exposure and internalizing symptoms to be stronger for girls than for boys. Interestingly, in exploratory analyses by Wolfe that excluded the four boy-only studies, difference in externalizing symptoms between boys and girls became non-significant. To test a similar possibility in the present study, we removed the three studies utilizing boy-only samples and found that the gender effect revealing a stronger relationship to externalizing symptoms among boys remained. In contrast to the present study and to the broader analyses by Wolfe, Kitzmann et al. (2003) did not find significant gender differences. It is possible that methodological differences across the three studies produced these inconsistent results. For example, the current study and Wolfe included studies primarily published as part of the “second generation” of literature on domestic violence exposure, which likely improved the overall quality of the studies, perhaps allowing for differences in gender to emerge (Fantuzzo & Lindquist, 1989). However, because few investigations have examined the moderating effects of gender on exposure to domestic violence, more empirical investigation is warranted to continue to clarify these associations.

The null findings when comparing age and age by gender interactions in this meta-analysis deviate from the conclusions of some narrative reviews (e.g., Carlson, 2000) and the Wolfe et al. (2003) meta-analysis, but are consistent with the findings of the Kitzmann et al. (2003). It should be noted, however, that similar to both the Kitzmann and Wolfe meta-analyses, the effect size estimates generated for the moderator analyses in the present study were based on only a small portion of the studies in which the statistical information was available for both boys and girls in a specific age range. For example, the effect size estimates for adolescent girls and boys were based on only four studies. The continuing dearth of studies addressing age and gender underscores the need for more empirical investigation in order to further clarify the role of these variables.

Finally, we examined the assertion that children recruited from battered women's shelters display more psychosocial problems than children recruited from community settings due to exposure to more severe violence as well as the stress associated with living in a shelter (Margolin, 1998). However, consistent with the Kitzmann et al. (2003) meta-analysis, the present study found that the strength of the relationships between exposure to domestic violence and internalizing, externalizing, and trauma symptoms was similar among samples recruited from clinical settings, battered women's shelters, and community or school settings. These findings across meta-analyses converge with conclusions reached in some narrative reviews and further suggest that the setting from which samples are drawn has little bearing on the degree association between domestic violence and child outcomes.

Several limitations of this meta-analysis reflect the still nascent state of the literature in this area. For example, there remains little agreement in how to define exposure to domestic violence. In some studies, children are classified as having been exposed to violence if they merely become aware of the violence but did not actually see it (i.e., hear the shouting or a person falling), whereas other studies define exposure or witnessing violence as seeing two of the violent acts on the CTSR. A related challenge is how to classify children who are exposed only to the aftermath of violence (i.e., heard about the violence from other siblings, saw the injury sustained after the violence occurred). Most researchers also do not assess whether the violence is unidirectional (perpetrated by one caregiver) or bidirectional (perpetrated by both caregivers). Finally, only three studies reviewed here examined severity and frequency of domestic violence (Fallin, 2000; Levendosky, Huth-Bocks, Shapiro, & Semel, 2003; O'Keefe, 1994), while the remainder treated exposure to domestic violence as a dichotomous variable. It is important that future researchers go beyond the simple dichotomization of an experience as complex and multifaceted as exposure to domestic violence.

Although the current study focused on internalizing, externalizing, and trauma outcomes, other symptom areas that have been linked to exposure to domestic violence could be explored (i.e., cognitive functioning, social competence; Rea, 2007; Wolfe, Zak, Wilson, & Jaffe, 1986). At present, however, these studies are too few to incorporate into a meta-analysis. Even the examination of trauma symptomatology, despite being the strongest outcome in the present meta-analysis, was limited to a small number of studies ($k=6$). This dearth is especially concerning given the strong theoretical links between exposure to violence and PTSD related symptoms (Kilpatrick & Williams, 1998; Margolin & Vickerman, 2007).

In addition to broadening scope of outcomes associated with domestic violence, future studies should also consider contextual factors that may be associated with domestic violence (i.e., non-violent marital conflict, child physical abuse, parental psychopathology) (Fantuzzo, Boruch, Beriama, Atkins, & Marcus, 1997; Fantuzzo & Lindquist, 1989). It is encouraging that many investigations reviewed here at least assessed these factors. For example, 52 (85.2%) of studies assessed non-violent marital

conflict, 28 (45.9%) assessed child physical abuse, and 15 (24.6%) assessed parental psychopathology (e.g., alcohol problems, depression, antisocial personality disorder). Unfortunately, however, many researchers are not fully utilizing these data. For example, only 10 of the 28 studies that assessed child physical abuse included it as anything other than a control variable in final statistical models. Finally, although there are exceptions (Kitamura & Hasui, 2006; Levendosky et al., 2003; Mejia, Kliever, & Williams, 2006; Moretti, Obsuth, Odgers, & Reebye, 2006), the literature in this area is comprised mainly of cross-sectional studies, which are limited in that they cannot disentangle the ordering of exposure experiences and putative effects, nor can they evaluate the role of contextual factors that correlate with the exposure and negative outcomes.

This updated meta-analytic study provides further evidence of the significant relationship between childhood exposure to domestic violence and internalizing and externalizing problems in children. It also lends support to many previous claims that exposure to domestic violence results in trauma symptomatology in children. This body of research, however, is still in the early phases of development in comparison to other areas of family violence research. For example, additional research is needed to further clarify how exposure to violence impacts girls and boys at different developmental levels. The use of longitudinal designs incorporating complex statistical models will be invaluable in advancing work in this area. As this literature base expands, empirical information can be used to guide clinical work with children and aid in the development of effective intervention strategies for the many children and families that experience domestic violence.

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