

The Effects of Children's Exposure to Domestic Violence: A Meta-Analysis and Critique

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A wide range of children's developmental outcomes are compromised by exposure to domestic violence, including social, emotional, behavioral, cognitive, and general health functioning. However, there are relatively few empirical studies with adequate control of confounding variables and a sound theoretical basis. We identified 41 studies that provided relevant and adequate data for inclusion in a meta-analysis. Forty of these studies indicated that children's exposure to domestic violence was related to emotional and behavioral problems, translating to a small overall effect ($Z_r = .28$). Age, sex, and type of outcome were not significant moderators, most likely due to considerable heterogeneity within each of these groups. Co-occurrence of child abuse increased the level of emotional and behavioral problems above and beyond exposure alone, based on 4 available studies. Future research needs are identified, including the need for large-scale longitudinal data and theoretically guided approaches that take into account relevant contextual factors.

KEY WORDS: domestic violence; child witnesses; marital aggression; meta-analysis; child behavior problems; family violence; child abuse.

Describing the effects of exposure to domestic violence on children and adolescents has been the subject of intense research efforts since early studies on this topic emerged in the mid-1980s. Several scholarly reviews have been conducted of this literature, resulting in a general consensus that exposure to domestic violence has a significant and measurable negative effect on children's functioning, relative to children from nonviolent families (Edleson, 1999; Fantuzzo & Lindquist, 1989; Fantuzzo & Mohr, 1999; Margolin & Gordis, 2000; Wolak & Finkelhor, 1998). These

negative effects pertain to emotional and behavioral functioning, social competence, school achievement, cognitive functioning, psychopathology, and general health. Although some of these effects have been replicated across studies and generally fit with theoretical and clinical expectations, there are a number of methodological issues that cloud their interpretation.

Researchers acknowledge that exposure to domestic violence is a nonspecific risk factor for developmental harm, typifying the process of multifinality of development (Sameroff, 2000). That is, such exposure is part of a group of harm-producing contextual factors (such as child abuse, harsh parenting practices, and other forms of trauma and violence) that interfere with normal development and lead to unpredictable, but generally negative, outcomes in the short- and long-term. Embedded in the literature is the further assumption that exposure to domestic violence creates a negative impact on children's emotional and behavioral adjustment *over and above* other coexisting factors (i.e., it is not merely a confound or a correlate). Saunders (2003) underscores this latter point

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by reporting how different types of violence often co-occur in children's lives and, coupled with the comorbidity of problem outcomes, investigations of any single type of violence face considerable challenges.

Although recognizing that exposure to domestic violence is often harmful, researchers have cautioned that the heterogeneity of the population, variability in findings across studies, and many other methodological limitations pose considerable obstacles to implying a cause and effect relationship (Edleson, 1999; Fantuzzo & Lindquist, 1989). Given the number of methodological concerns that have been noted in these reviews, it is important to examine the overall empirical findings (including possible moderators of the impact of domestic violence on children) with a cautious lens. Significant remaining barriers include, for example, sampling concerns (i.e., generalization from shelter samples), reliance on mother-only ratings of children's behavior, defining exposure to violence, and separating the impact of child abuse from indirect exposure to domestic violence. As well, the literature suffers from a lack of theoretical clarity and guidance, which seems especially warranted given the complexity of the issues involved.

A DEVELOPMENTAL PSYCHOPATHOLOGY FRAMEWORK

Developmental psychopathology provides a useful framework for organizing the study of children's exposure to domestic violence. This framework emphasizes the role of developmental processes, the importance of context, and the influence of multiple and interacting events in shaping adaptive as well as maladaptive development (Rutter & Sroufe, 2000). Moreover, the importance and complexity of family, social, and cultural factors are acknowledged in predicting and understanding developmental changes and abnormal outcomes, and single-variable causes are held to greater scrutiny. This framework, therefore, considers how children adapt to harsh events in their daily surroundings, such as direct and indirect forms of violence, at the expense of important regulatory processes, which compromises their ongoing development. For example, episodes of violence and abuse between family members may prompt efforts on the part of the child to accommodate to such events and form a hypervigilant, insecure approach to relationships, often marked by strong emotions (e.g., frustration, disappointment, hostility, fear). From this perspective, children's varied emotional and behavioral

problems associated with exposure to domestic violence are understandable in that they represent efforts to adapt to a maladaptive situation.

Developmental psychopathology further raises the importance of a multidimensional, interactive approach to the study of children's development, in contrast to static comparisons of one-to-one relationships. This view, shared by other perspectives as well, argues that there is rarely a direct causal pathway leading to a particular outcome; instead, there are ongoing interactions between protective and vulnerability factors within the child, between the child and his or her surroundings, and among particular risk factors. These factors are processes rather than absolutes, since the same event or condition can function as either a protective or a vulnerability factor depending on the overall context in which it occurs. Acute, stressful situations as well as chronic adversity put children's successful development at risk, yet these critical variables have rarely been controlled or examined in relation to domestic violence exposure. Finally, this perspective highlights the need to examine children's normal and abnormal development in relation to meaningful moderators such as sex, age, and type of outcome.

Whereas studies of children's exposure to domestic violence have acknowledged the importance of potential moderators that may affect developmental pathways, there has been only limited success at understanding their significance or roles. Shelter residence of the sample, reliance on maternal report of children's behavior, and efforts to control for direct and indirect exposure to violence are commonly mentioned as potential confounds or critical independent variables. For example, because children exposed to violence may present with similar difficulties to those who are direct victims of abuse, it is difficult to determine the degree to which behavioral outcomes are attributable to one or the other (Saunders, 2003). Second, there may be important differences in the characteristics of the families and the symptoms of children in these two groups (i.e., spouse-abusive versus spouse- and child-abusive), which get obscured when children exposed to domestic violence are grouped together regardless of child abuse status (Shipman, Rossman, & West, 1999). As a final consideration, the presence of child abuse raises the issue of multiple risk factors or stressors, and is an important reminder of contextually valid research (see Margolin & Gordis, 2000). Children's age and sex are also noted as being especially relevant in interpreting the effects of exposure to domestic violence although, like the

contextual factors noted above, practical limitations in sample selection often preclude any separate analyses of these variables.

In summary, there is a wide degree of method variance in the research conducted on children exposed to domestic violence. These differences make it difficult to compare across studies due to different definitions, samples, and methodology, and to draw firm conclusions. Nonetheless, it is important to look for common elements in these findings and examine theoretically relevant variables. Therefore, the main objective of this meta-analysis was to summarize the empirical findings of research evaluating consequences of domestic violence exposure on children. In addition, attempts were made to identify moderators that might lend more precision to the wide range of methodologies used in the area. The limits of the current literature are identified, in addition to suggestions for advancing research in this area. We approached the task of meta-analysis with these limitations and needs firmly in mind, and therefore chose to use a conservative approach to examining overall effect sizes and potential moderators. Thus, the current meta-analysis analyzes a smaller set of studies that more accurately assess exposure to domestic violence, while keeping in mind the potential methodological limitations described above.

METHOD

Meta-analytic techniques facilitate the synthesis of a large number of studies by distilling the empirical results to interpretable averages, thus potentially identifying emerging themes across studies. One approach is to include every study that has been conducted in an area, with the assumption that underlying "truths" will be identified, and that the advantages gained by a larger sample size outweigh the disadvantages of potentially faulty design or logic in any one study. This approach, used in a recent meta-analysis on exposure to domestic violence, facilitates the inclusion of a large number of studies (Kitzmann, Gaylord, Holt, & Kenny, 2003). A competing model is the one espoused by the Campbell Collaboration (n.d.), an international nonprofit organization that aims to help researchers make well-informed decisions about the effects of interventions in the social, behavioral, and educational arenas. The goal of this collaboration is to stimulate the empirical methodological research required to improve the validity, relevance, and precision of systematic reviews and the randomized trials

and nonrandomized trials on which they are based. Rather than including all available studies in a meta-analysis or review, this approach advocates a theoretically driven approach that relies on drawing conclusion from studies that meet more stringent criteria.

The starting point for any meta-analysis is to conceptually define the parameters of study with respect to independent and dependent variables. Studies of the effects of children's exposure to domestic violence have used wide-ranging parameters and various populations, including parental conflict and divorce, retrospective studies of exposure experienced by adults as children, simulated conflict studies, and studies of children exposed to domestic violence in their homes. In contrast to Kitzmann et al. (2003), the current analysis incorporated only those studies that pertained to children exposed to domestic violence. This decision was based on the knowledge that there are so many existing sources of error and variability in these studies (shelter status, clinical versus nonclinical samples, etc.) that a more narrowly defined independent variable increases the interpretability of the results.

PsycInfo and the National Clearinghouse on Child Abuse and Neglect databases were searched using the terms: [(domestic or interparental or marital) AND (exposure or witness*) AND (violence or conflict or abuse or battered) AND (child or children or youth)]. A manual search of the references of review articles was also conducted to supplement the electronic searches. Approximately 400 journal articles were initially found and evaluated with respect to the inclusion criteria (below), and of those 40 met our criteria and were included in the present analyses. These 40 articles actually represent 41 studies as one article had two separate studies (Jouriles, Norwood, McDonald, Vincent, & Mahoney, 1996). The final 41 studies had been published in peer-reviewed journals and included behavioral and/or emotional outcome measures of children's adjustment. See Table I for descriptive information.

Inclusion and Exclusion Criteria

To calculate effect sizes, only studies that published means and standard deviations for at least two groups (i.e., a group of children exposed to domestic violence and an appropriate nonexposed comparison group) or correlations within a target group were analyzed. A small number of methodologically sound studies were excluded because they provided statistics that were not applicable with meta-analysis (e.g., multiple regression coefficients).

Table 1. Descriptions of Studies Used in Meta-Analysis

Citation	Total (N)	Boys (N)	Girls (N)	Age range (years)	Ethnicities	Participant groups (relevant to meta-analysis)				Outcomes measured					
						Target Group 1	Target Group 2	Comparison Group	Abused/Witness	Shelter	Raters ^d	Int.	Ext.	PTSD	Other
						Shelter (n = 37)	Witnesses (n = 10)	Community (inner-city; n = 225)	Community (n = 86)	Shelter (Verbal/Physical; n = 23)	Home (Verbal/Physical; n = 27)	Control (n = 27)	Community control (n = 30)	Community control (n = 8)	One
Christopoulos et al. (1987) ^b	67	—	—	5–13	79% Caucasian; 21% African American	Shelter (n = 37)	Witnesses (n = 10)	Community (n = 225)	Community control (n = 30)	Community control (n = 8)	One	×	×	Perceived competence	
Coyne, Barrett, & Duffy (2000)	18	18	0	7–11	Not specified	Witnesses (n = 10)	Community (inner-city; n = 225)	Community control (n = 8)	Community control (n = 30)	Community control (n = 8)	One	×	×	CPIC threat; Blame	
DuRant, Cadenhead, Pendergraft, Slavens, & Linder (1994)	225	99	126	11–19	100% African American	Community (inner-city; n = 225)	Community (inner-city; n = 225)	Community control (n = 8)	Community control (n = 8)	Community control (n = 8)	One	×	×	Adolescent use of violence	
El-Sheikh & Harger (2001)	86	46	43	8–11	81% Caucasian; 8% African American; 2% Hispanic; 2% Asian; 7% other	Community (n = 86)	Community (n = 86)	Community control (n = 8)	Community control (n = 8)	Community control (n = 8)	Multiple	×	×	CPIC threat; Blame	
Fantuzzo et al. (1991)	77	41	36	3–6	59% Caucasian; 5% African American; 29% Hispanic; 4% Aboriginal; 4% Asian; 2% mixed	Shelter (Verbal/Physical; n = 23)	Home (Verbal/Physical; n = 27)	Control (n = 27)	Control (n = 27)	Control (n = 27)	One	×	×	CBCL social comp.	
Graham-Bermann (1996)	121	59	62	7–12	40% Caucasian; 60% unspecified (majority African American)	Shelter (n = 60)	Shelter (n = 60)	Community control (n = 61)	Community control (n = 61)	Community control (n = 61)	One	×	×	CBCL social comp.	
Grych, Fincham, Jouriles, & McDonald (2000)	464	235	229	10–14	Witness group: 33% Caucasian; 32% African American; 32% Hispanic; 1% other	Shelter (n = 145)	Shelter (n = 145)	Community control (n = 319)	Community control (n = 319)	Community control (n = 319)	One ^c	×	×	CPIC Self-blame; Threat	
Hershorn & Rosenbaum (1985)	32	32	0	Not specified (M ₁ = 8.5; M ₂ = 9.6)	Not specified	Witness (n = 15)	Witness (n = 15)	Community control (n = 18)	Community control (n = 18)	Community control (n = 18)	One	×	×	Temperament	
Holden & Ritchie (1991)	74	35	39	1–8	Not specified (majority Caucasian)	Shelter (n = 37)	Shelter (n = 37)	Community control (n = 37)	Community control (n = 37)	Community control (n = 37)	One	×	×	Temperament	
Hughes (1988)	180	86	94	3–12	Not specified	Shelter (n = 40)	Shelter (n = 40)	Community control (n = 83)	Community control (n = 83)	Community control (n = 83)	Multiple	×	×	CBCL social comp.	
Hughes, Parkinson, & Vargo (1989)	150	ns	ns	4–12	Not specified	Shelter (n = 44)	Shelter (n = 44)	Community control (n = 66)	Community control (n = 66)	Community control (n = 66)	Multiple	×	×	CBCL social comp.	
Ingoldsby, Shaw, Owsn, & Wilslow (1999)	129	129	0	T2: 3.5 years; T3: 5 years	77% Caucasian; 20% African American; 3% other	Community longitudinal (n = 129)	Community longitudinal (n = 129)	Community control (n = 15)	Community control (n = 15)	Community control (n = 15)	Multiple	×	×	BPC motor excess; Psychotic BPC inadequacy	
Jaffe, Wolfe, Wilson, & Zak (1986) ^d	47	47	0	4–16	Not specified	Shelter (n = 32)	Shelter (n = 32)	Community control (n = 15)	Community control (n = 15)	Community control (n = 15)	One	×	×	CBCL social comp.	
Jouriles, Barling, & O'Leary (1987)	45	22	23	5–13	Not specified	Witness (n = 45)	Witness (n = 45)	Community control (n = 15)	Community control (n = 15)	Community control (n = 15)	Multiple	×	×	BPC motor excess; Psychotic BPC inadequacy	
Jouriles, Murphy, & O'Leary (1989)	87	41	46	5–12	Not specified	Clinical marital (n = 87)	Clinical marital (n = 87)	Community control (n = 15)	Community control (n = 15)	Community control (n = 15)	Multiple	×	×	BPC motor excess; Psychotic BPC inadequacy	
Jouriles, et al. (1996a) ^{e,f}	55	23	32	5–12	95% Caucasian; 5% unspecified	Clinical marital (n = 55)	Clinical marital (n = 55)	Community control (n = 15)	Community control (n = 15)	Community control (n = 15)	Multiple	×	×	BPC motor excess; Psychotic BPC inadequacy	

Author(s)	Year	N	Age	Gender	Ethnicity	Setting	Control	Recent	Number of Studies	Yes	No	Self-esteem
Jouriles et al. (1996b) ^f	199	106	93	5-12	39% Caucasian; 37% Hispanic; 24% African American	Shelter (n = 199)			One	×	×	Self-esteem
Jouriles, Spiller, Stephens, McDonald, & Swank (2000)	154	83	71	8-12	40% Caucasian; 32% African American; 27% Hispanic; 1% other	Shelter (n = 154)			Multiple	×	×	CPIC threat
Kempton, McCombs-Thomas, & Forehand (1989)	48	29	19	11-15	Not specified	Community (n = 48)			Multiple	×	×	Teacher-rated competence
Kerig (1998)	174	88	86	7-11	85% Caucasian; 10% Asian; 1% each African American, Hispanic, & Aboriginal; 2% other	Community (n = 174)			Multiple	×	×	CPIC threat; Self-blame
Kilpatrick et al. (1997)	35	18	17	6-12	Not specified	Witness (n = 20)	Community control (n = 15)		Multiple		×	
Kolbo (1996)	60	30	30	8-11	73% Caucasian; 7% African American; 5% Hispanic; 3% Aboriginal; 12% other	Witness (n = 60)			One	×	×	
Levendosky, Huth-Bocks, Semel, & Shapiro (2002)	62	25	37	3-5	42% African American; 24% Caucasian; 19% mixed; 15% other	Community (n = 62)			One		×	
Litrowik et al. (2003)	682	341	341	6 year olds only	52% African American; 36% Caucasian; 12% other	Community longitudinal (n = 682)			One	×	×	
Martin & Clements (2002)	48	21	27	4 year olds only	96% Caucasian 4% unspecified	Community (n = 48)			Multiple	×	×	
Mathias, Merrin, & Murray (1995) ^f	44	—	—	6-12	Not specified	Shelter (n = 22)	Community control (n = 22)	Yes (recent)	Multiple	×	×	Adaptive behaviors
McCloskey, Southwick, Fernandez-Esquer, & Locke (1995)	48	25	23	5-12	100% Hispanic (Mexican American)	Witness (n = 24)	Community control (n = 24)		Multiple	×	×	
McDonald, Jouriles, Norwood, Ware, & Ezell (2000)	90	70	20	4-7	79% Caucasian; 10% African American; 10% Hispanic; 1% other	Clinical child (n = 43)	Clinical control (n = 47)		Multiple	×	×	
McGee, Wolfe, & Wilson (1997)	160	70	90	11-17	96% Caucasian; 4% unspecified (Aboriginal & African Canadian)	CPS agency (n = 160)			Multiple	×	×	

Table I. Continued

Citation	Total (N)	Boys (N)	Girls (N)	Age range (years)	Ethnicities	Participant groups (relevant to meta-analysis)			Shelter	Raters	Outcomes measured		
						Target Group 1	Target Group 2	Comparison Group			Abused/Witness	Int.	Ext.
Muller et al. (2000)	65	25	40	13–17	63% Caucasian; 22% African American; 15% Hispanic	Clinical child (n = 65)			One	x	x	x	x
O'Brien et al. (1997)	43	23	20	8–12	60% Caucasian; 14% African American; 12% Hispanic; 7% Asian; 7% other	Community sample (n = 43)		No	Multiple	x	x	x	Self-worth
O'Keefe (1995)	184	93	91	7–13	42% Caucasian; 37% Hispanic; 21% African American	Shelter (n = 120)		Yes	One	x	x	x	
Osofsky, Wewers, Hann, & Fick (1993)	53	ns	ns	9–12	100% African American	Community (n = 53)		No	One	x	x	x	
Porter & O'Leary (1980)	64	37	27	5–16	Not specified	Clinical child (n = 64)		No	One	x	x	x	
Rogers & Holmbeck (1997)	80	28	52	11–15	36% Caucasian; 25% African American; 23% Hispanic; 3% Asian; 8% East Indian; 5% mixed	Community (school; n = 80)		No	One	x	x	x	
Spaccarelli, Sandler, & Roosa (1994)	291	144	147	9–12	50% Caucasian; 24% Hispanic; 14% African American; 4% Aboriginal; 8% other	Community (inner-city; n = 291)		No	Multiple	x	x	x	Self-esteem
Sternberg et al. (1993)	77	43	34	8–12	100% Caucasian (Israel)	Witness (n = 16)		No	Multiple	x	x	x	
Tang (1997)	39	17	22	6–13	100% Asian (Chinese)	Shelter (n = 21)		Yes	Multiple	x	x	x	
Tannenbaum et al. (1992)	270	135	135	11–15	100% Caucasian	Community (n = 270)		No	One	x	x	x	
Wolfe, Jaffe, Wilson, & Zak (1985)	198	98	102	4–16	Not specified	Shelter (n = 102)		Yes	One	x	x	x	
Wolfe, Zak, Wilson, & Jaffe (1986)	63	35	28	4–13	Not specified	Shelter (current; n = 17)	Shelter (former; n = 23)	Partial groups	One	x	x	x	
Total	5088	2497 ^h	2282 ^h	6.6–12.0 years	59% Caucasian; 25% African American; 19% Hispanic; 11% Asian; 7% other					39	37	4	

^aNo. of raters for child outcome measures included in the meta-analysis.

^bMeans from narrowed sample (in which Ss without DV were taken out of the comparison group).

^cOutcome measures were obtained from multiple sources, but only child reports had information for both the witness and comparison groups.

^dAlso has an "abuse only" group not included in the analysis.

^eOverlapping Ss.

^fJouriles and colleagues 1996a and 1996b represent different studies (and samples) within a single paper.

^gOnly Phase II of Mathias et al. (1995) was included in the meta-analysis. The Phase II sample includes a subset of participants from Phase I; however, demographic information was only provided for the larger Phase I sample.

^hEstimates due to missing information on sex.

Studies that only involved comparison groups of abused children, abused/witnesses, or witnesses of a lesser severity of domestic violence were excluded because they overlap with the target group (i.e., both groups of children had been exposed to some form or degree of interparental violence; Jouriles et al., 1998). Multiple articles that relied on the same sample of children were not entered; in these cases, the article with the most comprehensive results that met the inclusion criteria was used. In addition, studies were excluded that reported two groups but used a standardized norm group as their comparison (e.g., studies that reported the results from the CBCL standardization group as their control group). Studies focusing primarily on interparental conflict (but not violence) were excluded, as were studies that used children's reactions to a simulated conflict paradigm.

Effect sizes were calculated in the present study for behavioral (e.g., externalizing, conduct problems), emotional (e.g., internalizing, depression, anxiety), and Posttraumatic Stress Disorder (PTSD) outcome measures. An overall effect size was calculated for each study by taking the average of the behavioral, emotional, PTSD, and social problem effects (weighted by sample size, where relevant). Studies that examined other constructs (e.g., cognitive attributions, emotional encoding, perceptions, reactions to conflict vignettes, self-esteem) and did not include measures of the aforementioned outcomes were excluded. Retrospective studies with adult participants recalling childhood experiences were also excluded. A recent twin study was excluded because the sample size ($N = 1,103$ twin pairs) was so much larger than any of the other studies (Jaffee, Moffitt, Caspi, Taylor, & Arsenuault, 2002). Because a meta-analysis approach weights the effect sizes by relative sample size, this study would have been disproportionately responsible for the overall outcome. The effect size for this study was .17 for the total sample of twin pairs ($N = 2,206$).

Definitions of Confounding Variables

Despite the narrower focus of this meta-analysis, considerable variability remained with respect to the determination of key variables. One construct that defies precise definition and measurement is the nature and extent of exposure to domestic violence. Although a wide range of variation is recognized in the types, severity, and chronicity of violence experienced by women in intimate relationships (Holtzworth-

Munroe & Stuart, 1994), the heterogeneity of these experiences tends to be overlooked when the focus shifts to the children of these women (see Jouriles et al., 1996, 1998 for notable exceptions). The definitions of interparental violence in the present analyses varied greatly, with a common definition being the endorsement of at least one physical incident in the past year (in contrast with a chronic history of severe battering). Previous research suggests that adults tend to vastly underestimate the extent to which their children are exposed (Jaffe, Wolfe, & Wilson, 1990; O'Brien, John, Margolin, & Erel, 1997). As well, there is a whole continuum of involvement for children, ranging from seeing the sequelae of violence or being passive observers, to attempts by children to physically intervene or seek help. A recent telephone survey of 114 battered women revealed that almost 25% of their children were reported to have been physically involved in a battering incident, and over half verbally intervened while in the same room (Edleson, Mbilinyi, Beeman, & Hagemester, 2003). To date, the literature on children exposed to domestic violence has overlooked this continuum of involvement, and tends to assume that exposure is a uniform experience. Source of information used to determine the presence of child abuse is likewise variably determined.

Table II summarizes how investigators of the studies included in this meta-analysis determined the key inclusion criteria of interparental violence, child exposure, and child abuse. To define the interparental violence group, 19 studies used maternal report only (which was often based on responses or direct questioning from the Conflict Tactics scale; Straus, 1979); 15 studies relied on information obtained from multiple informants (which typically consisted of both parents, or mother and child in some cases); 3 assumed parental violence on the basis of shelter residence, and 4 on child report alone. Similarly, the majority of studies (13) assumed the presence of child exposure from maternal report or through direct questioning of the mother (16). Fewer studies (12) asked the children themselves about their exposure.

Very few studies controlled for the possible confounding factor of child abuse, and many did not address the issue at all. Some studies assessed child abuse, yet did not utilize that information. Others controlled for child abuse in later analyses (e.g., hierarchical regression) using statistics that could not be incorporated into the meta-analysis (13). Relatively few studies (4) separated the domestic violence groups (i.e., witness versus abused/witness) or used child abuse as an exclusionary factor (3). For those

Table II. Criteria for Determining Interparental Violence, Child Exposure to Violence, and Child Abuse

	Interparental violence				Child exposure			Child abuse				
	Shelter assumed ^d	Mother only (e.g., CTS, interview)	Multiformant (e.g., CTS, interview)	Child only	Parental CTS/DV report assumed	Maternal direct (e.g., modified CTS, interview)	Child report	Separate groups	Excluded unusable stats for meta)	Examined differences; not used;	Child abuse	
											Not addressed	Source of child maltreatment information
Christopoulos et al. (1987)		×				×					×	N/A
Coyne et al. (2000)		×				×			×			Interview with mother
DuRant et al. (1994)		×		×			×				×	N/A
El-Sheikh & Harger (2001)		×				×	×				×	N/A
Fantuzzo et al. (1991)		×			×			×				CPS records
Graham-Bermann (1996)		×			×						×	N/A
Grych et al. (2000)		×					×				×	N/A
Hershorn & Rosenbaum (1985)		×				×					×	N/A
Holden & Ritchie (1991)		×				×				×		PC-CTS (mother)
Hughes (1988)	×					×		×				Mother & shelter staff reports
Hughes et al. (1989)	×					×		×				Mother & shelter staff reports
Ingoldsby et al. (1999)		×				×					×	N/A
Jaffe et al. (1986)		×				×		×				CPS records
Jouriles et al. (1987)		×				×			×			PC-CTS (mother reports both parents)
Jouriles et al. (1989)			×		×						×	N/A
Jouriles et al. (1996a)			×		×						×	N/A
Jouriles et al. (1996b)		×			×						×	N/A
Jouriles et al. (2000)			×				×		×			PC-CTS (mother & child reports)
Kempton et al. (1989)			×		×						×	N/A
Kerig (1998)		×									×	N/A
Kilpatrick et al. (1997)		×				×		×			×	Mother & child questionnaires

studies that did assess for child abuse (21), the majority used only one informant (14), and only five queried the children themselves about abuse. One third of abuse assessments were conducted with the Parent–Child Conflict Tactics Scale (PC-CTS; Straus, 1979). Clearly, there is much heterogeneity between studies in terms of how domestic violence, exposure to such violence, and coexisting child abuse are addressed.

Data Coding and Analytical Approach

Means and standard deviations (for witnessing and comparison groups) and correlational data (for relating domestic violence to outcomes within witness groups) were used to generate effect sizes for each of the relevant outcomes. Effects were also coded for shelter sample, number of raters, and separate direct and indirect exposure to violence, to facilitate moderator analyses. Coding was independently verified by a second (and in some cases third) rater. Disagreements or ambiguity regarding coding were resolved through discussion among authors.

A total of 41 average effect sizes were included in this analysis (generated by combining measures of internalizing and externalizing difficulties, PTSD, and social problems for each study). The meta-analysis was conducted using methods outlined by Rosenthal (1995) and Wolf (1986). Effect sizes expressed as a standard difference score (d) were transformed to r scores to facilitate comparison of studies that reported either type of statistic. Next, a Fisher's r to Z transformation was performed to standardize all of the effect sizes. Results are reported for a random effects analysis, which is appropriate because of the recognized variability within the sampling of studies (Borenstein & Rothstein, 1999).

Moderator Analysis

Studies that provided results separately for girls and boys, or those that included only males or females, were used to evaluate the sex of the child as a moderator. There were 10 studies that provided results for boys and girls separately, and another 4 that included boys only. To examine outcomes by developmental stage, age categories were chosen to represent preschool (3–6 years), school age (5–12 years), and adolescence (11 years +). Although these categories are somewhat arbitrary, they overlap to accommodate the inclusion of more studies in this moderator analy-

sis. Studies that had samples completely within one of those three categories were coded for developmental stage. Approximately 2/3 of the studies were coded (as shown in Table III), with the remaining ones not coded by age due to their large age span.

The various outcomes measured in the studies were divided into internalizing and externalizing categories to examine outcome type as a moderator. Only studies that reported both types of measures were included, because using two effects (i.e., externalizing and internalizing) from some studies and only one effect (i.e., externalizing *or* internalizing) from other studies would result in overrepresentation of samples of children from studies that provided both types of outcome compared to those that did not. As a result, none of the studies that measured PTSD was included,⁵ as they did not also include a measure of externalizing behavior. The measures used to determine the externalizing and internalizing variables are provided in Table IV. If the Child Behavior Checklist (CBCL) Internalizing or Externalizing scores were available, subscales were not used. If the CBCL Internalizing score and an internalizing score from another measure (e.g., the Children's Depression Inventory) were available, the average of these was used (weighted by subsample size, if relevant).

Although a developmental psychopathology framework should permit the evaluation of multiple dimensions in combination, too few studies provided results that would permit such analyses. As seen in Table III, only 7 of the studies that provided information by developmental stage also provide sex-specific results, and 12 provided information about both internalizing and externalizing outcomes. Only four of the studies provided results that analyzed data with respect to three of these dimensions.

RESULTS

Results are presented in three sections: descriptive statistics of the characteristics of the studies; an overall meta-analysis across all outcomes; and moderator analyses.

⁵The average effect size for the three studies that measured PTSD symptomatology was $r = .51$ ($SD = .39$). This large effect size should not be overinterpreted as the effects ranged from $r = .16$ (Muller et al., 2000) to $r = .94$ (Kilpatrick et al., 1997). Furthermore, the total sample size of the three studies combined was only 162 participants. Clearly, the link between exposure to domestic violence and PTSD requires further study.

Table III. Studies Providing Sex and Outcome Results for a Particular Developmental Stage

Stage	Citation	N	Overall effect	Outcomes by sex	Outcomes measured		
					Internalizing	Externalizing	PTSD
Preschool (3–6)	Fantuzzo et al. (1991)	77	.51		×	×	
	Ingoldsby et al. (1999)	129	.25		×	×	
	Levendosky et al. (2002)	63	.42				×
	Litrownik et al. (2003)	583	.13		×	×	
	Martin & Clements (2002)	48	.33		×	×	
Total (Preschool)	5 studies	900		0	4	4	1
School Age (5–12)	Coyne et al. (2000)	18	.73		×	×	
	El-Sheikh & Harger (2001)	86	.11		×	×	
	Graham-Bermann (1996)	121	.14		×	×	
	Grych et al. (2000)	464	.12	×	×		
	Jouriles et al. (1996a)	55	.23	×	×	×	
	Jouriles et al. (1996b)	199	.18		×	×	
	Jouriles et al. (2000)	154	.24		×	×	
	Kerig (1998)	174	.30	×	×	×	
	Kilpatrick et al. (1997)	35	.94				
	Kolbo (1996) ^a	60	.26	×			
	McCloskey et al. (1995) ^a	48	.33				×
	O'Brien et al. (1997)	43	.22		×	×	
	O'Keefe (1995)	185	.15		×	×	
	Osofsky et al. (1993)	53	.67		×	×	
	Spaccarelli et al. (1994)	131	.10	×	×	×	
Sternberg et al. (1993)	47	.54		×	×		
Total (School)	16 studies	1,873		5	13	12	2
Adolescent (11–19)	DuRant et al. (1994)	225	.29		×		
	Kempton et al. (1989)	48	.21		×	×	
	McGee et al. (1997)	160	.07	×	×	×	
	Muller et al. (2000)	65	.21		×	×	×
	Rogers & Holmbeck (1997)	80	.40		×	×	
	Tannenbaum et al. (1992)	224	–.20	×	×	×	
Total (Adolescent)	6 studies	802		2	6	5	1

^aOverall CBCL problem score only (internalizing and externalizing not reported).

Description of Samples

The summary of studies provided in Table I shows wide variability in participant characteristics across studies. Sample sizes reported for each study are *minimum* samples; that is, the reported *N* represents the number of participants for which all of the relevant data were available. Age is reported as a range where available, as ranges were reported more often than means. In terms of shelter residence, 32% of the studies used shelter-only samples for their witness group, 63% used nonshelter samples, and 5% used both (with separate groups). Of the 26 nonshelter samples, 50% were community samples, in which the number of families with interparental violence may have been relatively low, but scores on domestic violence measures were correlated with outcome measures. The proportion of studies with single versus multiple raters of child outcomes were similar: 51%

Table IV. Measures Grouped Into Internalizing and Externalizing Categories of Outcomes

Internalizing	Externalizing
CBCL: Internalizing	CBCL: Externalizing
CBCL: Anxious/Depressed	CBCL: Aggressive
CBCL: Somatic	CBCL: Attention
Children's Depression Inventory	CBCL: Delinquent
Revised Children's Manifest Anxiety Scale	BPC: Anxiety
(R)BPC: Personality	(R)BPC: Conduct Problems
BPC: Anxiety	BPC: Aggression
YSR: Internalizing	ECBI: Intensity
	ECBI: Frequency
	YSR: Externalizing
	Conners: Conduct
	Conners: Hyperactivity

Note. CBCL = Child Behavior Checklist; (R)BPC = (Revised) Behavior Problem Checklist; YSR = Youth Self-Report; ECBI = Eyberg Child Behavior Inventory.

Table V. Shelter Residence, Number of Raters, Sex and Type of Child Outcome as Moderating Variables of Child Adjustment

Moderator	<i>n</i>	<i>Z_r</i>	SD	95% CI	<i>z</i> -values	<i>z</i> -score (diff)
Gender (10 studies)						
Boys	746	.11	.19	.04–.19	3.08	<i>ns</i>
Girls	734	.09	.19	.02–.16	2.38	
Type of outcome (31 studies)						
Internalizing	5148 ^a	.19	.12	.16–.21	13.59	<i>ns</i>
Externalizing	5148	.21	.12	.18–.23	15.05	

^aSame samples, but different measures.

single (e.g., mother only, child only), and 49% multiple (e.g., mother and child, mother and teacher). Most studies had measures of child externalizing and internalizing difficulties, except for those involving PTSD (which tended to exclude externalizing symptoms). Although the sex ratio was approximately equivalent overall, 10% of the studies included only boys. The majority of participants was Caucasian, although a fair number of other ethnicities was represented (see Table I).

Consequences of Exposure to Domestic Violence

Forty of the 41 effects indicated that exposure to domestic violence has a negative effect on children. Further support for an overall relationship between exposure to violence and negative outcomes was provided by an aggregate weighted mean correlation of $Z_r = .28$ ($SD = .17$; $95\% CI = .21-.32$), which is significant ($Z_c = 8.86$, $p < .001$). A $Z_r = .28$ effect corresponds to a small effect size (Cohen, 1977). The one study that reported a reverse effect from what would be expected provided somewhat ambiguous results (Tannenbaum, Neighbors, & Forehand, 1992). In that study the overall correlation between exposure to violence and problematic child outcomes was negative, but the unique contribution of exposure to violence in predicting poor outcomes (when other confounds were controlled) was positive. Thus, the unexpected result likely represents a complicated pattern of relationships among domestic violence and other dynamics, and underscores the need for contextually relevant research.

Moderator Analyses

An analysis of heterogeneity was conducted to determine whether there was adequate dispersion of individual outcomes vis a vis the overall effect

to explore for possible moderators (Borenstein & Rothstein, 1999). Given evidence of significant heterogeneity ($\chi^2 = 188.49$, $df = 40$, $p < .001$), a small number of variables was explored, with the results summarized in Table V. Results of a fixed effects analysis are reported for the moderators as per convention (Borenstein & Rothstein, 1999).

Developmental Stage

When all 27 studies that had samples within a particular developmental stage were compared, the school aged children demonstrated the largest average effect size ($Z_r = .23$), followed by preschoolers ($Z_r = .22$) and adolescents ($Z_r = .11$). The difference across developmental stages was significant ($Z = 8.76$, $p < .05$). However, this analysis exemplifies one of the problems that arises in using meta-analysis techniques with a small number of studies that have wide variability in methodology. The average effect size for school aged children was strongly affected by one study (Kilpatrick, Litt, & Williams, 1997), in which the outcome of interest was PTSD. However, rather than using rates of diagnosis, results were reported with respect to a PTSD scale, and there was considerable dispersion in mean scores between the groups (with a corresponding effect size of $Z_r = .94$). This outcome, therefore, may have been an artefact of the scale rather than the difference suggested by such an extreme effect size; alternatively, this may suggest that comparing mean scores for a syndrome such as PTSD may be misleading. Similarly, the effect size for adolescents may be artificially suppressed by the Tannenbaum et al.'s study (Tannenbaum et al., 1992), which generated a negative effect size.

When the developmental stage moderator analysis was conducted *without* these two studies, significant differences among developmental stages disappeared. Adolescent ($Z_r = .23$), preschool ($Z_r = .21$), and school age samples ($Z_r = .21$) showed similar

effect sizes. Rather than providing a basis for drawing conclusions about the effects of domestic violence at different stages of development, this example illustrates the lack of a clear result with respect to developmental stage, and underscores the variability across studies with respect to methodology. Because of the lack of stability for a solution concerning developmental stage, this moderator is not presented in Table V.

Sex

Initially, studies that reported results for both sexes as well as those that only involved boys were included in the analysis, generating average effect sizes of $Z_r = .17$ for boys and $Z_r = .09$ for girls. When the four studies that only included boys were removed, this gap between boys and girls disappeared ($Z_r = .11$ and $.09$, respectively). The substantial convergence between boys and girls achieved by removing the “boys only” studies suggests that the high effect sizes for those samples might be related to sample characteristics other than sex. The latter analysis is reported in Table V as the more conservative estimate of the two with respect to sex differences in the effects of exposure to domestic violence.

Type of Outcome

On the basis of the 31 studies that provided information about both internalizing and externalizing adjustment problems, the moderator analysis with respect to type of outcome was not significant ($Z_r = .21$ for externalizing, $Z_r = .19$ for internalizing).

Comparison of Witnesses and Combined Witness/Victims

Although the intention at the outset of this paper was to examine the presence of direct victimization as a moderator of exposure to domestic violence, meta-analysis was curtailed because of the availability of only four studies. The individual results of these studies are presented in Table VI for descriptive purposes only. Because there was significant variability, internalizing and externalizing outcomes are presented separately for each study. Effect sizes are presented such that a positive effect corresponds to a finding that children who are both witnesses and

victims are functioning more poorly than those who only witness. The findings across these four studies suggest a small effect size for the difference between children who are combined witness/victims and those who are witnesses only. There is preliminary evidence that this difference is greater for externalizing behaviors, although more studies are required to determine whether or not this trend is significant. Although the difference in outcomes between these two groups of children may be statistically nonsignificant, there is an issue of restricted range that is important to consider. That is, the comparison group in this case is children exposed to violence (and the target group has been exposed to direct and indirect violence). Thus, the experience of direct victimization may add a small effect size *in addition to* the medium effect already present with respect to exposure to domestic violence.

DISCUSSION

The purpose of this article was to synthesize the collective literature on children exposed to domestic violence, with respect to negative emotional and behavioral outcomes. The answer to whether or not children exposed to violence experience more difficulties than their peers emerged as an unequivocal yes. When evaluated across all of the samples and outcomes, a small effect size was evident for exposure to domestic violence. In terms of translating an effect size of $r = .28$ into a more concrete concept, in the treatment literature an effect size of $r = .30$ would mean an increase in successful treatment rate from 35 to 65% (Wolf, 1986). Conversely, the variance equivalent to an effect of $r = .30$ could be interpreted as increasing the number of children exhibiting difficulties from 35 to 65%. Clearly, the statistical significance of exposure to domestic violence is matched by clinical significance. Furthermore, child abuse experiences (in addition to exposure) added a small increment in effect size above and beyond exposure alone, although this finding is preliminary due to the limited number of studies.

The fundamental building blocks of developmental theory (developmental stage, sex, and type of outcome) were examined as moderators. The lack of significant findings with these moderators, as well as the degree to which the results changed with minor alterations to the analyses, underscores the lack of stability in the underlying data set. Another way of framing these findings is to note that the disparity in sampling (i.e., shelter versus clinical versus community),

Table VI. Preliminary Effect Sizes Comparing Children Who Are Both Witnesses and Victims with Witnesses only

Study	N	Internalizing		Externalizing	
		Z _r	Effect size	Z _r	Effect size
Hughes (1988)	24	-.17	Small ^a	.22	Small
Hughes et al. (1989)	56	.22	Small	.28	Medium
O'Keefe (1995)	185	.12	Small	.18	Small
Sternberg et al. (1993)	46	.22	Small	.12	Small

^aEffect in reverse direction.

wide range in outcomes among these children, the wide method variance in measuring outcomes, and lack of a contextually sensitive approach produced greater variability across studies than that found between sexes or across developmental stages. In other words, methodological variability and other unspecified factors produced larger differences in effect sizes than did the selected moderators of age, sex, and type of outcome.

The current state of the literature on children exposed to domestic violence provides a solid foundation from which to move forward with more complicated hypotheses and analyses. In comparison to the literature on other forms of child maltreatment, the state of this literature is less developed. For example, early analyses of child sexual abuse sequelae have been followed by more detailed analyses that indicate that the impact of sexual abuse may vary according to many factors, such as severity of the abuse, age of onset, nature of perpetrator, patterns of disclosure, and support systems in place for the child (Oddone-Paolucci, Genuis, & Violato, 2001). The impact of exposure to violence is likewise a complex phenomenon that may be determined by a host of factors within the child's environment, family, and individual characteristics. This experience is different from many other single traumatic events and requires complex, multivariate models that examine the interplay between trauma and development.

Several reviews have pointed to the challenges that face abused women and their children in escaping from batterers. These challenges may include the distress of repeated separations, ongoing violence during visitation, and prolonged child custody battles in court (Jaffe, Lemon, & Poisson, 2003; Jaffe, Poisson, & Cunningham, 2001). The field will require multisite studies that can capture these complexities with large enough data samples to examine all the variables of interest including changes at different stages of development. Furthermore, questions remain about the long-term effects in adult relationships that may not

be visible from traditional measures of child adjustment. There may be some specific effect on children's knowledge and attitudes about violence in relationships and their sense of personal responsibility for domestic violence that is not captured by current measures.

The question of long-term adjustment versus short-term adaptation to crisis will only be answered with the use of longitudinal data. Furthermore, given the variability within the population of children exposed to domestic violence, large samples are required to capture the full picture. There is also a pressing need to investigate a wider range of negative outcomes. Although the initial intention was to include educational and cognitive outcomes in this meta-analysis, there were not enough studies to facilitate this inclusion. There are sound theoretical reasons to expect exposure to violence to have an impact on cognition and learning and to further explore these links; however, it is misleading to present this as a well-documented finding at this time. Similarly, there is emerging evidence for the link between exposure to domestic violence and PTSD in children; however, the dearth of studies in this area makes it premature to offer anything other than tentative conclusions. Our preliminary analyses show that PTSD symptoms appear to be one negative outcome, particularly for younger children. Lehmann's study (Lehmann, 1997) of child witnesses also found significant PTSD symptomatology in over half of the sample, raising the possibility of an interaction between trauma and the developmental stage of the child at the time of exposure.

Future Research Directions/Promising Approaches

Although the concept of ecologically valid models has become de rigeur in the developmental literature, research on children exposed to domestic violence has tended to focus on these children in a

vacuum. The need to evaluate the contribution of exposure to domestic violence in tandem with other risk factors is paramount. Some research efforts have begun to look at the exposure to domestic violence within the context of exposure to community violence, (e.g., Muller, Goebel-Fabbri, Diamond, & Dinklage, 2000), which highlights the unique and shared characteristics of these related forms of trauma.

Recent studies have begun to address some of the fundamental methodological flaws in this literature by employing longitudinal designs with large samples, multiple raters of child outcomes, and sophisticated multivariate techniques. One multisite, longitudinal study, (LONGSCAN) reported the effects of exposure to violence at 3 years of age on externalizing and internalizing behavior at age 6, and is continuing to follow these children (Litrownik, Newton, Hunter, English, & Everson, 2003). Other longitudinal studies (Ware et al., 2001) have compared maternal ratings of child outcomes during and following shelter residence to examine whether mothers' more negative ratings of their child's behavior (compared to rating by teachers and shelter staff, diagnostic interviews by researchers, etc.) are a result of their level of distress during shelter residence. Studies that have examined this issue of maternal ratings with a cross-sectional design (Morrel, Dubowitz, Kerr, & Black, 2003), have compared child outcomes across raters, and controlled for maternal victimization and depression in addition to maternal distress. Finally, multivariate techniques are being utilized to identify developmental profiles that children may exhibit following exposure to domestic violence. To illustrate, a recent cluster analysis of 228 children from shelters identified five clusters based on internalizing and externalizing outcomes, which could be distinguished with respect to frequency of the children's exposure to interparental violence, and child abuse (Grych, Jouriles, Swank, McDonald, & Norwood, 2000).

In sum, in contrast to many meta-analyses that summarize a large set of studies and provide conclusive findings, results of the current meta-analysis should be considered as a preliminary springboard to further research on this topic. Important progress has been made in terms of isolating possible moderators of the impact of exposure to violence on children, but unanswered questions still remain. The field is beginning to move away from epidemiological studies emphasizing prevalence and extent of clinically significant problems, towards a more refined developmental focus on the interaction of risk and protective fac-

tors that mediate the impact of exposure to domestic violence.

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