

# Review

## CHILD SEXUAL ABUSE IN THE ETIOLOGY OF DEPRESSION: A SYSTEMATIC REVIEW OF REVIEWS

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**Background:** *Despite a large amount of research, there is considerable controversy about the role that child sexual abuse plays in the etiology of depression. To prevent interpretative difficulties, mistaken beliefs, or confusion among professionals who turn to this literature for guidance, this article addresses the best available scientific evidence on the topic, by providing a systematic review of the several reviews that have investigated the literature on the issue.* **Methods:** *Seven databases were searched, supplemented with hand search of reference lists from retrieved papers. The author and a psychiatrist independently evaluated the eligibility of all studies identified, abstracted data, and assessed study quality. Disagreements were resolved by consensus.* **Results:** *Four reviews, including about 60,000 subjects from 160 studies and having no limitations that could invalidate their results, were analyzed. There is evidence that child sexual abuse is a significant, although general and nonspecific, risk factor for depression. The relationship ranges from small-to-medium in magnitude and is moderated by sample source. Additional variables may either act independently to promote depression in people with a history of sexual abuse or interact with such traumatic experience to increase the likelihood of depression in child abuse survivors.* **Conclusions:** *For all victims of abuse, programs should focus not only on treating symptoms, but also on reducing additional risk factors. Depressed adults who seek psychiatric treatment should be enquired about early abuse within admission procedures. Depression and Anxiety 27:631–642, 2010. © 2010 Wiley-Liss, Inc.*

**Key words:** *depression; child abuse; sexual abuse; etiology; risk factors; developmental psychopathology; systematic review*

### INTRODUCTION

Concern over the adverse effects of depression on a person's general health, well-being, quality of life, and social, occupational, or other important areas of functioning is reflected in the increase in research in the etiology of depressive symptoms and disorders are aimed toward understanding how and why some people develop a depressive disorder in order to implement prevention and treatment efforts.

Much of the research examining the etiology of depression has focused on the role of stressful life events, especially early traumatic events, such as early experiences of sexual abuse. A large amount of studies and literature reviews, addressing the association between child sexual abuse and depression, has appeared over the past 20 years, so much so that, in the literature on child sexual abuse, depressive symptoms and disorders are the

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most commonly reported<sup>[1,2]</sup> and the best documented<sup>[3]</sup> outcomes in survivors of child sexual abuse.

Several literature reviews have suggested that child sexual abuse is a risk factor for the development of psychological problems, especially depression. Nevertheless, such large body of research has not been unanimous in its conclusions. Indeed, there are fundamental questions regarding the nature of the relationship between child sexual abuse and depression that remain unanswered.

For example, some reviews have concluded that child sexual abuse is related to depression (e.g.<sup>[4-6]</sup>), expressing caution about a causal relationship between child sexual abuse and depression or explicitly stating that such relationship might be mediated by other variables.<sup>[7]</sup> Other reviews have stated that survivors of child sexual abuse show higher levels of depressive symptoms or disorders (e.g.<sup>[8-12]</sup>) or are at increased risk for depression (e.g.<sup>[13-15]</sup>), implying a causal relationship between child sexual abuse and depression or explicitly stating that such relationship persists even when controlling for other variables that may be independently related to the development of depression.<sup>[16]</sup>

Furthermore, there is considerable controversy concerning those variables (gender, age when abused, severity of abuse, and relationship to the perpetrator) that are usually highlighted as potential moderators of the association between child sexual abuse and depression.

For example, some reviews have shown great evidence of depression in female subjects with a history of childhood sexual abuse (e.g.<sup>[9,15,17,18]</sup>), suggesting that women who have been victims of child sexual abuse are more likely to develop a depressive symptomatology than men with a history of childhood sexual abuse (e.g.<sup>[3,16]</sup>). Other reviews have shown high levels of depression also in male survivors of child sexual abuse,<sup>[2,10,14,19]</sup> with some studies (e.g.<sup>[20,21]</sup>) revealing that sexually abused boys have worse outcomes.

Furthermore, although some reviews have revealed that increased rates of depression are related to both the frequency and duration of sexual abuse experiences,<sup>[12]</sup> others have suggested that higher levels of depression are associated with contact sexual abuse<sup>[3,5,16]</sup> or abuse by a primary caregiver.<sup>[3,5,12]</sup>

Therefore, although efforts to summarize the literature have resulted in several qualitative and quantitative reviews, even these have generated inconsistent results and conclusions have not yet been definitively drawn.

Much of the controversy in the literature might be accounted for, in part, by definition, sampling, and measurement differences between studies<sup>[12]</sup> as well as by the methodological limitations of the literature.<sup>[22,23]</sup> Indeed, many studies are characterized by serious methodological problems, including poor sampling methods, absence of matched comparison groups, and inadequate control for effect modifiers and confounders (see<sup>[17,24,25]</sup>). Furthermore, many reviews are characterized by imprecision and subjectivity.<sup>[22,23]</sup> For example, some reviewers have specified neither the

data sources that were searched nor the criteria used for including studies, paying more attention to study findings indicating harmful effects.

In conclusion, although studies and reviews examining the association between child sexual abuse and depression abound, the inconsistency in their conclusions may create interpretative difficulties, mistaken beliefs, or confusion among all physicians, psychologists, other professionals who treat children, policymakers, and other individuals responsible for the welfare of children who turn to this literature for guidance.

In response to these difficulties and uncertainties and with the current high level of societal interest in both depression and childhood abuse, it seems evident that, despite a large amount of research addressing the potential relationship between child sexual abuse and depression, the role of child sexual abuse in the etiology of depression needs further careful consideration. To implement research and health policy, an analysis of what is currently known about the issue aimed to know the factors that promote the development of a depressive disorder in people who have been sexually abused in childhood is required.

In order to address the best available scientific evidence on the topic, this article provides a qualitative and semi-quantitative analysis of the findings of several reviews that have investigated the literature on the relationship between child sexual abuse and depression.

## METHODS

Given that this systematic review is part of a more comprehensive review of the literature on child sexual abuse, the methods are described in detail elsewhere<sup>[26]</sup> and are only briefly described here.

Two methods were used to obtain relevant studies: an internet-based search and a manual search.

First, seven internet-based databases (AMED, Cochrane Reviews, EBSCO, ERIC, MEDLINE, PsycINFO, and ScienceDirect) were searched for articles published between January 1966 and December 2008. Separate searches were conducted for the keywords child(hood) sexual abuse and child(hood) sexual maltreatment.

Second, further articles were identified by a manual search of reference lists from retrieved papers.

Studies were included if they (i) appeared in peer-reviewed journals; (ii) were published in full; (iii) were critical reviews of the literature; (iv) were not dissertation papers, editorials, letters, conference proceedings, books, and book chapters; (v) reviewed studies sampling human subjects; (vi) investigated medical, neurobiological, psychological, behavioral, sexual, or other health problems following childhood sexual abuse; and (vii) had primary and sufficient data derived from longitudinal, cross-sectional, case-control, or cohort studies. For the purpose of this systematic review, only reviews that investigated depressive symptoms or disorders following childhood sexual abuse were included.

According to guidelines for systematic reviews,<sup>[27-32]</sup> data were abstracted and study quality was assessed on the basis of the following criteria: (i) evidence identification, i.e. the data sources (e.g. computerized databases, key journals, or reference lists from pertinent articles and books), used to identify studies, including years searched, keywords, and constraints; (ii) study selection, i.e. the

criteria used to select studies for inclusion in the review; (iii) data extraction, i.e. the process by which researchers obtained the necessary information about study characteristics and findings from the included studies; (iv) quality assessment, i.e. the criteria or guidelines used for assessing data quality and validity; (v) data synthesis and analysis, i.e. the methods used to synthesize and analyze the results and the strength of evidence as well as the description of the main results in an objective, rigorous, and transparent fashion, with the highest quality evidence available receiving the greatest emphasis.

On the basis of these criteria, each study was assigned one of the following ratings: "good" (study meets all criteria well), "fair" (study does not meet one criterion), or "poor" (study does not meet more than one criterion). Those studies that were judged "poor" were rejected, because they had important methodological limitations that could invalidate their results.

Given that the assessment of all the reports by at least two researchers working independently may limit biases, minimize errors, improve reliability of findings, reduce the possibility that relevant reports will be discarded, and ensure that decisions and judgments are reproducible,<sup>[27,29]</sup> the author, RM, and a psychiatrist, professor of Criminology, independently evaluated the eligibility of all studies identified, abstracted data, and assessed study quality. Disagreements among authors were discussed and resolved by consensus after review of the article and the review protocol.

## RESULTS

A summary of the study selection process is illustrated in Figure 1. Twenty thousand five hundred and thirty-five articles were identified. The internet-based search identified 20,502 articles, 0 from AMED,

9 from Cochrane, 1,550 from EBSCO, 1,154 from ERIC, 2,514 from MEDLINE, 7,956 from PsycINFO, and 7,319 from ScienceDirect. Thirty-three articles were identified by the manual search of reference lists. Two hundred and forty-four full-text articles were retrieved for more detailed evaluation and 45 fulfilled all inclusion criteria. Of these, 41 did not meet more than 1 of the quality criteria. For these reasons, these studies were judged "poor" and were rejected.

Four reviews were included in this systematic review (Table 1).

## DESCRIPTION OF STUDIES

The four reviews included in this systematic review are described in Table 1.

All these reviews detailed the data sources that were used to identify studies, the criteria used to select studies for inclusion in the review, and the process by which researchers obtained the necessary information about study characteristics and findings from the included studies.

All the reviews did not assess data quality and validity and aggregated different study findings, particularly those with different levels of methodological quality. However, all the reviews described the main results in an objective fashion, outlined the methods used to obtain these results, considered the strength of evidence, explored whether any observed effects were consistent across studies, and investigated possible reasons for any inconsistencies. Indeed, all these

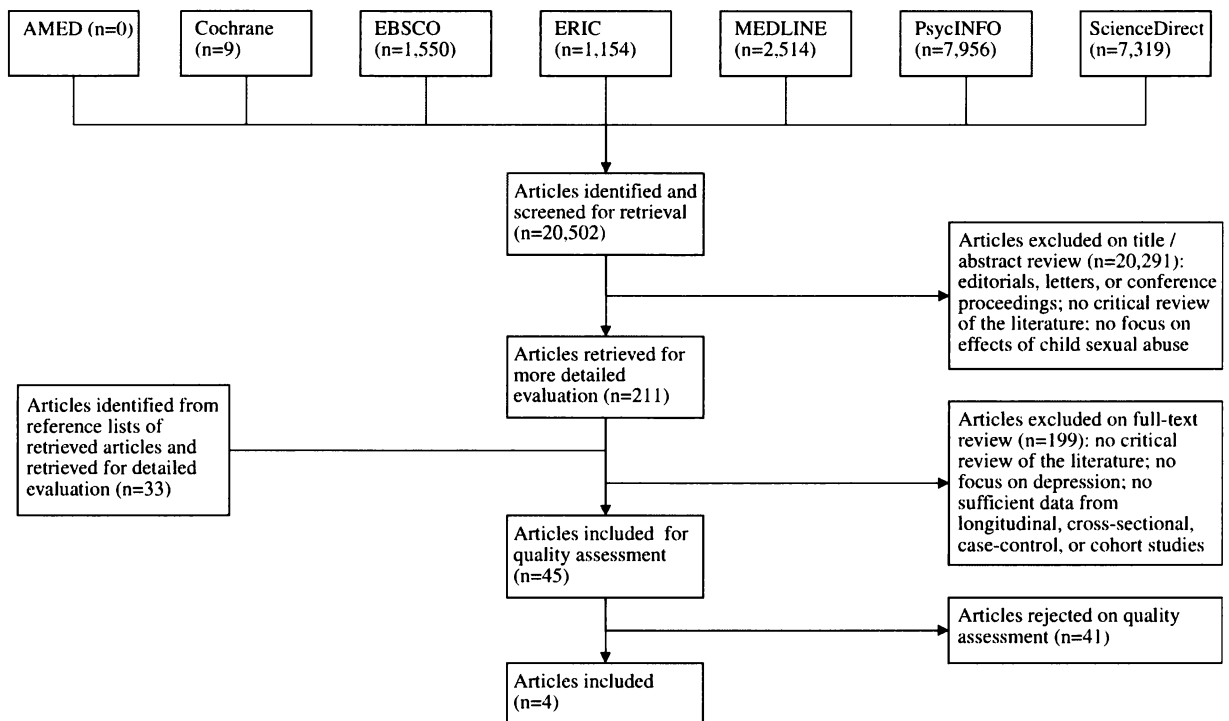


Figure 1. Summary of study selection process.

TABLE 1. Description and results of the included reviews

Source	Main methods	Subjects	Outcome variables	Moderator variables	Significant outcomes (effect sizes or odds ratios [95% confidence interval], homogeneity)	Significant moderators (between-group homogeneity)
Jumper	Systematic search; study selection; meta-analysis	Male and female adult patients and nonpatients (26 studies, 30 samples, about 7,000 subjects)	Depression, self-esteem, other psychological problems (i.e. suicidal ideation or behavior, anxiety, personality, psychotic, somatoform, and dissociative disorders)	Publication date, sample source, gender of the subjects, level of contact, or consent of abuse	Depression: ( $r = .22$ [.21-.35], $P < .001$ ; $Q_T = 84.11$ , $P < .001$ ), self-esteem: ( $r = .17$ [.14-.34], $P < .001$ ; $Q_T = 85.95$ , $P < .001$ ), other ( $r = .27$ [.20-.32], $P < .001$ ; $Q_T = 147.77$ , $P < .001$ )	Depression: sample source ( $Q_B = 49.64$ , $P < .001$ ), contact/consent ( $Q_B = 33.09$ , $P < .001$ ), self-esteem: sample source ( $Q_B = 64.59$ , $P < .001$ ), contact/consent ( $Q_B = 65.43$ , $P < .001$ ), publication date ( $Q_B = 15.30$ , $P < .01$ ), gender ( $Q_B = 29.61$ , $P < .001$ ); other: sample source ( $Q_B = 65.75$ , $P < .001$ ), contact/consent ( $Q_B = 15.28$ , $P < .001$ ), publication date ( $Q_B = 20.25$ , $P < .001$ )
Neuman	Systematic search; study selection; meta-analysis	Female adult patients or nonpatients (38 studies, 11,162 subjects)	Overall psychopathology; anger, anxiety, depression, revictimization, self-mutilation, sex problems, substance abuse, suicide, self-concept, interpersonal problems, dissociation, obsessions or compulsions, somatization, posttraumatic stress, and general symptoms	Publication date and form, sample size and source, age of subjects at the time of assessment, assessment of abuse, type of statistic, and relationship to the perpetrator	Overall ( $d = .37$ [.33-.41]; $Q = 62.36$ , $P < .01$ ), depression ( $d = .41$ [.36-.46]), anger ( $d = .39$ [.25-.51]), anxiety ( $d = .40$ [.34-.47]), revictimization ( $d = .67$ [.50-.84]), self-mutilation ( $d = .42$ [.19-.64]), sex problems ( $d = .36$ [.30-.42]), substance abuse ( $d = .41$ [.31-.51]), suicide ( $d = .34$ [.24-.44]), self-concept ( $d = .32$ [.32-.47]), interpersonal problems ( $d = .39$ [.22-.46]), dissociation ( $d = .39$ [.32-.47]), obsessions/compulsions ( $d = .34$ [.22-.46]), somatization ( $d = .34$ [.24-.45]), posttraumatic stress ( $d = .52$ [.44-.59]), general symptoms ( $d = .46$ [.40-.52])	Overall impairment: sample source ( $Q_B = 9.40$ , $P < .01$ )

Paolucci	Systematic search; study selection; meta-analysis	Male and female young and adult patients and nonpatients (37 studies, 88 samples, 25,367 subjects)	Posttraumatic stress, depression, suicide or self-injury, early sex or prostitution, sex perpetration, intelligence or learning	Gender and socioeconomic status of subjects at the time of assessment, level of contact and frequency of abuse, relationship to the perpetrator, and age when abused	Depression ( $d = .44$ [41–47]), posttraumatic stress ( $d = .40$ [37–43]), suicide/self-injury ( $d = .44$ [40–48]), early sex/prostitution ( $d = .29$ [25–32]), sex perpetration ( $d = .16$ [11–21]), intelligence/learning ( $d = .19$ [12–26])	Overall impairment: incest ( $r = .09$ ), gender/consent interaction ( $z = 2.51$ , $P > .02$ ; females, $r = .11$ [09–13]; $\chi^2 = 14.50$ )
Rind et al.	Systematic search; study selection; meta-analysis	Male and female adult nonpatients (59 studies, 51 samples, 15,635 subjects)	Overall psychopathology, alcohol, anxiety, depression, dissociation, eating disorders, hostility, interpersonal sensitivity, locus of control, obsessions or compulsions, paranoia, phobia, psychosis, self-esteem, sex problems, social impairment, somatization, suicide, general symptoms	Publication form, study site, sampling strategy, gender and age of the subjects at the time of assessment, sampling strategy, assessment of abuse, age of victim in abuse definition, level of contact, consent, force, frequency and duration of abuse, and relationship to the perpetrator	Overall ( $r = .09$ [08–11]; $\chi^2 = 49.19$ , $P > .50$ ), depression ( $r = .12$ [10–14]; $\chi^2 = 25.71$ ), alcohol ( $r = .07$ [02–12]; $\chi^2 = 2.97$ ), anxiety ( $r = .13$ [10–15]; $\chi^2 = 4.62$ ), dissociation ( $r = .09$ [04–15]; $\chi^2 = 1.86$ ), eating disorders ( $r = .06$ [02–10]; $\chi^2 = 9.92$ ), hostility ( $r = .11$ [06–16]; $\chi^2 = 11.22$ , $P < .05$ ), interpersonal sensitivity ( $r = .10$ [06–15]; $\chi^2 = 11.78$ ), obsessions/compulsions ( $r = .10$ [06–15]; $\chi^2 = 5.01$ ), paranoia ( $r = .11$ [07–16]; $\chi^2 = 10.34$ ), phobia ( $r = .12$ [07–17]; $\chi^2 = 8.08$ ), psychosis ( $r = .11$ [06–15]; $\chi^2 = 10.13$ ), self-esteem ( $r = .04$ [01–07]; $\chi^2 = 51.31$ , $P < .05$ ), sex problems ( $r = .09$ [07–11]; $\chi^2 = 39.49$ , $P < .05$ ), social impairment ( $r = .07$ [04–10]; $\chi^2 = 20.37$ ), somatization ( $r = .09$ [06–12]; $\chi^2 = 15.20$ ), suicide ( $r = .09$ [06–12]; $\chi^2 = 10.94$ ), general symptoms ( $r = .12$ [08–15]; $\chi^2 = 18.77$ )	

reviews undertook a quantitative analysis of the data (i.e. meta-analysis), to infer whether child sexual abuse was significantly associated with depressive symptoms or disorders and to estimate the strength of this association. These meta-analyses reported effect sizes and sources of variation between studies, outlining how heterogeneity was explored and quantified.

For all these reasons, these reviews were judged “fair”, because they did not meet the fourth criterion (i.e. they lacked a formal “quality assessment”).

All the meta-analyses were published between 1995 and 2001 and reviewed 160 studies (including 207 different subject samples, with about 60,000 subjects), although 23 (14.4%) studies were analyzed by more than 1 review.

The following sample types were investigated: both adults and children or adolescents, only adults, both males and females, and only females.

These reviews assessed the psychological effects, including depressive symptomatology, of child sexual abuse. In the studies included in each review, depressive symptoms were usually measured by depression inventories, scales, or questionnaires, investigator-authored items or questions, or depression-related items or subscales from clinical questionnaires, scales, and inventories.

The following moderator variables were analyzed: form and date of publication of the study, site of the study, size and source of the samples, gender, socio-economic status, and age of the subjects at the time of assessment, sampling strategy, method of assessment of abuse (e.g. questionnaire list), type of statistic used, definition of child sexual abuse based on maximum age of victim, level of contact, consent, force, frequency and duration of abuse, relationship to the perpetrator (e.g. parent), and age when abused.

A number of procedures, such as multiple regression, analysis of variance, and test of categorical models, were used to determine if moderator variables accounted for significant heterogeneity in effect size estimates.

The main findings of the four meta-analyses included in this systematic review are qualitatively and semi-quantitatively analyzed in an evidence-based, objective, and balanced fashion, with the highest quality evidence available receiving the greatest emphasis.<sup>[33]</sup> To represent the degree of the relationship between child sexual abuse and depression, the effect size estimators  $d$  and  $r$  were used. Positive  $d$  and  $r$  values indicate higher levels of symptomatology for sexually abused participants compared to control participants. According to Cohen,<sup>[34]</sup>  $d$  of .20, .50, and .80, and to  $r$  of .10, .30, and .50 correspond to “small,” “medium,” and “large” effect sizes.

### **STRENGTH OF THE ASSOCIATION BETWEEN CHILD SEXUAL ABUSE AND DEPRESSION**

In the review by Jumper,<sup>[35]</sup> three meta-analyses were provided to address the association of child sexual

abuse with depression, self-esteem, and other psychological problems. Eighteen studies, yielding 20 samples with 3,546 subjects, were used in the depression meta-analysis. Results showed that child sexual abuse was significantly related to adult depression. The magnitude of such relationship was small-to-medium. Child sexual abuse was significantly related also to self-esteem impairment and other psychological problems.

Neuman and co-workers<sup>[36]</sup> provided fifteen meta-analyses to address the relationship of child sexual abuse with a variety of psychological, behavioral, and sexual problems. Twenty-four studies were used in the depression meta-analysis. Results showed that child sexual abuse was significantly related to adult depression. Such association was small-to-medium in magnitude. Child sexual abuse was significantly related also to all the other problems.

In the review by Paolucci and co-workers,<sup>[37]</sup> six meta-analyses were undertaken to address the association of child sexual abuse with a number of psychological, behavioral, and sexual outcomes. Twenty-five studies, with 6,417 subjects, were used in the depression meta-analysis. Results showed a significant association between child sexual abuse and depression. Such relationship was nearly medium in magnitude. Child sexual abuse was significantly related also to all the other outcomes.

Rind and co-workers<sup>[23]</sup> provided eighteen meta-analyses to address the relationship of child sexual abuse with a variety of psychological, behavioral, and sexual problems. Twenty-two samples, with 7,778 subjects, were used in the depression meta-analysis. Results showed that child sexual abuse was significantly related to depression. The magnitude of such relation was of small size. Child sexual abuse was significantly related to several other outcomes.

### **MODERATORS OF THE RELATIONSHIP BETWEEN CHILD SEXUAL ABUSE AND DEPRESSION**

In the review by Jumper,<sup>[35]</sup> the homogeneity statistic indicated significant heterogeneity among effect size estimates. In the depression meta-analysis, although none of the categorical models proved to be completely adequate moderators of effect size variance, analysis of effect sizes revealed that some explanation of effect size variance was partially accounted for by sample source and definition of abuse. Subject samples drawn from clinical populations demonstrated larger effect sizes than did subject samples drawn from community, student, or other populations. Contact abuse and consensual abuse generated larger effect sizes than did non-contact abuse.

Neuman and co-workers<sup>[36]</sup> found a significant heterogeneity among effect sizes. Focusing on the sample-level rather than symptom-level effect sizes, the authors found that the variability in sample-level effect sizes could be accounted for by sample source. Clinical

samples generated larger effect sizes. Furthermore, there was a tendency for studies with smaller samples ( $N < 50$ ) to yield comparatively high mean effect sizes, compared to studies that examined larger numbers of subjects.

In the review by Paolucci and co-workers,<sup>[37]</sup> a series of analyses of variance revealed that none of the moderators was statistically significant.

Rind and co-workers,<sup>[23]</sup> found that the effect sizes were generally homogeneous. Further analysis of the sample-level effect sizes revealed that larger effect sizes were significantly linked to intrafamilial abuse and definition of abuse including both willing and unwanted sex (only for women). Importantly, certain family variables (e.g. conflict, pathology, neglect, physical or emotional abuse) were confounded with child sexual abuse and explained considerably more variance than abuse; the relationship between a history of child sexual abuse and depression generally became nonsignificant when studies controlled for family environment. Indeed, for the relationship between family environment and depression, effect size estimate was medium in size ( $r = .38$ ); in contrast, for the relationship between child sexual abuse and depression, effect size was small ( $r = .12$ ).

## DISCUSSION

Four meta-analytic reviews addressing the potential relationship between child sexual abuse and depression and having no important limitations that could invalidate their results were included in this systematic review.

In considering the results as a whole, there is evidence that across methodologies, samples, and measures, survivors of child sexual abuse are significantly at risk of depression. However, it should be noted that child sexual abuse was significantly related also to a variety of other forms of psychopathology; thus, child sexual abuse is not a specific risk factor for depression. Instead, this early traumatic experience may contribute to the development of several other symptoms or disorders.

In part, because of the variation across sample characteristics in the four meta-analyses, the magnitude of the relationship between child sexual abuse and depression ranged from small-to-medium.

Moderator analyses revealed that some explanation of effect size variance was partially accounted for by sample source. Indeed, subject samples drawn from clinical populations generated larger effect size estimates than did subject samples drawn from community, student, or other populations, although in all groups outcomes were significant. Thus, it is apparent that survivors of child sexual abuse among clinical populations show greater evidence of depressive symptoms or disorders than do survivors of child sexual abuse among nonclinical populations. It is possible that clinical samples may exclude well-adjusted people with a

history of child abuse or constitute the negative extreme of abuse outcomes.<sup>[38]</sup> Furthermore, it has been noted that data coming from clinical samples are vulnerable to several biases that threaten their validity.<sup>[22,39]</sup> Conversely, nonclinical samples (e.g. college samples) might include more well adjusted people with a history of child abuse. For example, it has been suggested that students need a certain level of wellness to handle the rigors of college life (see<sup>[35]</sup>). Moreover, it is also possible that some negative long-term effects may have not yet manifested at college age (see<sup>[23]</sup>).

It is noteworthy that all the other moderators generated conflicting or nonsignificant results. Thus, the results of this systematic review do not confirm suspicions that some variables concerning aspects of the abuse experience (younger age when abused, incestuous forms of abuse, contact, use of force, higher frequency, and longer duration of abuse) increase the likelihood of depressive symptoms or disorders in survivors of child sexual abuse.

Although the results of this systematic review provide clear evidence that the relationship between child sexual abuse and depression does exist, the presence of confounding variables and the generally poor quality of the studies included in each review do not allow for causal inferences to be made; thus, findings must be interpreted with caution.

Studies included in each review were generally methodologically limited, given that they are characterized by a number of design, sampling, and measurement problems, such as poor sampling methods, absence of appropriate comparison groups, inadequate operationalization and measurement of abuse histories and/or depressive symptoms, insufficient control for effect modifiers and confounders, or designs inappropriate to prove causality.

For example, most studies relied solely on self-report measures of abuse history and/or depressive symptomatology, rather than relying on formal classification systems to operationalize depression and/or child abuse, with some studies employing measures of questionable reliability and validity (e.g. investigator-authored questions or only single item indicators of depression or child sexual abuse) instead of well-established measures.

Importantly, the vast majority of studies included in each review were retrospective in design, in that adults were asked about early experiences of sexual abuse. Research including reported data about an event or a series of events that occurred in the past tends to be threatened by the limitations of the individual's memory and the influence of disease/exposure status on the recalling process in humans.<sup>[40,41]</sup> Retrospective designs have been explicitly demonstrated to be capable of producing false positive results, because such designs tend to be subject to recall bias as they require participants to rely on their memory to identify what in the past might have caused their current disease which is most often of long latency. For example, some

studies that used prospective and retrospective victimization information<sup>[42,43]</sup> have shown that retrospective self-reports of child abuse were associated with significant increases in risk for drug abuse and pain problems in adulthood. In contrast, prospectively, abused individuals were not at increased risk for drug abuse and pain symptoms. In a recent cross-sectional community survey with retrospective reports of childhood adversities,<sup>[44]</sup> the fact that associations of childhood adversities with first onset of anxiety, mood, disruptive behavior, and substance use disorders increased in magnitude, when the length of recall raised the possibility of recall bias inflating estimates. Thus, results from studies employing retrospective designs should be interpreted with caution, given the demonstrated flaws of this methodology. Indeed, recall bias represents a major threat to the internal validity and credibility of studies using self-reported data, because it tends to inflate the estimated risk attributed to the exposure under investigation and this could potentially yield spurious association.<sup>[40,41]</sup>

Most importantly, with few exceptions, most studies did not control for the overlap with other stressful events, such as other forms of maltreatment that often accompany child sexual abuse. Therefore, it is unclear whether higher rates of depressive symptoms and disorders in people who have been sexually abused in childhood are truly due to child sexual abuse or whether they may be attributable to the co-occurrence of other traumatic experiences, such as emotional or physical maltreatment, with the sexual abuse.

Speaking more broadly, other stressful events and adverse psychosocial factors might also be present in an abused child's life or environment. Greenand co-workers<sup>[44,45]</sup> examined the joint associations of 12 childhood adversities with the first onset and persistence of anxiety, mood, disruptive behavior, and substance use disorders, using substantively complex multivariate models. Results showed that childhood adversities were highly prevalent and intercorrelated. Childhood adversities associated with maladaptive family functioning (e.g. family violence and parental mental illness, substance abuse, or criminality) were the strongest correlates of disorder onset and persistence throughout the life course. Multiple childhood adversities involving maladaptive family functioning had significant subadditive associations with the same outcomes.

In sum, because of these methodological limitations, associations were confounded and causal inferences not feasible.

Furthermore, it is possible that several antecedent or concurrent third variables may either act independently to promote depression in people with a history of child sexual abuse or interact with early traumatic experience to increase the likelihood of depression in survivors of child sexual abuse.

First, it has been suggested that certain variables, especially the negative family circumstances in which

many maltreated children are raised (e.g. other forms of child maltreatment or high family conflict or dysfunction), might independently account for the higher levels of depression reported by subjects with a history of child sexual abuse (see, for example,<sup>[46,47]</sup>).

For example, some reviews not included in this systematic review<sup>[7,48]</sup> have shown that the evidence for an association between child emotional maltreatment and depression is more consistent than that for a relationship between child sexual abuse and depression. Indeed, it has been noted that a large proportion of the studies on child emotional abuse that have controlled the overlap of emotional maltreatment with child sexual abuse have found that child emotional abuse is more strongly related to depression than is child sexual abuse.<sup>[7]</sup> Thus, there might be greater confidence that the association of child sexual abuse with depression may be due to the emotional and psychological aspects that might also be present in the early experience of sexual abuse rather than any sexual or physical components of such experience.

In their review, Rind and co-workers<sup>[23]</sup> found that certain family variables (e.g. conflict, pathology, neglect, physical or emotional abuse) were confounded with child sexual abuse and more strongly related to depression than was child sexual abuse. Indeed, the magnitude of the relationship between family environment and depression was medium in size, in contrast to the magnitude of the relationship between child sexual abuse and depression, which was small.

In a review not included in this systematic review,<sup>[16]</sup> of eight studies addressing the association between family dysfunction, child sexual abuse, and adult-onset depression, six found a positive correlation between child sexual abuse and various markers of familial dysfunction (e.g. early parental separation, family violence, physical punishment, and lack of parental warmth) and/or a positive correlation between poor parenting and adult-onset depression, even in the absence of child sexual abuse; in one of these studies, poor parental support was a better predictor of subsequent impaired psychological functioning than child sexual abuse.

These results imply that family environment might be a better predictor of depression than is child sexual abuse. Indeed, it may be possible that certain negative family circumstances environment might be directly responsible for the onset of depression in people with a history of child sexual abuse.

Second, additional variables may interact with child sexual abuse to increase the likelihood of depression in survivors of child sexual abuse. Indeed, there is emerging evidence that a number of neurobiological and psychosocial factors, such as dysregulation of the hypothalamic-pituitary-adrenocortical axis, adverse environmental factors that might accompany abuse (e.g. dysfunctional parenting), disadvantaged life circumstances that might follow the abuse experience (e.g. teenage pregnancy or single motherhood), and the



cognitive or personality characteristics of the victim, might mediate the relationship between child sexual abuse and depression.

For example, according to a number of reviews (e.g.<sup>[16,49]</sup>), both animal and human studies have shown that early stress and adversity may result in both acute and chronic changes in the activity and regulation of the hypothalamic–pituitary–adrenocortical axis, similar to those believed to be important in the pathophysiology of depression. The pathophysiological similarities observed in both the stress response and depressive illness lend support to the hypothesis that an adverse event during childhood may contribute to adult-onset of depression by means of chronic dysregulation of the hypothalamic–pituitary–adrenocortical axis.<sup>[16]</sup>

Furthermore, according to the major cognitive theories of depression, individuals' characteristic ways of interpreting relevant experiences in their lives may increase individuals' likelihood of developing depressive symptoms or disorders, in particular, a cognitively mediated subtype of endogenous depression, when they encounter negative life events (see, for example,<sup>[50,51]</sup>). Indeed, it has been shown that one mechanism by which child sexual abuse contributes to depressive symptoms or disorders is through the development of negative cognitive styles and information processing biases.<sup>[7]</sup>

In conclusion, a number of third variables may either be directly responsible for the onset of depression in people with a history of child sexual abuse or contribute to the development of depression by mediating the relationship between child sexual abuse and depression. Therefore, it is possible that child sexual abuse may not have a primary role in the development of depression.

Individuals vary widely in their responses to traumatic experiences, such as child abuse. Some have no serious psychiatric sequelae or only suffer mild, short-lived psychiatric symptoms, whereas others develop severe or long-lasting mental disorders, such as a major depressive disorder. It is clear that an increased presence of biological, psychological, or social risk factors may interact with ongoing negative events and enhance the likelihood of deviating from the conditions that promote normal development and manifesting negative developmental outcomes. Thus, for depression, a multifactorial etiological model is required.

The etiology of depression is complex. The results of this systematic review show that being a victim of child sexual abuse is a significant risk factor, but is not the only important risk factor. There is strong evidence that the onset of depression is associated with a variety of biological, psychological, and social risk factors, such as neurobiological mechanisms, genetic factors, stressful life events, maladaptive cognitive patterns, parental mental illness, and certain types of parenting practices.

For example, a number of reviews have shown an increased risk of depression in people exposed to

stressful life events (e.g.<sup>[52–54]</sup>), people exposed to mass conflict and displacement,<sup>[55]</sup> women with a history of intimate partner violence,<sup>[56]</sup> children who were verbally and physically victimized by peers,<sup>[57]</sup> men and women exposed to chronic psychosocial stress at work (i.e. high demand and low control at work or who spent high efforts in combination with low rewards received in turn,<sup>[58]</sup>) women exposed to stressful life events, especially life stress during pregnancy or the early puerperium,<sup>[59–61]</sup> and people caring for a relative with a severe disability within their family,<sup>[62]</sup> especially mothers of children with disabilities.<sup>[63,64]</sup>

Other reviews have found that parental mental illness, in particular major depressive disorder,<sup>[65,66]</sup> or a parenting style characterized by low levels of warmth and caring and high negative psychological control or overprotection (i.e. criticism, intrusiveness, and guilt-induction,<sup>[7,67]</sup>) may increase the risk of adult-onset depression.

Furthermore, several reviews (e.g.<sup>[51,68–70]</sup>) have shown that a set of maladaptive cognitive patterns (e.g. negative inferential or attribution style, information processing biases, maladaptive self-schemas, and dysfunctional beliefs, attitudes, or self-worth contingencies) may increase vulnerability to depression.

Moreover, there is evidence that depression results in part from genetic influences.<sup>[71]</sup> Indeed, it has been estimated that the heritability of major depression is likely to be in the range of 31–42%.<sup>[72]</sup>

Finally, it has been proposed that dysfunctional emotion regulation might increase vulnerability to depression (see, for example,<sup>[73,74]</sup>).

In conclusion, the results of this systematic review clearly show that child sexual abuse is a general, nonspecific risk factor for depression, although it is not the only important risk factor and often has no primary role in the development of depression.

It is clear that multiple biological, psychological, or social risk factors contribute to the development and maintenance of depressive disorders and, in some cases, child sexual abuse confers additional risk. Therefore, child sexual abuse should be included in more comprehensive, multifactorial etiological models for depression, in order to explain how risk factors work together to promote depressive symptoms and disorders.

To achieve this goal, a number of methodological advances in research in this area, such as use of prospective, longitudinal designs, control for confounders, and employment of study samples representative of the general population and matched comparison groups, must be implemented.

Importantly, future investigations should use standard measures and instruments designed to assess depressive symptoms and disorders.<sup>[12]</sup> Indeed, in the literature on the consequences of child sexual abuse, different definitions for “depression” have been used,<sup>[5]</sup> from depression as a “mental disorder,” as defined in formal classification systems, such as the Diagnostic

and Statistical Manual of Mental Disorders,<sup>[75]</sup> to depression as a “symptom” or “set of symptoms,” as measured by a number of depression inventories, scales, or questionnaires, investigator-authored items or questions, or depression-related items or subscales from clinical questionnaires, scales, and inventories. All the reviews included in this systematic review did not distinguish between studies that employed the diagnostic criteria for major depressive disorder in the DSM and studies that used depression inventories or items, rather than relying on formal classification systems to operationalize depression. Thus, it is possible that study findings might have been hampered by the method used to identify depression. This is the main limitation of this systematic review.

Moreover, future literature reviews should use recent advances in methodology, as highlighted by guidelines for systematic reviews, in order to select studies, abstract data, and assess data quality. Importantly, because all studies in this review aggregated different study findings with different levels of methodological quality, future reviews must assess data quality and validity.

Along with these directions for improving research, this systematic review has some implications for treatment and health policy.

Because child sexual abuse is a risk factor for the development of depression, services designed to prevent the occurrence of child sexual abuse and to treat its sequelae must be implemented in order to decrease the incidence and prevalence of depression in our society.

Children who have been abused recently must be assessed for the presence of depressive symptomatology and receive available treatment resources. Although a number of treatment protocols have been proposed,<sup>[76]</sup> there is growing empirical support for the efficacy of trauma-focused cognitive-behavioral therapy in decreasing psychological symptomatology, including depressive symptoms and disorders, in maltreated children.<sup>[77]</sup>

Depressed adults who seek psychiatric treatment should be asked about early abuse within admission procedures, because a history of sexual abuse might affect response to standard treatments for depression.<sup>[3]</sup> These patients might respond with a reduction in overall psychopathology if such traumatic experience is addressed therapeutically.<sup>[78]</sup>

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