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A meta-analytic investigation of therapy modality outcomes for sexually abused children and adolescents: An exploratory study

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Abstract

Objective: The purpose of the current study was to investigate the independent effects of different treatment elements on a number of secondary problems related to childhood and adolescent sexual abuse, as well as investigate a number of different moderators of treatment effectiveness.
Method: Twenty-eight studies that provided treatment outcome results for children and adolescents who had been sexually abused were included in the meta-analysis. Different aspects of psychological treatment, such as specific treatment modalities (individual, cognitive-behavioral, etc.) or secondary problems (behavior problems, psychological distress, etc.) were investigated.
Results: The overall mean weighted effect size for the meta-analysis was $d = .72$ ($SE = .02$). The results indicate that psychological treatment after childhood or adolescent sexual abuse tended to result in better outcomes than no treatment. There was significant heterogeneity in the effectiveness of the various psychological treatment elements. Play therapy seemed to be the most effective treatment for social functioning, whereas cognitive-behavioral, abuse-specific, and supportive therapy in either group or individual formats was most effective for behavior problems. Cognitive-behavioral, family, and individual therapy seemed to be the most effective for psychological distress, and abuse-specific, cognitive-behavioral, and group therapy appeared to be the most effective for low self-concept.
Conclusions: The choice of therapy modality should depend on the child's main presenting secondary problem. Further research should be conducted investigating other possible moderators and secondary problem outcomes.

Keywords: Sexual abuse; Childhood abuse; Therapy; Treatment; Meta-analysis

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Introduction

Child sexual abuse is a serious, global problem. According to the United States Department of Health and Human Services (2006), approximately 84,398 children in the United States alone were found to be victims of child sexual abuse in the year 2004. Child sexual abuse has been shown to be associated with a number of short- and long-term problems, including significantly increased levels of major depression, suicide ideation, social anxiety, conduct disorder, divorce (Nelson et al., 2002); dissociation, posttraumatic stress disorder, anger, impaired sense of self, indiscriminate sexual behavior (Briere & Elliott, 1994); substance abuse, eating disorders, panic disorder (Kendler et al., 2000); behavioral problems, academic problems, and difficulty relating to peers (Beitchman, Zucker, Hood, DaCosta, & Akman, 1991).

In response to these problems, a multitude of therapeutic approaches have been adapted to treat sexually abused children. Although numerous therapeutic interventions for child sexual abuse have been discussed in the literature (Boatman, Borkan, & Schetky, 1981; Douglas, Coghill, & Will, 1996; Friedrich, Berliner, Urquiza, & Beilke, 1988; Sheinberg, True, & Fraenkel, 1994; Trepper & Traicoff, 1985), it has not been until recently that empirical research has evaluated the effectiveness of these treatments.

In a literature review, Saywitz, Mannarino, Berliner, and Cohen (2000) concluded that many of the symptoms associated with child sexual abuse may be treated successfully with professional intervention. Saywitz et al. also concluded that cognitive-behavioral therapy and abuse-specific therapy seemed to perform better than other forms of treatment in the alleviation of problems associated with child sexual abuse. In contrast, Kolko (1987) suggested that art therapy and individual, supportive therapy may be more beneficial for child sexual abuse survivors because these therapies promote the expression of emotional reactions to abuse experiences while providing safe forums for the discussion of abuse. In another literature review, Silovsky and Hembree-Kigin (1994) reported that family therapy and group therapy were the most effective treatments for child sexual abuse survivors.

Perhaps disagreement about the efficacy of various treatment modalities for child sexual abuse has developed from the nature of child sexual abuse itself, which is an experience; it is not, by itself, a syndrome or a disorder (Finkelhor & Berliner, 1995), although it may result in the development of a disorder, syndrome, or other problems (Beitchman et al., 1992). Children referred to treatment for sexual abuse may have a wide range of problems or may present with few or no clinically significant issues (Saywitz et al., 2000). The heterogeneity of presentation logically suggests that some therapy modalities may be more effective than others for children with varying secondary problems. For example, sexually abused children who seem to be experiencing heightened anxiety may respond well to individual cognitive-behavioral therapy because of the one-on-one emphasis on decreasing specific, anxiety-related symptoms (Barlow & Cerny, 1988).

Other factors may play a role in determining the effectiveness of child sexual abuse therapy. Abuse characteristics, such as whether the abuse was intrafamilial or extrafamilial, may moderate the effectiveness of different treatments (Browne & Finkelhor, 1986; Finkelhor & Berliner, 1995). Child characteristics, such as age, gender, or ethnicity, may also play a role in therapeutic effectiveness (Beitchman et al., 1992; Kolko, 2000). Therapeutic variables, such as the length of therapy, could moderate effectiveness (Howing, Wodarski, Gaudin, & Kurtz, 1989). Secondary problems themselves may play a role. Some problems may be more difficult to treat than others, with longer lasting personality problems taking more time and effort to treat than shorter-term, situation-specific concerns (Finkelhor & Berliner, 1995). Because the research on child sexual abuse treatment is relatively new, no primary study to date has been able to address all these possible moderators.

With the development of meta-analytic techniques, researchers have begun to examine the effectiveness of child sexual abuse treatments across studies. In 1996, deJong and Gorey presented the results of a meta-analysis of short-term versus long-term group work with female survivors of childhood sexual abuse. The results of their meta-analysis indicated that group work was effective for three-quarters of the study participants regardless of whether the treatment was short- or long-term. This meta-analysis represented an important first step in the secondary analysis of the efficacy of child sexual abuse therapy. However, de Jong and Gorey included only seven studies, investigated only group therapy, and examined data only on affect and self-esteem.

Reeker, Ensing, and Elliott (1997) conducted a meta-analysis of group treatment outcomes for sexually abused children and adolescents. The authors found a significant effect size for group treatments for sexually abused children and adolescents, indicating that effective group treatments for sexually abused children exist. They failed to find a significant effect for age or gender of the child on treatment effectiveness, but did find a significant effect for treatment setting, indicating that studies which took place in an agency setting tended to yield higher effect sizes than studies conducted in research settings. There was no effect of group treatment on different outcome measures, indicating that group therapy for child sexual abuse was equally effective across all types of secondary problems. However, Reeker et al. did not examine the effectiveness of individual treatments for child and adolescent sexual abuse, nor did they examine the treatment modality of each group therapy, such as cognitive-behavioral or play.

Since the previous meta-analyses on the treatment of child sexual abuse, there have been many new studies. Therefore, we sought to conduct a meta-analysis: (1) to include data on both individual and group therapeutic interventions for child sexual abuse, (2) to investigate the independent effects of different treatment modalities (e.g., cognitive-behavioral, play, and family) on a number of secondary problems related to child sexual abuse (e.g., social functioning, psychological distress, and self-concept), and (3) to examine a number of different moderators of treatment effectiveness, including abuse characteristics, child characteristics, and study quality.

We hypothesized that treatment groups would evidence more improvement than no treatment groups, as this difference has been consistently found in previous research (Saywitz et al., 2000).

Method

Sample of studies

A literature search was performed on all published, English-language studies, conducted between 1975 and 2004, on sexual abuse treatment outcomes for children and adolescents from ages 3 to 18. Computer-based literature searches were conducted using *PsychINFO*, *Social Science Abstracts*, and *Medline* using the following key terms: *child abuse*, *sexual abuse*, *treatment*, *therapy*, *outcome*, *cognitive-behavioral*, *play therapy*, and *family therapy*. In addition, reference lists from empirical studies and review articles were examined for other relevant investigations.

Studies were included in the meta-analysis if they (a) were designed to examine the effectiveness of treatment for sexually abused children or adolescents, (b) utilized a pre–post design, (c) had a sample size of at least 10, (d) provided sufficient statistical information to allow computation of effect sizes (i.e., means and standard deviations, *t* tests, *F* tests, etc.), and (e) had been published in a peer-reviewed journal. The decision to include only published studies in this meta-analysis was made in order to provide

Table 1
Characteristics of included studies ($n = 28$)

Mean age of participants	
<6.0 years	4
6.0–12.0 years	12
>12.0 years	3
Not reported	9
Gender of participants	
Female	11
Male	1
Mixed	14
Not reported	2
Sample size	
$N < 40$	12
$N \geq 40$	16
Random assignment	
Yes	12
No	16
Untreated control group utilized	
Yes	11
No	17

a degree of quality control in the selection of studies. This search resulted in 28 studies that provided treatment outcome results for sexually abused children and adolescents. Our criteria to include studies in the present meta-analysis were strict, which we believe provided us a relatively unbiased collection of studies from which we could draw stronger conclusions. Characteristics of included studies are presented in Table 1.

Recorded variables

Variables that were viewed as potential moderators included: sample size, age of the sample, ethnicity, gender, and the relationship of the perpetrator to the victim (intrafamilial or extrafamilial). We had intended to code for both duration of reported abuse and the presence of other abuse (i.e., physical, emotional); however, only a few studies reported this information so these variables were not included. Each study was also given ratings according to coder, coding time, and the quality of the study. Quality was based on sample size (greater or less than 40), use of a random assignment to treatment or control groups, and use of a comparison group.

The specific treatment modalities used were coded as "present" or "not present" for each effect size: individual (17 studies), group (15 studies), cognitive-behavioral (15 studies), abuse-specific (15 studies), supportive (11 studies), family (9 studies), no treatment (9 studies), play (4 studies), or "other" (EMDR; 1 study) type of therapy. These therapy modalities were not mutually exclusive. For example, a person could receive cognitive-behavioral, abuse-specific group therapy. In addition, the duration of therapy (number of sessions; length of treatment in months), and the level of therapist training (no training, trained in one modality, or trained in more than one modality) were recorded.

Effect sizes were classified according to the number of participants used to calculate the effect size and the type of secondary problem the effect size measured. Secondary problem types included problems with social functioning, behavior, psychological distress, self-concept, and "other" problems (level of academic functioning and risk assessment abilities). Only effect sizes related to child and adolescent outcomes were included; effect sizes regarding parent behavior and health were not included in the analyses.

The studies were coded separately by each of the three authors. Interrater reliabilities for the study design variables were as follows: 1.00 for sample size, .91 for randomization, and .94 for utilization of a comparison group. Interrater reliabilities for treatment modality and secondary problems were .94 and .95, respectively. Where disagreements occurred, coders reached consensus through discussion.

Computation and analysis of effect sizes

All of the studies provided information on average pre- and post-test measures for each treatment modality on multiple assessment measures. Some studies also included post-test scores that were not measured immediately following treatment. These findings were not included in this analysis because our interest focused exclusively on the immediate post-test results. An effect size (d-value) was calculated from the pre- and post-test measures for each treatment modality (e.g., abuse-specific) on each secondary problem assessment measure (e.g., measure of self-esteem). The effect sizes for each study were averaged to derive an overall mean effect size for each study. The effect sizes for each subsample were also averaged to derive an overall mean effect size for each subsample. All of the effect sizes reported were computed using the D/STAT computer program for conducting meta-analyses (Johnson, 1989), or by using the Effect Size Determination Calculator (Wilson, 2001a). Effect sizes were categorized as small, medium, and large as defined by Cohen (1988).

To account for differences in sample size between the studies, we weighted each effect size by the inverse of the variance (or square of the standard error) for that effect size (w). Variances for each effect size were based on within-group sample sizes and pre- and post-test correlations (Shadish & Haddock, 1994). Therefore, effect sizes based on larger sample sizes or with smaller variances "weighed" more in the analyses. Once an effect size had been derived for each assessment measure, the effect sizes were averaged to derive mean weighted effect sizes for each study, study subsample, and treatment modality.

The meta-analysis macros for SPSS for Windows (Wilson, 2001b) were used to perform the overall meta-analysis as well as all main effect and moderator analyses. We utilized the Q statistic to assess homogeneity among effect sizes by testing the assumption that the effect sizes share a common population. A significant Q_w statistic indicates substantial variability among effect sizes, suggesting that specific between-group variables can be tested to see if they can explain the heterogeneity. A significant Q_b statistic suggests a considerable difference between the effect sizes of two or more groups (e.g., differences between cognitive-behavioral and play therapy effect sizes).

We first compared the effect sizes for treatment and no treatment groups. We then aggregated and compared the effect sizes for each treatment modality for the five secondary problem outcomes (behavior problems, psychological distress, social functioning, self-concept, and "other" problems). Lastly, the aggregated effect sizes for the child, abuse, and therapy characteristics were analyzed to determine if these variables moderated the overall mean weighted effect size.

Results

Overall effect size

Descriptive information regarding each study and subsample effect sizes is presented in Table 2. The overall mean weighted effect size for the meta-analysis was $d = .72$ ($SE = .02$; range: $-.20$ to 2.08), and the confidence interval did not contain zero, $Z = 34.76$, $p < .001$. The Q statistic was significant, $Q_w = 597.93$, $p < .001$, indicating that there was significant heterogeneity among the effect sizes to warrant further analyses. Moderator analyses were performed on quality of the study, coder, and coding time. Moderator analysis showed no significant effect of study quality, $Q_b = 6.77$, $p = ns$, coder, $Q_b = .10$, $p = ns$, or coding time, $Q_b = .07$, $p = ns$, on mean weighted effect size.

Treatment versus no treatment

To analyze the heterogeneity of the overall mean weighted effect size, the main effect of treatment was investigated. The treatment group's mean weighted effect size was large ($d = .74$) and was significantly greater than the no treatment group mean weighted effect size ($d = .46$), $Q_b = 19.23$, $p < .001$. This difference suggests that the effect of any type of treatment modality was more effective than no treatment. The heterogeneity statistic was significant for the effect sizes for no treatment, $Q_w = 56.03$, $p < .001$, suggesting that within the no treatment group there was still variability in secondary problem outcomes. There was also significant heterogeneity in the treatment effect sizes, $Q_w = 469.72$, $p < .001$, so further analyses were conducted on the treatment effect sizes.

Secondary problem outcomes

Mean weighted effect sizes for each secondary problem by treatment modality are presented in Table 3. The heterogeneity of secondary problem outcomes (social functioning, behavior, psychological functioning, self-concept, and other) was examined. There was a significant difference, $Q_b = 1037.92$, $p < .001$, between the weighted mean effect sizes of the secondary problem outcomes. The mean effect size for social functioning was moderate in magnitude, whereas the effect sizes for behavior outcomes, psychological distress, self-concept, and "other" outcome measures were large in magnitude (Table 3). There was significant heterogeneity among the effect sizes for behavior outcomes ($Q_w = 6817.93$, $p < .001$), "other" outcome measures ($Q_w = 3367.18$, $p < .01$), psychological distress, ($Q_w = 5124.30$, $p < .001$), self-concept ($Q_w = 366.39$, $p < .001$), and social functioning ($Q_w = 265.77$, $p < .001$). Further analyses were conducted to examine each of the secondary problem outcomes.

For behavior outcomes, cognitive-behavioral, supportive, individual, group, abuse-specific and no treatment effect sizes were all large in magnitude. Play and family therapy exhibited moderate effects. For "other problems," the largest effect sizes were found for cognitive-behavioral, play, abuse-specific, supportive, and group therapy. The mean weighted effect sizes for family and individual therapy for "other problems" were moderate in magnitude.

The largest effect sizes for psychological distress outcomes were for cognitive-behavioral, play, supportive, abuse-specific, individual, and family therapy. Group and "other" therapy was moderately effective. For self-concept problems, cognitive-behavioral, group, and abuse-specific therapy seemed to provide the largest effect. Family, supportive, and individual therapy exhibited moderate effect sizes for

Table 2
Summary information and mean effect sizes (*d*s) for each study and study subsample

Study	Age range (in years)	Gender	Ethnicity (% non-White)	Perpetrator (% intrafamilial)	Therapy modality elements	*N*	Subsample *d* (*v*)	Study *d* (*v*)
Berliner and Saunders (1996)*	4–13	Mixed	NR	NR	Cognitive-behavioral, group	48	.23 (.02)	.28 (.01)
					Abuse-specific, group†	32	.34 (.03)	
Celano, Hazzard, Webb, and McCall (1996)	8–13	Females	78.0%	56.0%	Cognitive-behavioral, individual	15	.59 (.06)	.63 (.03)
					Family, abuse-specific, individual†	17	.66 (.05)	
Cohen and Mannarino (1996)*	3–6	Mixed	46.0%	34.0%	Cognitive-behavioral, family, abuse-specific, supportive, individual	39	.98 (.02)	.66 (.01)
					Family, supportive, individual†	28	.34 (.03)	
Cohen and Mannarino (1998)*	7–14	Mixed	41.0%	44.0%	Cognitive-behavioral, abuse-specific, individual	30	.45 (.03)	.37 (.02)
					Supportive, individual†	19	.29 (.05)	
Cohen, Deblinger, Mannarino, and Steer (2004)*	8–15	Mixed	40.0%	100.0%	Cognitive-behavioral, family, abuse-specific, individual	92	.82 (.01)	.69 (.01)
					Family, supportive, individual†	92	.57 (.01)	
Deblinger, Lippmann, and Steer (1996)*	7–13	Mixed	28.0%	58.0%	No treatment	21	.41 (.05)	.73 (.01)
					Cognitive-behavioral, individual	22	.82 (.03)	
					Cognitive-behavioral, individual	24	.72 (.03)	
					Cognitive, behavioral, family, individual	22	.97 (.03)	
Deblinger, McLeer, and Henry (1990)	3–16	Females	NR	73.7%	No treatment	19	.06 (.06)	.95 (.04)
					Cognitive-behavioral, individual	19	1.51 (.02)	
Deblinger, Stauffer, and Steer (2001)*	2–8	Mixed	36.0%	52.1%	Cognitive-behavioral, group	21	.76 (.04)	.59 (.02)
					Supportive, group†	23	.41 (.04)	
DeLuca, Boyes, Grayston, and Romano (1995)*	7–12	Females	NR	100.0%	Abuse-specific, supportive, group	33	.86 (.01)	.86 (.01)
Friedrich, Luecke, Beilke, and Place (1992)	4–16	Males	NR	NR	Play, family, supportive, individual, group	33	.52 (.03)	.52 (.03)
Jaberghaderi, Greenwald, Rubin, Zand, and Dolatabadi (2004)	12–13	Females	100.0%	28.5%	Cognitive-behavioral, abuse-specific, individual	7	1.13 (.10)	1.49 (.06)
					Abuse-specific, other (EMDR), individual	7	1.70 (.06)	
Jenson, Jacobson, Unrau, and Robinson (1996)*	NR	Mixed	22.0%	95.0%	Abuse-specific, other, individual	294	.26 (.01)	.26 (.01)

Table 2 (*Continued*)

Study	Age range (in years)	Gender	Ethnicity (% non-White)	Perpetrator (% intrafamilial)	Therapy modality elements	*N*	Subsample *d* (*v*)	Study *d* (*v*)
King et al. (2000)	5–17	Mixed	NR	19.0%	No treatment	12	.29 (.09)	.77 (.02)
					Cognitive-behavioral, individual	12	.94 (.06)	
					Cognitive-behavioral, family, individual	12	1.06 (.06)	
Krakow et al. (2001)	13–18	Females	NR	NR	No treatment	10	.16 (.11)	.53 (.03)
					Cognitive-behavioral, group	9	.90 (.09)	
Kruczek and Vitanza (1999)*	13–18	Females	39.0%	61.0%	Cognitive-behavioral, group	41	.81 (.02)	.81 (.02)
Lanktree and Briere (1995)*	8–15	NR	57.1%	NR	Family, abuse-specific, individual, group	56	.69 (.01)	.52 (.01)
					Family, abuse-specific, individual, group	26	.64 (.03)	
					Family, abuse-specific, individual, group	23	.28 (.04)	
					Family, abuse-specific, individual, group	15	.48 (.06)	
McGain and McKinzey (1995)	9–12	Females	NR	NR	No treatment	15	.05 (.02)	1.07 (.02)
					Abuse-specific, supportive, group	15	2.08 (.07)	
Meezan and O'Keefe (1998)*	2–11	NR	40.0%	100.0%	Family, supportive, other, individual†	39	.17 (.03)	.24 (.01)
					Family, supportive, other, group	42	.32 (.02)	
Nolan et al. (2002)	6–17	Mixed	NR	44.8%	Abuse-specific, supportive, individual	20	.55 (.05)	.58 (.02)
					Abuse-specific, supportive, individual, group	18	.61 (.05)	
Oates, O'Toole, Lynch, Stern, and Cooney (1994)*	5–15	Mixed	NR	NR	No treatment	84	.93 (.01)	.75 (.01)
					Cognitive-behavioral, supportive, individual	84	.57 (.01)	
Reeker and Ensing (1998)	5–8	Mixed	63.0%	NR	Play, abuse-specific, supportive, group	19	1.65 (.02)	1.65 (.02)
Rust and Troupe (1991)*	9–18	Females	2.0%	80.0%	No treatment	25	.02 (.03)	.44 (.02)
					Play, supportive, group	25	.85 (.04)	
Scott, Burlingame, Starling, Porter, and Lilly (2003)	3–9	Mixed	3.9%	NR	Play, individual	26	.43 (.04)	.43 (.04)
Sinclair et al. (1995)*	12–18	Females	25.0%	NR	Cognitive-behavioral, abuse-specific, group	43	.21 (.02)	.21 (.02)
Stauffer and Deblinger (1996)	2–6	Mixed	16.0%	69.0%	No treatment	19	−.20 (.05)	.15 (.05)
					Cognitive-behavioral, family, abuse-specific, group	19	.51 (.05)	

Sullivan, Scanlan, Brookhouser, Schulte, and Knutson (1992)*	12–16	Mixed	NR	NR	No treatment	30	−.03 (.03)	.70 (.01)
					No treatment	7	−.18 (.16)	
					Cognitive-behavioral, abuse-specific, supportive, individual	21	1.78 (.02)	
					Cognitive-behavioral, abuse-specific, supportive, individual	14	1.22 (.04)	
Trowell et al. (2002)*	6–14	Females	37.0%	42.3%	Play, individual†	35	1.08 (.02)	.88 (.01)
					Play, group	36	.69 (.02)	
Verleur, Hughes, and de Rios (1986)	13–17	Females	NR	100.0%	No treatment	14	.61 (.06)	1.10 (.02)
					Cognitive-behavioral, group	16	1.59 (.03)	

Note: An asterisk (*) denotes studies with sample sizes greater than 40. A † denotes a comparison treatment group (treated control group). *d*: effect size; *v*: variance; NR: not reported.

Table 3
Mean weighted effect sizes (*d*) for each secondary problem outcome by treatment modality

Treatment modality	Secondary problem outcome					
	Behavior	Other problem	Psychological distress	Self-concept	Social functioning	Total
Cognitive-behavioral ($n = 17$)	.87	1.00	1.41	.79	.54	.88
Play ($n = 5$)	.59	2.51	.78	.25	.72	.88
Supportive ($n = 13$)	1.46	2.01	.77	.52	.44	.87
Group ($n = 16$)	1.44	2.03	.56	1.00	.54	.85
Abuse-Specific ($n = 15$)	1.48	2.16	1.02	.67	.46	.81
Individual ($n = 17$)	.75	.47	1.23	.57	.44	.68
Family ($n = 9$)	.58	.46	1.06	.57	.42	.62
No treatment ($n = 10$)	1.02	.20	.30	1.08	–	.46
Other ($n = 2$)	.27	.36	.51	–	.32	.32
Total	1.60	1.49	1.05	.71	.48	.72

Note: n = number of studies included in the treatment modality. Therapy modalities were not mutually exclusive.

self-concept problems, but play therapy had a small effect. The mean weighted effect size for no treatment on self-concept problems was large but was based on only one study, so should be interpreted with caution. The largest effect size for social functioning was play therapy; however, cognitive-behavioral, family, abuse-specific, supportive, individual, and group therapy were also moderately effective.

Moderator analyses

Child characteristics. Age, gender, and ethnicity were investigated as possible moderators of effect size for the 56 treatment subsamples from the 28 studies. Age, gender, and ethnicity data were not available for every subsample so each child characteristic was analyzed separately using only those studies for which it was reported. Mean age (39 subsamples) and percent of male participants (48 subsamples) were not significant moderators, $p < .05$. However, the percent of non-Caucasian participants (33 subsamples) was a significant moderator of mean weighted effect size, $Q_b = 10.92$, $p < .001$; as the percent of non-Caucasians increased, the weighted effect size increased.

Intrafamilial abuse. The percent of intrafamilial abuse (36 subsamples) was a significant moderator of mean weighted effect size, $Q_b = 9.55$, $p < .002$; as the percent of intrafamilial abuse increased, the mean weighted effect size decreased.

Therapy characteristics. Number of therapy sessions, number of months in therapy, and therapist training were investigated as possible moderators of effect size at the subsample level. The number of therapy sessions (38 subsamples) was a significant moderator of mean weighted effect size, $Q_b = 32.65$, $p < .001$. As the number of therapy sessions increased, mean weighted effect size increased. The number of months in therapy (41 subsamples) was a significant moderator of the mean weighted effect size, $Q_b = 14.54$, $p < .001$. Therapist training (35 subsamples) was not a significant moderator of mean weighted effect size, $p = ns$.

File drawer problem

To address the potential problem that studies with significant effect sizes for child sexual abuse treatment may be selectively published over non-significant findings, we calculated fail-safe *N*s in accordance with the method proposed by Rosenthal (1979). The fail-safe *N* is a measure of the number of unpublished studies with non-significant results that would be needed to reduce the overall effect size to below the point of statistical significance. The results of the fail-safe *N* calculations support the robustness of the overall mean effect size with a fail-safe *N* of 22. We supplemented the fail-safe *N* with a funnel plot regression (Macaskill, Walter, & Irwig, 2001). We fitted a regression line to the data using the study size as the independent variable and the mean weighted effect size as the independent variable. A regression slope of 0 is expected when there is no publication bias (Macaskill et al., 2001). Funnel plot analysis showed that the overall regression slope did not differ significantly from zero, $B = .001$, $t(27) = .799$, $p = ns$ (Figure 1).

The effect sizes for therapy modality were robust. The fail-safe *N* for play therapy was 134, and the fail-safe *N*s for the other six of the seven other modality elements were all greater than the fail-safe *N* for play therapy. However, only one unpublished, non-significant effect size would be needed to generate a non-significant effect size for "other" therapy. The effect sizes for behavior outcomes and psychological distress were robust and resulted in fail-safe *N*s of 100 or greater. Less robust but still requiring a number of zero effect sizes was other secondary outcomes with a fail safe *N* of 83. Self-concept and social functioning needed 10 and 11 non-significant effect sizes, respectively.

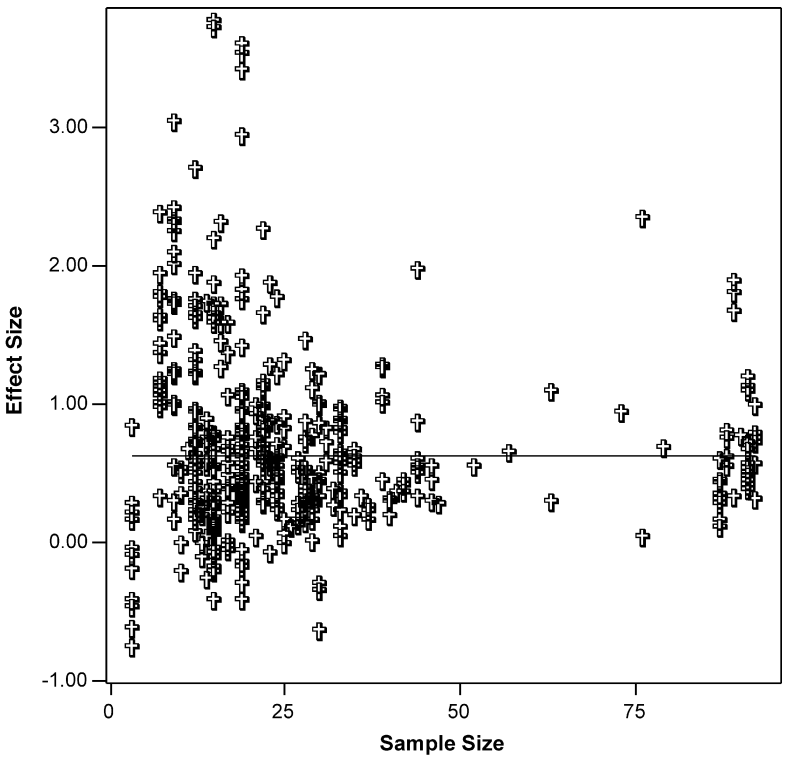

Figure 1. Funnel plot of effect sizes by sample size.

Thirty-three unpublished, non-significant effect sizes would be needed to generate a non-significant effect size for ethnicity. The fail-safe *N*s for number of months in therapy and number of sessions in therapy were 95 and 77, respectively. Forty-one unpublished, zero effect sizes would be needed to create a non-significant effect size for intrafamilial abuse.

Discussion

The results of the meta-analysis indicate that treatment appears to be better than no treatment for outcomes of sexually abused children and adolescents, and this difference did not seem to be due to study quality. The effectiveness of each treatment modality differed based on the secondary problem examined. For behavior outcomes, abuse-specific, supportive, and group therapy seemed to be the most effective, whereas cognitive-behavioral and individual therapy had the largest effect sizes for psychological distress. Self-concept problems seemed to respond best to cognitive-behavioral therapy, abuse-specific therapy, and group therapy and also seemed to be the most likely to correct themselves without treatment. Play therapy seemed to be the most effective treatment for social functioning problems. For "other problems," which included issues such as academic functioning and risk assessment abilities, abuse-specific, play, supportive, cognitive-behavioral, and group therapy showed the greatest effect sizes. Ethnicity of the sample, the presence of intrafamilial abuse, and length of therapy were significant moderators of the effectiveness of treatment, but age, gender, and therapist training were not.

There was a large degree of variability within treatment effect sizes, which was expected. However, there was also a significant degree of variability within the effect sizes for no treatment. This result suggests that there may be some children who show positive changes without the benefit of child sexual abuse treatment, indicating higher levels of resiliency. Edmond, Auslander, Elze, & Bowland (2006) found that nearly half of their sample of adolescents who experienced moderate to severe sexual abuse were psychologically functioning well. These girls showed high levels of resiliency in areas of education, orientation to the future, peer influence, and family support. Another possible explanation for the variability within the no treatment group stems from the manner in which the no treatment conditions were coded. A condition was coded as "no treatment" if the participants did not receive treatment from the therapists identified in the study during the time between the pre- and post-tests. Therefore, participants who were placed on an active wait list or were given a referral for community therapy were coded as "no treatment." It may be that there were some inherent differences between the children in these groups and those in the treatment groups.

Moderator analyses suggested that the differences among treatment modalities were influenced by characteristics of the child and therapy. The child's ethnicity was found to be associated with differences in treatment effect sizes; as the percent of non-Caucasians increased, so did the effectiveness of treatment, suggesting that this child characteristic lends itself to better treatment outcomes within the context of research settings. It may be that participants from minority populations were given more attention by the therapist because of their underserved nature. It may also be that non-Caucasians had more pre-existing problems and were able to gain more from the intervention. Katerndahl, Burge, Kellogg, & Parra (2005) found that Hispanic women, as compared to Caucasian women, were more likely to be sexually abused by a family member and experience more shame associated with the sexual abuse. Ullman and Filipas (2005) assessed an ethnically-diverse group of college students and found that Black and Hispanic women

were more likely than Caucasian and Asian women to report more severe forms of sexual abuse and more frequent episodes of mild abuse. The ethnic minority participants were also more likely to report that others reacted with embarrassment and disgust to disclosure of the abuse than the Caucasian participants. Since few studies included in the present study reported ethnicity, this result should be interpreted with caution.

The results of the present meta-analyses provide empirical evidence that, at least within the context of research, longer durations of therapy are associated with better outcomes for children who are suffering from secondary problems related to child sexual abuse. One possible explanation is that time produces improvements in symptoms independent of treatment.

A higher percentage of intrafamilial abuse was associated with lower effect sizes. It may be that intrafamilial abuse is more damaging to the child than extrafamilial abuse because of the betrayal of trust experienced by the child (Finkelhor, 1987). If sexual abuse is perpetrated by a family member, the child may realize that a person she trusted, perhaps someone she was dependent upon, has treated her without regard to her well-being. The child may experience more serious secondary problems as a result. Other abuse characteristics such as duration and frequency of abuse, number of perpetrators, co-occurrence with physical or emotional abuse, severity of abuse, or age of perpetrator could not be examined because so few studies reported this information. Preexisting factors of the child or the family also could not be examined in the present research.

There was significant variability within each secondary problem outcome. Within treatment for social functioning, play therapy was associated with higher effect sizes than all other therapy elements. This finding is consistent with Bratton, Ray, Rhine, & Jones (2005) who found that play therapy was especially effective on childhood social adjustment. Play therapy in a group setting may be more effective for social functioning because it offers children time to interact with other children in a safe environment. Cognitive-behavioral therapy, abuse-specific therapy, and group therapy were associated with higher effect sizes for self-concept. Cognitive-behavioral therapy and abuse-specific therapy may be more effective for self-concept because they can directly educate children on the influence of abuse-experiences on self-concept, as well as help the children challenge negative core beliefs about the self (Cohen, Berliner, & March, 2000). Friedrich (2002) suggested that group therapy can provide an opportunity for abused children to hear feedback from peers and incorporate this information into a stronger sense of self, as well as increase their sense of self-efficacy as they work through their sexual abuse experiences and achieve a sense of closure. Group therapy may be more effective for self-concept because it provides children with an opportunity to learn that they are not alone in their experiences and other children have survived similar experiences.

The large effect sizes for behavior outcomes associated with supportive, abuse-specific, and group therapy elements may be due to the opportunities for children to witness appropriate interactions in supportive therapy, see and practice appropriate behavioral interactions in group therapy, and to relate to the abusive experiences of others in abuse-specific therapy. Family therapy was associated overall with relatively low effect sizes, which is not consistent with previous findings. Summarizing the literature, Berliner and Elliott (2002) stated that parental involvement in abuse-specific therapy seems to be particularly important in reducing behavior problems by assisting parents to realize the positive impact of parental support and understanding in the recovery of sexually-abused children. Although family therapy may not be the most effective treatment of behavior problems, group family therapy that incorporates elements of supportive and abuse-specific therapies may be effective because non-offending family members may gain strength from the understanding that others are experiencing similar difficulties.

For psychological distress, cognitive-behavioral, abuse-specific, and individual therapy modalities were associated with higher effect sizes than all other therapy elements. This result is consistent with multiple literature reviews which have shown that abuse-specific cognitive-behavioral treatment is effective for posttraumatic stress reactions (e.g., Cohen, Berliner, & Mannarino, 2000; Saywitz et al., 2000). It may be more comfortable for children to discuss issues such as depression or anxiety when alone with a therapist as opposed to openly admitting difficulties in the presence of others. Psychological distress is also something that children may not understand well and may best be explained and treated individually by a therapist. Cognitive-behavioral elements may be more effective because they can in some cases provide a faster alleviation of psychological distress symptoms (Cohen, Berliner, & March, 2000; Cohen, Berliner, & Mannarino, 2000), although the underlying cause of those symptoms may not yet have been addressed.

Limitations

Included studies. The main limitation of the studies included in this analysis was small sample sizes. The power associated with smaller sample sizes is very low, and the results of studies with low power are more difficult to interpret and/or replicate. Future studies should try to use larger sample sizes to avoid these problems. A second limitation of the studies included in these analyses was the lack of explanation or description of the therapy used. This presented a problem with coding decisions. Future research should attempt to define more accurately the therapy modality utilized. Including this information would be helpful for future meta-analyses and practicing therapists. Finally, there were many studies that failed to report sample characteristics, such as mean age, gender, ethnicity, abuse characteristics, level of familial support, and parenting styles.

Present analysis. Caution should be taken regarding the effectiveness of some of the therapy modalities included in the meta-analysis. While the effectiveness of some modalities (e.g., cognitive-behavioral) is based on over a dozen studies, the effectiveness of others (e.g., play therapy) is based on only a few studies. The present research was exploratory in nature. Presently, no consensus exists as to what treatment characteristics are important in child and adolescent sexual abuse therapy. Although reviews (Finkelhor & Berliner, 1995; Saywitz et al., 2000) have discussed the different treatments that currently exist, none has presented an adequate theory explaining the benefits and consequences of each treatment. The results of this meta-analysis may help to develop a theoretical approach to sexual-abuse treatment decision-making. However, because no specific theory was tested in the present research, the current findings should be interpreted as exploratory.

Conclusions

Treatment of sexual abuse in children seems to have a greater effect on secondary problems than no treatment, at least within the context of structured research on child sexual abuse treatment. There appears to be variability among treatment effectiveness and secondary problems. The results of the present study suggest that the effectiveness of different treatments will be different across secondary problem outcomes. The main implication of the current study's findings is that the most beneficial treatment for a client is likely to be client-specific and rely heavily on the client's secondary problems (e.g., behavior problems,

psychological distress, etc.). Friedrich (1990) highlighted the need for diverse treatments to meet the needs of the heterogeneous population of sexually abused children and adolescents; the results of the current meta-analysis supports this view. When a therapist is attempting to decide what therapy to use for a sexually abused child, the choice of therapy modality should depend on the child's main presenting secondary problem. More research should be performed investigating other possible moderators and should more clearly report methodology and sample characteristics. Since the problems experienced by sexually abused children are so variable (Finkelhor & Berliner, 1995), the treatments available for these children should also be as variable to serve their needs more effectively.

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Résumé/Resumen

French- and Spanish-language abstracts not available at time of publication.