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Child Maltreatment and Depression: A Meta-Analysis of Studies Using the Childhood Trauma Questionnaire

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Abstract

Background—Researchers have documented that child maltreatment is associated with adverse long-term consequences for mental health, including increased risk for depression. Attempts to conduct meta-analyses of the association between different forms of child maltreatment and depressive symptomatology in adulthood, however, have been limited by the wide range of definitions of child maltreatment in the literature.

Objective—We sought to meta-analyze a single, widely-used dimensional measure of child maltreatment, the Childhood Trauma Questionnaire, with respect to depression diagnosis and symptom scores. Participants and Setting: 192 unique samples consisting of 68,830 individuals.

Methods—We explored the association between total scores and scores from specific forms of child maltreatment (i.e., emotional abuse, physical abuse, sexual abuse, emotional neglect, and physical neglect) and depression using a random-effects meta-analysis.

Results—We found that higher child maltreatment scores were associated with a diagnosis of depression (g=1.07; 95% CI, 0.95−1.19) and with higher depression symptom scores (Z=.35; 95% CI, .32−.38). Moreover, although each type of child maltreatment was positively associated with depression diagnosis and scores, there was variability in the size of the effects, with emotional abuse and emotional neglect demonstrating the strongest associations.

Conclusions—These analyses provide important evidence of the link between child maltreatment and depression, and highlight the particularly larger association with emotional maltreatment in childhood.

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Keywords

child maltreatment; depression; abuse; neglect; meta-analysis

Depression is a significant public health concern; indeed, major depressive disorder (MDD) is the leading cause of disability worldwide (World Health Organization, 2017). Understanding the etiology of depression, and in particular mutable factors that may play a causal role, is critical for reducing risk for this recurrent and debilitating disorder (Liu, 2017). Prospective studies have documented that greater adversity in childhood is associated with more chronic depression (Klein & Kotov, 2016), more severe depression (Rhebergen et al., 2012), and a longer time to remission (Fuller-Thomson, Battiston, Gadalla, & Brennenstuhl, 2014). The role of early adversity in increasing risk for the subsequent development of depression is substantial; in fact, Kessler et al. (2010) estimated that almost 25 percent of population-attributable risk is due to early adversity.

Among early adverse experiences, child maltreatment is a particularly potent risk factor for depression. Previous meta-analyses examining child maltreatment and depression have found that experiencing any form of maltreatment (treated statistically as the presence or absence of maltreatment) was associated with more than a two-fold increase in risk for depression in adulthood (Li, D'Arcy, & Meng, 2016), and with the development of chronic, or recurrent, depression (Nanni, Uher, & Danese, 2012). Although sexual abuse has received the most empirical attention (see Liu, 2017), it is noteworthy that different types of maltreatment frequently co-occur (Petersen, Joseph, & Feit, 2014). Thus, rather than focus on a single type of maltreatment, it is important to characterize the relation between different types of child maltreatment and depression. This perspective is supported by the emerging theory that early experiences that are characterized by threat (e.g., abuse) have different effects on the emergence of psychopathology than do early experiences characterized by a lack of species-expected input (e.g., neglect; Humphreys & Zeanah, 2015). Further, although physical, sexual, and emotional abuse have all been linked to depression (Mullen, Martin, Anderson, Romans, & Herbison, 1996), their different prevalence rates (Edwards, Holden, Felitti, & Anda, 2003), and their differential links to depressogenic features (e.g., low self-esteem following emotional abuse; Mullen et al., 1996), underscores the importance of careful examination of different forms of maltreatment with depression.

Previous meta-analyses examining the association between maltreatment and depression are informative. However, while important, all are limited either by small number of available studies (e.g., 8 for Li et al., 2016; 12 for Infurna et al., 2016; 16 for Nanni et al., 2012) or by considerable variability in how child maltreatment was operationalized (e.g., Norman et al., 2012), which limits comparisons across studies. Given that different definitions, informants, and thresholds for characterizing maltreatment are likely to result in different patterns of findings, there is value in prioritizing the meta-analysis of studies that use a common measure to assess maltreatment. In one such example, Infurna and colleagues (2016) conducted a meta-analysis of studies using the Childhood Experience of Care and Abuse interview (CECA; Bifulco, Brown, & Harris, 1994). They also restricted their inclusion criteria to studies that required a clinical diagnosis of depression. This increased confidence

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in their conclusions has a trade-off, which is that only 12 studies met inclusion criteria, which limited their ability to conduct moderator analyses. Moreover, experiences of maltreatment, as well as characterization of depression, may better be considered along a dimension (i.e., people vary in the severity of their maltreatment experiences [Humphreys & Zeanah, 2015; King, Humphreys, & Gotlib, 2019; McLaughlin, Sheridan, & Lambert, 2014] and depression to be represented both dimensionally and categorically [Ruscio & Ruscio, 2000]).

Thus, we sought to meta-analyze studies that assessed maltreatment experiences on a continuous scale using the Childhood Trauma Questionnaire (CTQ; Bernstein et al., 2003; Bernstein & Fink, 1998). The CTQ is the most widely used measure of this construct; it has been shown to have acceptable internal consistency, test-retest reliability, and strong convergence with interviews that assess child trauma (Bernstein et al., 1994). The CTQ assesses five types of maltreatment experiences (i.e., emotional abuse, physical abuse, sexual abuse, emotional neglect, and physical neglect) using a Likert-scale approach to assess the severity of each type of experience. By assessing maltreatment using a dimensional approach, and by using a single assessment measure (i.e., the CTQ), our meta-analysis maximizes consistency in the measurement of child maltreatment and increases confidence in the effect size estimates in relation to depression; moreover, this meta-analysis includes the largest set of studies and number of unique participants assessed using a single measure examined to date. Further, unlike prior meta-analyses that vary in the forms of maltreatment that were considered in their assessments, our approach allows us not only to probe associations between depression and overall maltreatment, but also to assess specific types of maltreatment measured at the same time using the same scale. Such an approach will yield insight into whether models indicating that the type of maltreatment or deviation from an expectable environment are differentially associated with depression (including neglect versus abuse; see Humphreys & Zeanah, 2015; McLaughlin & Sheridan, 2016; McLaughlin et al., 2014; or emotional maltreatment versus physical or sexual maltreatment). Finally, by including studies that examined depression using either a group-based approach (e.g., diagnoses) or a continuous approach (e.g., depression symptom scores), we can examine the strength and specificity using two widely used approaches to the assessment of depression.

Method

Study Selection

Each study satisfied the following inclusion criteria: (a) dimensional measurement of child maltreatment using the CTQ (either the long or short form); (b) dichotomous or dimensional assessment of depression; and (c) available data to calculate effect sizes (i.e., standardized mean difference in studies examining depression group and Z in studies examining depression scores).

Search Procedure—We used several strategies, outlined in the PRISMA flowchart (Figure 1), to identify the 190 journal articles with 192 independent samples that were ultimately included in this meta-analysis. First, we conducted computer-based searches using PubMed and Ovid for the following terms (or stems when appropriate) appearing

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anywhere in the manuscript: (depress* OR MDD) AND (ctq OR "child trauma questionnaire" OR "childhood trauma questionnaire"). Second, we reviewed the bibliographies for additional studies using forward and backward searching. Third, we sent emails describing our meta-analysis and its inclusion criteria to professional membership LISTSERVs of research organizations including the Society for a Science of Clinical Psychology, the Association for Behavioral and Cognitive Therapies, and Division 53. The majority of reviewed studies were excluded due to the presence of confounding medical conditions (e.g., heart disease, diabetes, cancer), the lack of examination of CTQ as a predictor for MDD, and insufficient data for our quantitative analysis.

Data Extraction—Two trained raters independently coded each study. When raters provided contradictory judgments, disagreements were discussed and the lead authors made a final determination.

Moderator Variables—When heterogeneous effect sizes were detected, we tested whether potentially important demographic and methodological factors moderated the association between child maltreatment and depression. These moderators were selected on the basis of both recommendations from experts in meta-analysis (Lipsey & Wilson, 2001) and of prior work by the authors (Humphreys, Eng, & Lee, 2013; LeMoult et al., 2019; Muscatell, Humphreys, & Brosso, 2018). We coded the following demographic characteristics: (a) mean age of the sample at the depression assessment (in years) and whether the mean age was above or below age 18 years; (b) sex composition (percent male); and (c) racial diversity (percent Caucasian). We coded the following methodological characteristics of each study: (a) sample size; (b) year published; (c) sample source (i.e., clinic-referred; community; population-based; other); (d) assessment used to determine depression (i.e., Structured Clinical Interview for the Diagnostic and Statistical Manual [SCID] vs. other) or symptom scale (i.e., Beck Depression Inventory [BDI]; Center for Epidemiologic Studies Depression Scale [CES-D] vs. other); (e) whether the original 53 item version of the CTQ was used (vs. 25/28 item short-form); and (f) the language in which the measures were given (i.e., English vs. other).

Calculation of Effect Size—We calculated two different types of effect sizes depending on whether depression was operationalized as a dichotomous (diagnosis of depression) or a dimensional (depression scores) measure. When depression was operationalized as a dichotomous measure, we calculated the Hedge's *g* standardized mean difference (SMD) in order to estimate the effect size of the association between child maltreatment total scores and the onset of a diagnosis of depression. An estimate of 0 for the SMD effect size indicated that child maltreatment scores were equivalent in individuals with and without depression, whereas an SMD greater than 0 indicated that the depressed group had higher scores on the CTQ than did individuals without depression, and an SMD less than 0 indicated that the depressed group had lower scores on the CTQ than did those without depression. When depression was operationalized dimensionally, we calculated the bivariate association between child maltreatment scores and depression scores by converting correlations and standardized β to *Z* values. A *Z* estimate of 0 indicated no association between child maltreatment and depression, whereas a *Z* value greater than 0 or less than 0

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indicated that maltreatment had a positive or negative association, respectively, with depression scores. The 95 % confidence interval (CI) for the effect size represents the relative precision of the measurement (wider ranges are less precise). For each study, we calculated as many as 12 effect sizes: the two forms of depression measurement (diagnosis and scores) by CTQ total scores and the five types of child maltreatment. These procedures produced 609 total effect sizes estimated from 190 eligible studies. The number of studies were 39 for CTQ total score by depression *group* and 70 for CTQ total score by depression *scores* (see Tables 2 and 3).

Statistical analysis—We conducted random-effects models and estimated heterogeneity of effect sizes using the standard Cochran's *Q* Test, which indicates the degree of consistency of findings across studies and approximates a chi-square distribution with *k*–1 degrees of freedom, where *k* is the number of effect sizes (Hedges & Olkin, 1983). A nonsignificant *Q* test statistic suggests that the pooled OR represents a unitary effect. When the *p*-value associated with the *Q* statistic was equal to or less than .05, we conducted random-effects meta-regression analyses to determine whether the study characteristics described above could explain variability across studies. We assessed publication bias via Egger's test (Egger et al., 1997). When we observed heterogeneous effect sizes, we conducted leave-one-out sensitivity analyses to test whether a single study unduly influenced effect size estimates. In addition, we examined whether any of the moderator variables predicted significant variance in the effect sizes that had significant heterogeneity. We used STATA 14 to conduct the analyses.

Results

Table 1 presents descriptive information for each included study, including details of demographic and methodological moderators coded and outcomes obtained. Extracted and coded data is available and can be obtained by emailing the lead author.

Child Maltreatment and Continuous Depression Scores

The number of studies that examined the relation between severity of child maltreatment and depression scores was 70 for total CTQ scores, and ranged from 48 (physical neglect) to 81 (emotional abuse) for the subtype CTQ scores. Overall, there was a significant association between child maltreatment and depressive symptoms (Figure 2). The effect size estimates varied by type of child maltreatment: estimates were highest for emotional abuse and lowest for sexual abuse. All effect sizes differed significantly from 0, indicating a significant association between all types of child maltreatment and depression scores. Variation of the effect size within each meta-analysis is presented in Table 2. In addition, there was evidence of significant heterogeneity for all outcomes.

Child Maltreatment and Depression Diagnosis

The number of studies that examined the relation between severity of child maltreatment and diagnosis of MDD as 39 for total CTQ scores and 35 for each of the subtype CTQ scores. As with the correlational analyses, there was a significant association between total CTQ scores and a diagnosis of depression (Figure 3). The random-effects meta-analysis indicated that

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individuals with depression reported higher child maltreatment scores than did individuals without depression, an effect that differed significantly from zero. The effect size estimates varied by type of child maltreatment: they were highest for emotional neglect and lowest for sexual abuse. All effect sizes obtained from meta-analyses differed significantly from zero, indicating a significant association between all types of child maltreatment and depression scores. Variation of the effect size within each meta-analysis is presented in Table 3. In addition, there was evidence of significant heterogeneity for all outcomes.

Moderators—We examined both methodological and demographic study-level variables that may explain variation in effect sizes within studies for each outcome (see Method for moderator variables of interest). We tested each coded moderator separately using simple regressions, weighted by the sample size for each study. Statistically significant moderators are presented by outcome in Tables 2 and 3. For total CTQ score and depressive symptoms, community samples were associated with larger effect size relative to other participant sources ($t(69) = 3.18$, $p = .002$). When the studies were divided based on whether the samples were drawn from the community vs. all others (e.g., clinic, population-based, etc.), we observed that the 48 samples not drawn from the community had a statistically significant ($Z = 16.08$, $p < .001$), but somewhat smaller estimate of the effect size (Z = .32 [95% CI, .28−.36]) than did the 22 studies of community participants ($Z = .43$ [95% CI, .37−.49]), whose overall effect statistically differed from zero ($Z = 14.06$, $p < .001$). In addition, studies that used the CES-D, relative to other measures (e.g., BDI, etc.), on average had larger effect sizes ($t(69) = 2.34$, $p = .022$). Again, when the studies were divided based on the depression assessment measure, we found that studies that used the CES-D (n = 11) had a larger effect size estimate ($Z = .43$ [95% CI, .36−.51]) than did studies that did not use the CES-D (n = 59) (Z = .34 [95% CI, .30−.37]), although both sets of studies had effects that differed significantly from zero).

For emotional abuse, whether the mean age of the sample fell into childhood or adulthood (i.e., split based on the mean age of 18 years) emerged as a significant moderator ($t(80) = 2.34$, $p = .022$). Analyses conducted within the 20 studies with child/adolescent samples yielded a larger association ($Z = .45$ [95% CI, .35−.54]) than did the 59 studies that included adults ($Z = .36$ [95% CI, .32−.39]), although in both cases the estimates significantly differed from zero ($Z = 9.28$, $p < .001$ and $Z = 20.86$, $p < .001$, respectively) and remained significantly heterogeneous. For this outcome, sample source was also significantly associated with effect size, such that population-based samples had smaller effect sizes than did other sample sources ($t(80) = -3.12$, $p = .003$). When the two studies that were population-based (i.e., Mikaeili, Barahmand, & Abdi, 2013; Schulz, Schmidt, et al., 2014) were excluded, the overall effect was similar to the full analyses ($Z = .38$ [95% CI, .35−.41]) and the effect statistically differed from zero ($Z = 24.72$, $p < .001$). In addition, year of publication was significantly associated with effect size (Coef. = 0.01, SE = 0.004; $t(80) = 2.35$, $p = .021$): on average, more recently published papers had larger effects. For both emotional neglect and physical neglect, population-based samples had smaller effect sizes than did other sample sources (emotional neglect: Coef. = −0.21, SE = 0.07; $t(57) = -2.87$, $p = .006$; physical neglect: Coef. = −0.21, SE = 0.10; $t(47) = -2.04$, $p = .047$). When population-based samples were excluded, the overall effect was just slightly larger relative to

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the full analyses (emotional neglect: $Z = .31$ [95% CI, .27−.34], physical neglect: $Z = .24$ [95% CI, .20−.27]); the effects of non-population-based samples on depression differed statistically from zero (emotional neglect: $Z = 17.24$, $p<.001$, physical neglect: $Z = 14.34$, $p<.001$).

Finally, for the depression group analyses, a significantly larger effect size was found in studies that used the full 53-item version of the CTQ to assess the association between total CTQ score and depression group ($t(38) = -2.62$, $p = .013$). Analyses were repeated in the 11 studies that used the original version and the 28 studies that used the short form; in both sets, the effect size estimates differed significantly from zero (CTQ-53: $g = 1.64$ [95% CI, 1.14−2.14], $Z = 6.45$, $p < .001$ and CTQ-SF: $g = 0.93$ [95% CI, 0.82−1.05], Z = 15.59, $p < .001$). In addition, for CTQ total scores, the language in which the measure was administered moderated the observed effect size: studies conducted in English had smaller effect sizes than did non-English studies (Coef. = 0.50, SE = 0.22, $t(38) = 2.23$, $p = .032$); both English and non-English studies had effect size estimates that differed significantly from zero (English: $g = 1.40$ [95% CI, [1.10, 1.70], $Z = 9.09$ $p < .001$; non-English: $g = 0.89$ [95% CI, [0.80, 0.99], $Z = 18.45$, $p < .001$). The same pattern was found for both sexual abuse (English: $g = 0.65$ [95% CI, [0.48, 0.82], $Z = 7.40$, $p < .001$; non-English: $g = 0.37$ [95% CI, [0.31, 0.42], $Z = 12.46$, $p < .001$) and emotional neglect (English: $g = 1.17$ [95% CI, [0.93, 1.42], Z = 9.29, $p < .001$; non-English: $g = 0.85$ [95% CI, [0.73, 0.96], Z = 14.16, $p < .001$).

Publication Bias—For CTQ total score and depressive symptoms, the Egger's test revealed statistically significant bias ($t(69) = -2.02$, $p = .047$). The negative intercept (Coef. = −0.91, SE = 0.45) indicates that the effects from the smaller studies are less than the effects from the larger studies, indicating that small studies are not upwardly biasing the estimate. A trim and fill procedure identified 0 missing studies. For emotional abuse, there was evidence of publication bias. The Egger's test was statistically significant ($t(80) = 2.41$, $p = .018$), with a positive intercept (Coef. = 1.42, SE = 0.59) indicating that smaller studies may be upwardly biasing the effect. A trim and fill procedure identified 27 missing studies, with a filled meta-analysis estimate of $Z = .29$ (95% CI, .25−.33).

For the group-based analyses, there was evidence of publication bias from Egger's test for total CTQ scores (Coef. = 1.31, SE = 0.56, $t(34) = 2.32$, $p = .026$), emotional neglect (Coef. = 1.40, SE = 0.45, $t(34) = 3.12$, $p = .004$), physical neglect (Coef. = 1.52, SE = 0.51, $t(34) = 2.97$, $p = .005$). In all cases, smaller studies may have been upwardly biasing estimates. Trim and fill procedures indicated the following corrected effect size estimates for total CTQ scores: $g = .88$ (95% CI, 0.74−1.02; 8 missing), emotional neglect; $g = .77$ (95% CI, 0.65−0.90; 12 missing), and physical neglect: $g = .49$ (95% CI, 0.35−0.63; 10 missing). In all cases, these revised estimates had effects that differed significantly from zero. No other associations were characterized by statistically significant tests of publication bias.

Leave-one-out Sensitivity Analyses—Given the significant heterogeneity in effects, we conducted sensitivity analyses for all of the outcomes using the leave-one-out approach (i.e., conducting the random-effects model following the removal of each study individually, with replacement). Tables 2 and 3 provide data indicating that no single study unduly

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influenced the effect size estimates; in all cases in which a study was removed, the effect size estimates remained significantly different from zero.

Discussion

In this paper we report the result of a meta-analysis of 192 unique samples from 190 studies, consisting of 68,830 individuals, conducted to test whether child maltreatment was associated with depression diagnosis and symptom scores in adulthood. This is the largest study examining the association between child maltreatment and depression, increasing our confidence in the strength of the observed effect sizes. Across both methods of assessing depressive symptomatology, we found a significantly increased risk for higher depression symptom scores and depressive disorders (typically meeting criteria for MDD) as a function of greater reported severity of child maltreatment. In addition, in order to examine whether there was specificity in the association between different types of child maltreatment and depression, we conducted analyses across five types of maltreatment, all assessed using the same measure of child maltreatment (i.e., the CTQ). Consistent with expectations, we found that all types of maltreatment were associated with significantly higher depression scores and greater risk for meeting criteria for MDD. Importantly, however, emotional abuse and emotional neglect had the strongest associations with depression; we found weaker associations for sexual and physical abuse and physical neglect. In addition, the magnitude of the effect between emotional abuse and depressive symptoms was larger in samples of children and adolescents than in samples of adults.

The estimated effect size between child maltreatment scores and later depression was large; specifically, individuals with depression had, on average, total child maltreatment scores that were approximately one standard deviation higher than scores of their nondepressed counterparts. Even after applying a trim-and-fill procedure following the identification of possible publication bias favoring smaller studies with larger effects, the estimated effect size was almost one standard deviation difference between groups. These effects are substantially larger than those previously reported, which is bolstered by the large number of unique individuals who contributed data to these analysis and the advances in methods by including a dimensional assessment of child maltreatment. For example, across 9 studies, a composite measure of childhood maltreatment was reported to be moderately associated with a diagnosis of depression, although the confidence interval included zero (SMD=0.43; Infurna et al., 2016). It is possible that this discrepancy is due to differences in the scales used in these two meta-analyses (CTQ vs. CECA); for example, the range of possible scores is substantially greater in the CTQ and, further, many of the studies in Infurna et al.'s study used dichotomized experiences of maltreatment rather than applying a dimensional approach to assessing maltreatment.

Although all forms of child maltreatment examined in the present study were significantly associated with depression, the strength of the association varied by type of maltreatment. Three prior meta-analyses are relevant in interpreting these findings. Mandelli, Petrelli, and Serretti (2015) meta-analyzed studies that examined the association between binary measures of child maltreatment and diagnosed depression. These investigators found that emotional abuse (k=8) and neglect (k=6) were most strongly associated with depression

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(ORs=2.8), and reported a weaker association for physical abuse (k=10; OR=2.0). Infurna et al. (2016) found that psychological abuse and neglect were the types of maltreatment most strongly associated with depression, and reported weaker, although still statistically significant, associations for sexual abuse. Finally, Norman et al. (2012) examined three forms of child maltreatment in relation to depressive disorders, and found the strongest association with emotional abuse (OR=3.06), followed by neglect, broadly defined (OR=2.11), and the weakest association for physical abuse (OR=1.54). While all three effect estimates differed significantly from zero, the effect estimate for emotional abuse and depression was significantly stronger than that for physical abuse and depression. In the present study, although effect size estimates varied across types of maltreatment, for depression diagnosis we found that emotional abuse differed significantly from physical abuse and sexual abuse, and that emotional neglect differed significantly from physical abuse, sexual abuse, and physical neglect, as represented by non-overlapping CIs. Such findings suggest that, for depression, predictions are less informed by whether maltreatment experiences are characterized by threat versus deprivation (e.g., McLaughlin et al., 2014; Sheridan & McLaughlin, 2014); instead, emotional maltreatment in particular could be depressogenic.

Importantly, more “silent” forms of child maltreatment (i.e., emotional abuse and emotional neglect) are most strongly associated with depression. This finding is consistent with theoretical and empirical accounts of maltreatment and depression. Compared to sexual and physical abuse, emotional neglect has been found to be uniquely associated with anhedonic symptoms of depression (Van Veen et al., 2013). Furthermore, Rose and Abramson’s (1992) developmental extension of the hopelessness theory of depression provides a framework through which to view the potential differential effects of emotional maltreatment. Rose and Abramson hypothesized that emotional abuse leaves individuals particularly vulnerable to developing a negative cognitive style, which in turn increases risk for depression. According to this formulation, children seek to understand the cause of the adverse life events they experience. Initially, these explanations are external, unstable, and specific (e.g., concluding that the cause of the abuse is not due to their stable characteristics of themselves, but instead, to some outside, isolated reason—for example, a parent having a stressful day). However, in the case of recurrent abuse, children may develop a more depressogenic causal attribution for the abuse (i.e., an attribution that is internal, stable, and global). In this context, emotional abuse may be particularly detrimental to children’s cognitive style because the abuser may state the negative causal attribution to the child (e.g., being called names). This formulation is supported by empirical work: emotional maltreatment during childhood has been found to be associated with negative self-referential processing (Steinberg, Gibb, Alloy, & Abramson, 2003), one potential risk pathway for depression. Our findings suggest that emotional neglect plays a similarly harmful role; thus, a depressive cognitive style may stem not only from the communication of negative cognitions, as in the case of emotional abuse, but also from lack of emotional support, as is the case with emotional neglect.

Among the moderators examined in this study, sample source and language used (i.e., English vs. other languages) emerged as particularly salient in relation to the size of effects that were estimated. Specifically, population-based studies demonstrated smaller associations than did other study recruitment sources. Sample source has also been found to

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be a relevant moderator in other studies; our findings are similar to those documenting a stronger association between child maltreatment and depression in clinical than in population-based samples (Infurna et al., 2016). Type of sample (i.e., community vs. clinical) has been found to be associated with type of maltreatment and risk for depression (Mandelli et al., 2015); across sample types, these investigators found a strong association between neglect and depression; in contrast, in community samples emotional abuse was a stronger predictor of depression. In addition, studies conducted in English had larger effect sizes, on average, than did those conducted in other languages. Language is confounded with geography and cultural factors, and it is difficult to disentangle which of these may be responsible for explaining the differences in effect size based on this moderator. In addition, we found significant evidence of publication bias in several of the meta-analyses here. Our analyses conducted to identify what is more likely to be unbiased effects all continue to demonstrate a significant association between maltreatment and depression, although the effect sizes are lower and are more likely to be an accurate estimate of the magnitude of the associations.

Despite the plausibility that other moderators (e.g., sex, age of participants) are meaningful in understanding the link between child maltreatment and depression, for nearly all outcomes we found no significant evidence that the size of the effect was explained by these factors. For emotional abuse, however, we did find evidence of a larger effect in the relation to child depressive symptoms than those found in adult samples. Such findings may indicate that the association between emotional abuse and depression symptoms weakens over time and as individuals enter adulthood.

We should note five limitations of the present meta-analysis. First, because the studies analyzed for this meta-analysis were cross-sectional, we cannot speak to a direct causal link between emotional maltreatment and depression. In this context, there may be gene-environment correlations for depression and maltreatment, given that parents with depression not only are passing on their genes, but also are more likely to engage in child maltreatment (Widom, DuMont, & Czaja, 2007). Second, the types of child maltreatment assessed in this meta-analysis do not occur independent of one another. Experiences of maltreatment, as well as other forms of stress in early life, are not randomly distributed: children who experience any one type of maltreatment are more likely to have experienced other types (Edwards et al., 2003). We are unable to determine the independent effect of each type using this approach, and we believe it would be useful going forward to use dimensional assessments of maltreatment type to document more thoroughly the overlap between each form of maltreatment. Third, we did not require that studies conduct clinical assessments to make diagnostic determinations of depression. While there are strengths to assessing depression dimensionally (see Ruscio & Ruscio, 2000), the use of clinical instruments may better capture functional impairment in relation to depression. Fourth, the assessment of child maltreatment in these studies was retrospective. While prospective studies also support the link between child maltreatment and depression (Li et al., 2016), there may be selective or biased reporting of adversity, which could affect the observed nature of the association between child maltreatment and depression (Colman et al., 2016; Patten et al., 2015). In fact, recent meta-analyses indicate that prospective and retrospective reports of maltreatment may identify different subgroups of individuals (Baldwin, Reuben,

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Newbury, & Danese, 2019), which could mean that what we documented here as potential predictive pathways may instead be a better marker of concurrent mood and recollections of past experiences. Finally, the CTQ is not without flaws. We selected this measure given its widescale use, its ability to assess maltreatment using a dimensional approach, and its assessment of different subtypes of maltreatment. However, the CTQ does not provide details about the timing of events, which are likely to be important in understanding the association between stress and depression (Teicher, 2008). It also has psychometric limitations. In particular, researchers have noted low reliability of the physical neglect subscale (Gil et al., 2009; Paivio & Cramer, 2004), that has been attributed to greater variability in the types of items included on this subscale (Bernstein et al., 1994).

In closing, the present findings underscore the association between experiences of child maltreatment and depression in adulthood. The goal of the present study was to characterize the associations between depression in adulthood and child maltreatment generally, as well as specific forms of child maltreatment. Assuming that there is a causal link between child maltreatment and depression, next steps in this line of research include probing the potential mechanisms by which these early adverse experiences may lead to a diagnosis of depression and to increased levels of depressive symptomatology in adulthood. Identifying these mechanisms will be important in understanding why treatment response has been found to be moderated by childhood maltreatment status, with individuals who endorsed child maltreatment being less likely to respond to treatment (Nanni et al., 2012). Collectively, these results highlight the importance of reducing exposure to child maltreatment as a clear policy goal. Interventions and preventions that have been shown to reduce child maltreatment are important, and include the Nurse Family Partnership (Donelan-McCall, Eckenrode, & Olds, 2009) and the Triple P (Positive Parenting Program) (Prinz, Sanders, Shapiro, Whitaker, & Lutzker, 2009). While there is likely to be immediate benefit for the children and the parents who participate in these programs, it is notable that the effects may also have long-term positive mental health outcomes (Liu, 2017). Finally, researchers must consider emotional maltreatment (i.e., emotional abuse and emotional neglect) as influencing the etiology of depression; indeed, including these more silent forms of maltreatment in relevant studies should yield important insights concerning the causes of depression and treatment targets for individuals who are experiencing this debilitating disorder.

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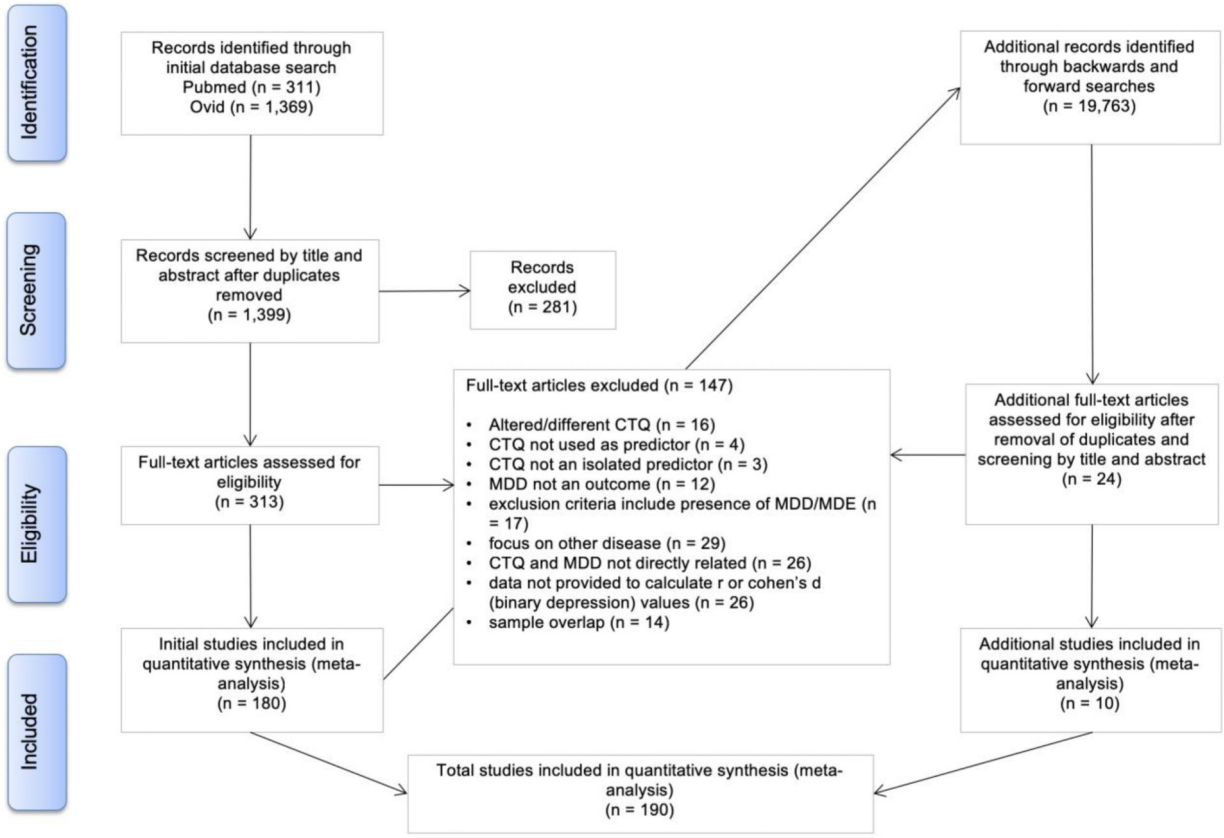

Figure 1.
Identification of independent studies for inclusion in meta-analysis (PRISMA)

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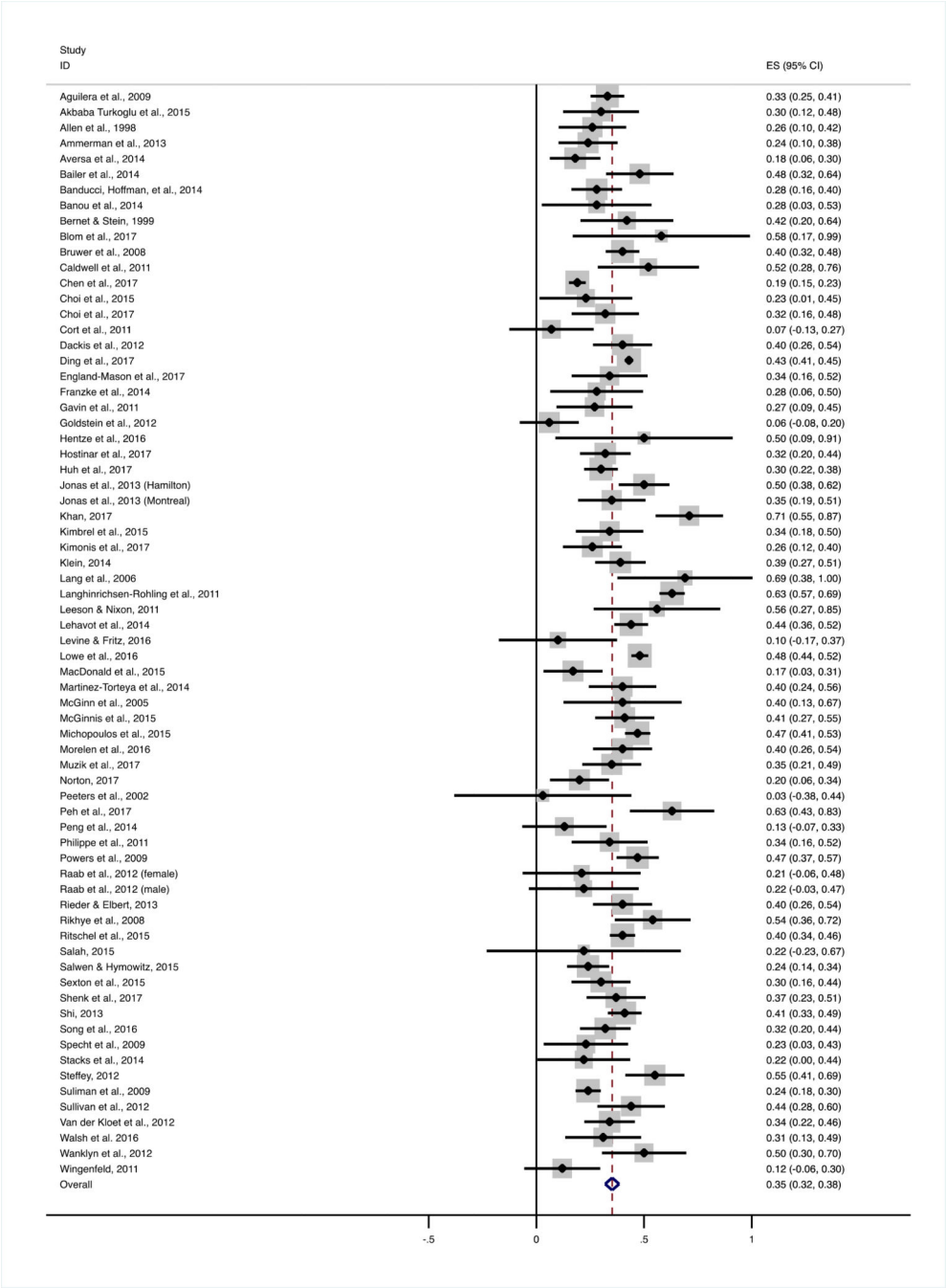

Figure 2.

Estimated association (Z) between total childhood trauma questionnaire scores and depressive symptoms. Estimates of zero indicate no association. Positive values indicate a positive association between maltreatment scores and continuous depression scores.

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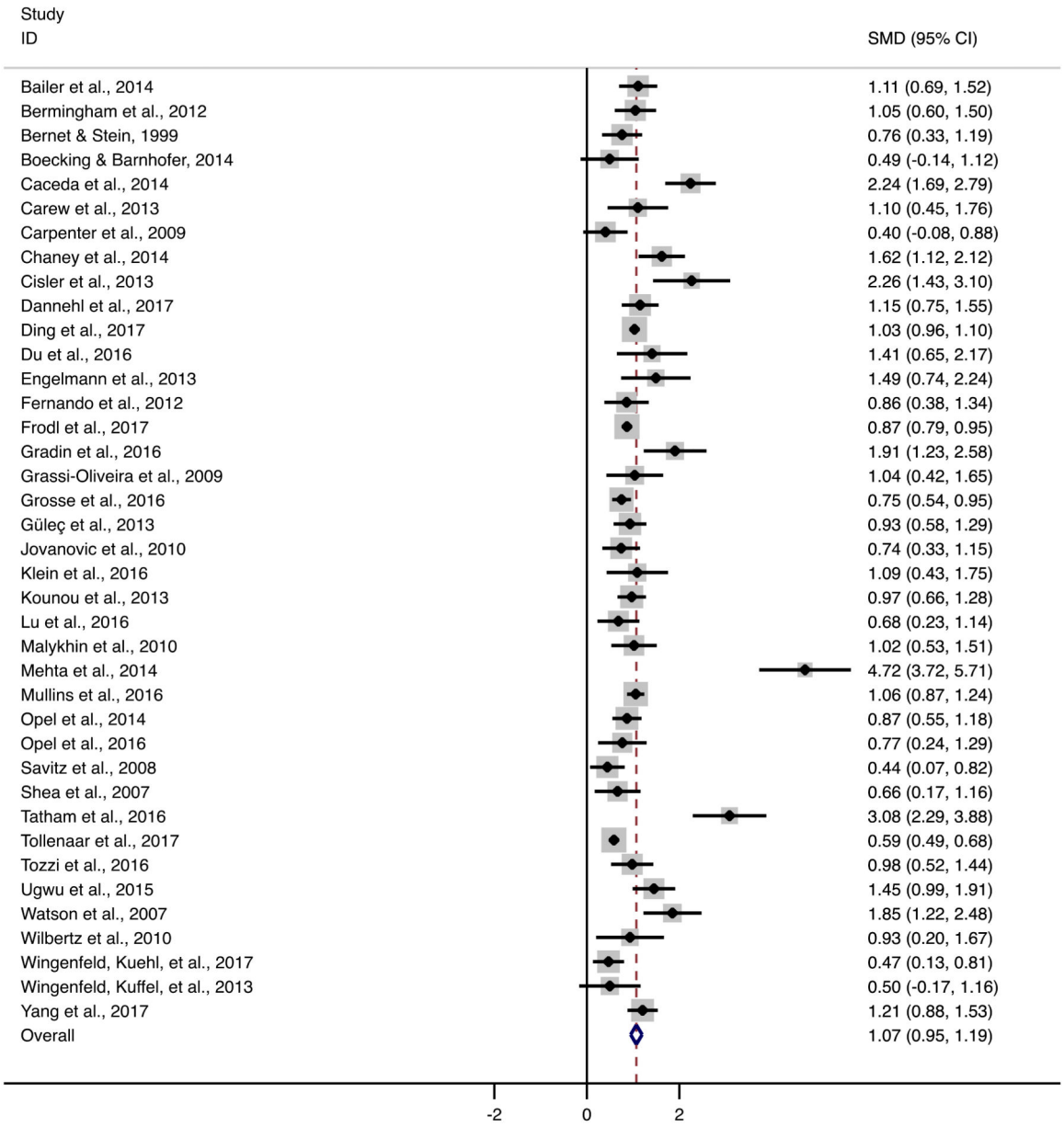

Figure 3.

Estimated standardized mean difference (Hedge's g) in childhood trauma questionnaire total scores between individuals with and without a diagnosis of depression. Estimates of zero indicate no differences, whereas an effect size of one indicates a full standard deviation difference in scores. Positive values indicate higher scores among those with a diagnosis of depression.

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Table 1.

Study list and features

Study	Sample	% Male	% White	Sample Source	Age of Depression Assessment	Depression Measure	CTQ version	Language
Aguilera et al., 2009	521	45	NS	Community/ volunteer	22.9	SCL-90-R	CTQ-SF	Spanish
Akbaba Turkoglu et al., 2015	120	0	NS	Any clinic referred	33.38	BDI	CTQ-SF	Turkish
Allen et al., 1998	142	0	NS	Any clinic referred	37.3	BSI	CTQ-53	English
Ammerman et al., 2013	208	0	80	Other	21.27	BDI-II	CTQ-SF	English
Arata et al., 2005	383	30	71	Community/ volunteer	20.4	CES-D	CTQ-SF	English
Arslan et al., 2015	320	34	NS	Community/ volunteer	24.62	BSI	CTQ-SF	Turkish
Auslander et al., 2016	237	0	25	Other	14.9	CDI	CTQ-SF	English
Aversa et al., 2014	249	100	77	Any clinic referred	29	HAMD	CTQ-SF	English
Bailer et al., 2014a	162	41	NS	Any clinic referred	42.9	SCID-I, PHQ-9	CTQ-SF	German
Balsam et al., 2010	669	38	78	Community/ volunteer	36.5	CES-D	CTQ-SF	English
Banducci et al., 2014a	222	56	51	Community/ volunteer	11.02	RCADS	CTQ-SF	English
Banducci et al., 2014b	280	70	NS	Any clinic referred	43.3	HAMD	CTQ-SF	English
Banou et al., 2009	64	0	86	Other	53.4	CES-D	NS	English
Basu et al., 2013	88	0	52	Community/ volunteer	27	SCID-I	CTQ-SF	English
Bauriedl-Schmidt et al., 2017	81	52	NS	Any clinic referred	45.53	NS	CTQ-SF	German
Bermingham et al., 2012	88	38	NS	Any clinic referred	38.77	SCID	NS	English
Bernet & Stein, 1999	88	50	74	Community/ volunteer	42.17	SCID-I, HRSD	CTQ-53	English
Blain et al., 2012	182	100	59	Community/ volunteer	35.99	BDI-II	CTQ-SF	English
Blom et al., 2017	26	27	46	Community/ volunteer	15.6	RADS-2	CTQ-SF	English
Boecking & Barnhofer, 2014	40	40	70	Any clinic referred	36.63	BDI-II, MDI	CTQ-SF	English
Brown et al., 2016	339	51	72	Community/ volunteer	19.00	SMFQ	CTQ-SF	English
Bruwer et al., 2008	502	41	31	Community/ volunteer	16.22	BDI	CTQ-SF	English
Burns, 2012	996	0	80	Community/ volunteer	18.98	BDI-II	CTQ-SF	English
Caceda et al., 2014	89	42	NS	Any clinic referred	34.84	NS	NS	English
Caldwell et al., 2011	76	0	51	Community/ volunteer	28	SCL-90-R	CTQ-SF	English

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Study	Sample	% Male	% White	Sample Source	Age of Depression Assessment	Depression Measure	CTQ version	Language
Carballedo et al., 2013	133	38	NS	Any clinic referred	40.0	SCID	NS	NS
Carew et al., 2013	47	0	NS	Any clinic referred	21.4	BDI-II, HAM-D, MINI	NS	NS
Carpenter et al., 2009	68	41	NS	Community/ volunteer	40.12	SCID-I/P	CTQ-SF	English
Chaney et al., 2014	83	41	NS	Any clinic referred	38.22	Prior diagnosis	CTQ-SF	English
Chen et al., 2017	1705	62	NS	Other	NS	BDI-II	CTQ-SF	Chinese
Choi et al., 2015	84	0	NS	Any clinic referred	NS	EPDS	CTQ-SF	Afrikaans, English, Xhosa
Choi et al., 2017	150	0	NS	Any clinic referred	25	EPDS	CTQ-SF	NS
Cisler et al., 2013	38	0	35	Community/ volunteer	28.88	SCID-I	NS	English
Cohen et al., 2017	580	42	29	Community/ volunteer	18.25	CES-D	CTQ-SF	English
Cort et al., 2011	104	0	33	Any clinic referred	31.29	BDI-II	CTQ-53	English
Crow et al., 2014	3902	31	NS	Other	39.34	BDI-II	CTQ-SF	English
Cyranowski et al., 2012	335	0	55	Population-based/ epidemiological	46.2	SCID-I	CTQ-SF	English
Dackis et al., 2012	236	0	34	Other	33.8	BDI-II	CTQ-SF	English
Dannehl et al., 2017	131	36	NS	Any clinic referred	36.47	SCID-I	CTQ-SF	German
Day et al., 2013	112	61	22	Other	16.8	CES-D	CTQ-SF	English
Ding et al., 2017	6406	52	NS	Population-based/ epidemiological	12.55	CES-D	CTQ-SF	Chinese
Douglas & Porter, 2012	105	37	NS	Any clinic referred	38.77	Prior diagnosis	CTQ-SF	English
Du et al., 2016	34	38	NS	Other	36.65	Prior diagnosis	NS	Chinese
Dunlop et al., 2015a	191	0	85	Other	44.2	IDS-SR	CTQ-SF	English
Dunlop et al., 2015b	140	100	85	Other	44.2	IDS-SR	CTQ-SF	English
Engelmann et al., 2013	36	25	58	Any clinic referred	37.04	SCID-I, HAMD	NS	English
England-Mason et al., 2017	140	100	87	Other	32.3	EPDS	CTQ-SF	English
Fernando et al., 2012	74	36	NS	Any clinic referred	33.19	SCID-I	NS	German
Fernando et al., 2014	111	40	NS	Any clinic referred	32.18	SCID-I	NS	German
Franzke et al., 2015	87	0	100	Any clinic referred	41.32	BDI	CTQ-SF	NS
Frodl et al., 2017	3036	47	NS	Any clinic referred	41.32	Prior diagnosis	CTQ-SF	NS
Gavin et al., 2011	132	50	47	Community/ volunteer	27	DIS	CTQ-SF	English
Gerke et al., 2006	417	0	58	Community/ volunteer	19.9	CES-D	CTQ-SF	English
Gibb & Abela, 2008	105	49	84	Community/ volunteer	9.82	CDI	CTQ-SF	French

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Study	Sample	% Male	% White	Sample Source	Age of Depression Assessment	Depression Measure	CTQ version	Language
Goldstein et al., 2012	202	46	30	Other	15.93	BSI	CTQ-SF	English
Goldstein et al., 2013	93	24	16	Other	19.46	CES-D	CTQ-SF	English
Gradin et al., 2016	50	32	NS	Community/ volunteer	25.46	BDI, MINI	NS	English
Grant et al., 2014	39	46	NS	Any clinic referred	32.89	SCID-I, HAMD	CTQ-SF	English
Grassi-Oliveira et al., 2008	49	0	NS	Any clinic referred	38.53	SCID-I	CTQ-SF	Portuguese
Grassi-Oliveria et al., 2009	49	0	NS	Any clinic referred	38.49	SCID-I	CTQ-SF	Portuguese
Grassi-Oliveria et al., 2011	42	0	NS	Any clinic referred	39.35	SCID-I	CTQ-SF	Portuguese
Gratz et al., 2011	225	55	50	Community/ volunteer	12.15	RCADS	CTQ-SF	English
Grosse et al., 2016	394	41	NS	Any clinic referred	38.72	MINI	CTQ-SF	NS
Güleç et al., 2013	150	29	NS	Any clinic referred	39.33	SCID, HDRS	CTQ-SF	Turkish
Hamilton et al., 2016	410	47	49	Community/ volunteer	12.84	CDI	CTQ-SF	English
Harding et al., 2012	157	0	58	Community/ volunteer	19.22	BDI-II	NS	English
Heckman & Westefeld, 2006	138	17	96	Any clinic referred	39.72	TSI	CTQ-SF	English
Hentze et al., 2016	25	36	NS	Any clinic referred	41.52	MADRS	CTQ-SF	German
Hopwood et al., 2011 (female)	82	0	78	Any clinic referred	15.90	BDI	CTQ-SF	English
Hopwood et al., 2011 (male)	66	100	78	Any clinic referred	15.90	BDI	CTQ-SF	English
Hostinar et al., 2017	314	44	63	Population-based/ epidemiological	55.3	CES-D	CTQ-SF	English
Huh et al., 2017	585	46	NS	Any clinic referred	36.94	BDI	CTQ-SF	Korean
Hund & Espelage, 2005	608	0	69	Community/ volunteer	20.3	CES-D	CTQ-SF	English
Hund & Espelage, 2006	608	0	69	Community/ volunteer	20.3	CES-D	CTQ-SF	English
James et al., 2012	286	100	76	Community/ volunteer	44.28	HAMD	CTQ-SF	English
Jessar et al., 2017	204	46	48	Community/ volunteer	12.85	CDI	CTQ-SF	English
Jin et al., 2014	134	100	NS	Community/ volunteer	45.6	Prior diagnosis	NS	Malayalam
Jobst et al., 2015	38	68	NS	Any clinic referred	46.19	SCID-I	CTQ-SF	German
Jonas et al., 2013a	280	0	80	Any clinic referred	30.00	CES-D	CTQ-SF	NS
Jonas et al., 2013b	151	0	76	Any clinic referred	29.05	CES-D	CTQ-SF	NS
Jovanovic et al., 2010	106	38	NS	Other	44.56	BDI, SCID-P	CTQ-SF	NS
Kecojevic et al., 2015	191	100	64	Community/ volunteer	23.7	BSI	CTQ-SF	English

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Study	Sample	% Male	% White	Sample Source	Age of Depression Assessment	Depression Measure	CTQ version	Language
Khan, 2017	146	0	77	Community/ volunteer	32.08	BDI-II	CTQ-SF	English
Kilimnik & Meston, 2016	222	0	68	Community/ volunteer	33.10	BDI	CTQ-53	English
Kim et al., 2017	207	41	NS	Community/ volunteer	27.86	BDI	CTQ-SF	Korean
Kimbrel et al., 2015	155	93	66	Community/ volunteer	40	PDSQ	CTQ-SF	English
Kimonis et al., 2017	232	100	42	Other	16.75	CES-D	CTQ-SF	English
Klein et al., 2008	250	0	12	Community/ volunteer	35.3	DASS	CTQ-53	English
Klein et al., 2009	808	45	86	Any clinic referred	43.6	HAMD	CTQ-SF	English
Klein et al., 2016	45	27	NS	Any clinic referred	42.47	NS	CTQ-SF	German
Klein, 2014	332	100	74	Population-based/ epidemiological	43.7	CES-D	NS	English
Kounou et al., 2013	181	34	NS	Any clinic referred	28.98	Prior diagnosis	CTQ-SF	French
Krastins et al., 2014	411	24	86	Community/ volunteer	29.75	DASS	CTQ-SF	English
Lang et al., 2004	72	0	56	Community/ volunteer	32.73	CES-D	CTQ-SF	English
Lang et al., 2006	44	0	61	Community/ volunteer	29.3	BDI-II	CTQ-SF	English
Lang et al., 2010	44	0	61	Community/ volunteer	29.27	BDI-II	CTQ-SF	English
Langhinrichsen-Rohling et al., 2011	1533	52	37	Community/ volunteer	15.8	CES-D	CTQ-SF	English
Leenarts et al., 2013	154	0	51	Any clinic referred	16.0	TSCC	CTQ-SF	Dutch
Leeson & Nixon, 2011	50	46	94	Any clinic referred	11.18	CDI	CTQ-SF	English
Lehavot et al., 2014	699	0	85	Community/ volunteer	49.74	PHQ-8	CTQ-SF	English
Levine & Fritz, 2016	51	0	57	Other	37	BDI-II	CTQ-SF	English
Lewis et al., 2006	102	0	NS	Other	27.17	CES-D	NS	English
Liu et al., 2013	66	23	62	Community/ volunteer	19.86	BDI-II	CTQ-SF	English
Locke et al., 2007	904	0	0	Community/ volunteer	17	Measure of dysphoria	CTQ-SF	NS
Lopez et al., 2011	813	0	40	Other	15.09	CES-D	CTQ-SF	English
Lowe et al., 2016	3192	30	NS	Other	39.98	BDI-II	CTQ-SF	English
Lu et al., 2016	80	43	NS	Any clinic referred	22.59	SCID	CTQ-SF	NS
MacDonald et al., 2015	200	54	NS	Any clinic referred	35.00	BDI-FS, PHQ-9	CTQ-SF	English
Malykhin et al., 2010	73	23	85	Community/ volunteer	33.91	SCID-I	NS	English
Marquee-Flentje, 2017	300	0	56	Community/ volunteer	26.3	SCL-90-R	CTQ-SF	English

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Study	Sample	% Male	% White	Sample Source	Age of Depression Assessment	Depression Measure	CTQ version	Language
Martinez-Torteya et al., 2014	153	0	56	Community/ volunteer	29.06	PPDS	CTQ-SF	English
Martsolf, 2004	258	34	NS	Community/ volunteer	32.4	CES-D	CTQ-SF	Creole
Massing-Schaffer et al., 2015	185	25	56	Community/ volunteer	19.65	BDI-II	CTQ-SF	English
Mazzeo et al., 2008 (African American)	192	0	0	Community/ volunteer	20.15	CES-D	CTQ-SF	English
Mazzeo et al., 2008 (European American)	412	0	100	Community/ volunteer	19.59	CES-D	CTQ-SF	English
McGinn et al., 2005	55	11	27	Any clinic referred	41.9	BDI	CTQ-SF	English
McGinnis et al., 2015	198	0	NS	Community/ volunteer	NS	PPDS	CTQ-SF	English
Mehta et al., 2014	62	0	85	Any clinic referred	33.38	BDI, SCID-I, HAMD, EPDS	NS	English
Michopoulos et al., 2015	1110	20	3	Other	39.6	BDI-II	NS	English
Mikaeili et al, 2013	893	100	NS	Population-based/ epidemiological	13.24	SCL-90-R	CTQ-SF	NS
Miller et al., 2017	682	NS	62	Community/ volunteer	11.83	CDI	CTQ-SF	English
Minnich et al., 2017	1344	36	90	Community/ volunteer	18.97	BDI-II	CTQ-SF	English
Mitchell & Mazzeo, 2005	168	100	54	Community/ volunteer	19.7	CES-D	CTQ-SF	English
Morelen et al., 2016	192	0	59	Any clinic referred	28.88	PPDS	CTQ-SF	English
Mullins et al., 2016	512	34	NS	Any clinic referred	38.61	BDI, SCAN, Past History Schedule	CTQ-SF	English
Murphy et al., 2012	90	37	NS	Any clinic referred	39.35	SCID	NS	English
Muzik et al., 2017	183	0	59	Other	29.15	PPDS	CTQ-SF	English
Negele et al., 2015	349	32	NS	Any clinic referred	40.40	BDI-II	CTQ-SF	German
Ng et al., 2011	160	32	0	Any clinic referred	41.9	BDI-II, prior diagnosis	CTQ-SF	Chinese
Norton, 2017	188	11	67	Any clinic referred	NS	PROMIS Depression	CTQ-53	English
O'Mahen et al., 2015	140	0	49	Other	26.71	BDI-II	CTQ-SF	English
Opel et al., 2014	170	38	NS	Any clinic referred	37.4	BDI, SCID-I	CTQ-SF	German
Opel et al., 2016	76	50	NS	Any clinic referred	36.89	SCID-I	CTQ-SF	German
Peeters et al., 2002	25	40	NS	Any clinic referred	41.5	MADRS	CTQ-SF	Dutch
Peh et al., 2017	108	41	NS	Any clinic referred	17.0	PHQ-8	CTQ-SF	NS
Peng et al., 2014	109	53	NS	Any clinic referred	28.37	HAMD	CTQ-SF	Chinese
Philippe et al., 2011	118	30	NS	Any clinic referred	32.82	BDI	CTQ-SF	NS
Pieritz et al., 2015	62	0	NS	Community/ volunteer	34.4	PHQ-9	CTQ-SF	German
Powers et al., 2009	378	46	4	Other	43.1	BDI-II	CTQ-SF	English

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Study	Sample	% Male	% White	Sample Source	Age of Depression Assessment	Depression Measure	CTQ version	Language
Raab et al., 2012 (female)	56	0	25	Any clinic referred	49.41	MDI	CTQ-SF	English
Raab et al., 2012 (male)	61	100	15	Any clinic referred	46.68	MDI	CTQ-SF	English
Raes & Hermans, 2008	101	18	100	Community/ volunteer	19.64	BDI	CTQ-53	Dutch
Rezaei et al., 2016	439	0	NS	Other	22.47	BDI-II	CTQ-SF	Persian
Rieder & Elbert, 2013	188	47	NS	Community/ volunteer	21.3	HSCL-25	CTQ-SF	Kinyarwanda
Riggs & Kaminski, 2010	285	23	69	Community/ volunteer	21.9	HSCL-25	CTQ-SF	English
Rikhye et al., 2008	141	35	NS	Community/ volunteer	31.27	IDS-SR	CTQ-SF	English
Ritschel et al., 2015	1050	24	42	Community/ volunteer	20.66	DASS	CTQ-SF	English
Salah, 2015	22	5	NS	Community/ volunteer	19.41	BDI	CTQ-SF	Dutch
Salwen & Hymowitz, 2015	382	43	50	Community/ volunteer	19.26	QIDS	CTQ-SF	English
Savitz et al., 2008	114	43	100	Any clinic referred	48.8	SCID	NS	English
Schulz et al., 2014	2265	47	NS	Population-based/ epidemiological	46.32	BDI-II	CTQ-SF	German
Schumm et al., 2005	176	0	38	Other	22.10	CES-D	CTQ-SF	English
Sexton et al., 2015	214	0	61	Community/ volunteer	28.2	PDSS	CTQ-SF	English
Shahar et al., 2015	219	50	NS	Community/ volunteer	38.7	DASS	CTQ-SF	NS
Shapero et al., 2013	216	42	53	Community/ volunteer	1	CDI	CTQ-SF	English
Shea et al., 2007	66	0	NS	Any clinic referred	30.50	MADRS, MINI, EPDS	CTQ-SF	English
Shenk et al., 2017	220	0	81	Other	21.26	BDI-II	CTQ-SF	English
Shi, 2013	497	35	NS	Any clinic referred	27.7	TSI	CTQ-SF	English
Song et al., 2016	305	43	NS	Any clinic referred	37.0	BDI	CTQ-SF	Korean
Specht et al., 2009	117	0	71	Other	33.9	BDI-II	CTQ-SF	English
Spertus et al., 2003	205	0	80	Other	44.5	SCL-90-R	CTQ-SF	English
Spinhoven et al., 2014	2308	34	NS	Any clinic referred	46.0	IDS	CTQ-SF	Dutch
Stacks et al., 2014	83	0	73	Community/ volunteer	30.04	PPDS	CTQ-SF	English
Stange et al., 2014 (male)	118	100	NS	Community/ volunteer	12.32	CDI	CTQ-SF	English
Stange et al., 2014 (female)	138	0	NS	Community/ volunteer	12.32	CDI	CTQ-SF	English
Steffey, 2012	207	27	87	Community/ volunteer	21.86	CES-D	CTQ-SF	English
Stewart et al., 2015	163	23	76	Any clinic referred	15.60	CES-D	CTQ-SF	English

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Study	Sample	% Male	% White	Sample Source	Age of Depression Assessment	Depression Measure	CTQ version	Language
Suliman et al., 2009	922	41	31	Population-based/ epidemiological	15.73	BDI	CTQ-SF	NS
Sullivan et al., 2012	143	0	9	Community/ volunteer	38.09	CES-D	CTQ-SF	English
Suzuki et al., 2014	79	35	80	Any clinic referred	48.26	Prior diagnosis, QIDS	CTQ-SF	English
Tanaka et al., 2011	117	45	27	Other	18.1	CES-D	CTQ-SF	English
Tatham et al., 2016	61	NS	100	Any clinic referred	35.61	SCID-I, HDRS	CTQ-SF	English
Tlapek et al., 2017	237	0	25	Other	14.9	CDI	CTQ-SF	English
Tollenaar et al., 2017	2567	34	NS	Any clinic referred	42.18	CIDI	CTQ-SF	English
Tozzi et al., 2016	83	35	NS	Any clinic referred	38.80	SCID-I	CTQ-SF	English
Treadway et al., 2009	38	47	NS	Any clinic referred	32.75	SCID, HDRS	CTQ-SF	English
Ugwu et al., 2015	92	40	NS	Any clinic referred	38.24	SCID-I	CTQ-SF	English
Van der Kloet et al., 2012	266	50	NS	Any clinic referred	44.2	BDI-II	CTQ-SF	Dutch
Van Vugt et al., 2014	89	0	NS	Any clinic referred	19.27	TSCC	CTQ-SF	NS
Virkler, 2006	75	0	96	Community/ volunteer	62.75	BDI-II	CTQ-SF	English
Voth Schrag et al., 2017	105	0	41	Any clinic referred	14.9	CDI	CTQ-SF	English
Walsh et al., 2016	133	0	NS	Other	17.80	SCL-90-R	CTQ-SF	English
Wanklyn et al., 2012	110	61	31	Other	16.78	CES-D	CTQ-SF	English
Watson et al., 2007	10b	37	NS	Any clinic referred	37.72	prior diagnosis	CTQ-SF	English
Wessel et al., 2001 **	117	46	NS	Any clinic referred	36.28	SCID, SDS	CTQ-53	Dutch
Wilbertz et al., 2010	32	50	NS	Any clinic referred	43.72	BDI	CTQ-SF	German
Wingenfeld et al., 2017	143	0	NS	Any clinic referred	34.77	SCID-I	CTQ-SF	German
Wingenfeld et al., 2013	36	18	NS	Any clinic referred	35.19	SCID-I	CTQ-SF	German
Wingo et al., 2010	792	32	NS	Other	36	BDI	CTQ-SF	English
Woods et al., 2010	157	0	46	Community/ volunteer	33.7	TSI	CTQ-SF	English
Wu et al., 2018	358	37	NS	Community/ volunteer	19.18	TDS	CTQ-SF	Chinese
Wuest et al., 2010	309	0	76	Community/ volunteer	39.4	CES-D	CTQ-SF	English
Yang et al., 2017	168	27	NS	Any clinic referred	30.64	SCID-I, HAMD	CTQ-SF	Chinese
Yildiz Inanici et al., 2017	144	0	NS	Other	29.37	BDI	CTQ-SF	Turkish
Zalewski et al., 2013	95	0	77	Any clinic referred	44	QIDS	CTQ-SF	English

Note. NS = not specified. BDI = Beck Depression Inventory. BDI-FS = Beck Depression Inventory-Fast Screen. BDI-II = Beck Depression Inventory, 2nd edition. BSI = Brief Symptom Inventory. CDI = Children's Depression Inventory. CES-D = The Center for Epidemiologic Studies

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Depression Scale. DASS = Depression Anxiety Stress Scales. DIS = Diagnostic Interview Schedule. EPDS = Edinburgh Postnatal Depression Scale. HAMD = Hamilton Depression Rating Scale (also known as HRSD = Hamilton Depression Rating Scale and HRSD = Hamilton Rating Scale for Depression). HSCL-25 = Hopkins Symptom Checklist-25. IDS-SR = The Inventory of Depression Symptomatology, Self-Report. MADRS = Montgomery-Asberg Depression Scale. MDI = Major Depression Index. MINI = The Mini International Neuropsychiatric Interview. PDSQ = Psychiatric Diagnostic Screening Questionnaire. PHQ = Patient Health Questionnaire. PDSS = Postpartum Depression Screening Scale (also known as PPDS = Postpartum Depression Screening Scale). PROMIS = Patient-Reported Outcomes Measurement Information System. QIDS = Quick Inventory of Depression Symptomatology. RADS-2 = Reynolds Adolescent Depression Scale, Second Edition. RCADS = Revised Children's Anxiety and Depression Scale. SCAN = Schedules for Clinical Assessment in Neuropsychiatry. SCID = Structured Clinical Interview. SCID-I = Structured Clinical Interview for Axis I Disorders. SCID-I/P = Structured Clinical Interview for Axis I Disorders, Patient Edition. SCL-90-R = Symptom Checklist-90-Revised. SDS = Zung Self-Rating Depression Scale. SMFQ = Short Mood and Feelings Questionnaire. TDS = trait depression subscale of the State-Trait Depression Questionnaire. TSCC = Trauma Symptom Checklist for Children. TSI = Trauma Symptom Inventory.

[a] Provided 162 participants for the depression scores analyses, presented here, and a subset (104) for the diagnostic group analysis (42% male, mean age = 42.40).

[b] Compared 10 individuals with MDD to 1000 individuals from a population representative sample.

[**] Provided 117 participants for the diagnostic group analysis, presented here, and a subset (91) for the depression scores analyses (45% male, mean age = 36.60).

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Table 2.

Summary of Meta-Analysis Statistics by Correlations Between Continuous Depression Scores and Childhood Trauma Questionnaire Scores

Outcome	k	Coeff. (95% CI)	Effect estimate differed from 0	Test for heterogeneity	I^2	Pooled *Z* range using leave-one-out analyses	Moderators with significant associations
Total CTQ scores	70	$Z = .35$ (.32–.38)	$Z = 21.21$, $p < .001$	$Q = 418.26$, $p < .001$	84%	.35–.36	+ in community samples; + using CES-D
Emotional Abuse	81	$Z = .38$ (.34–.41)	$Z = 22.15$, $p < .001$	$Q = 607.42$, $p < .001$	87%	.37–.38	+ year published; − in population-based samples
Physical Abuse	66	$Z = .22$ (.18–.25)	$Z = 12.70$, $p < .001$	$Q = 393.85$, $p < .001$	84%	.21–.22	--
Sexual Abuse	72	$Z = .20$ (17–.23)	$Z = 14.22$, $p < .001$	$Q = 287.82$, $p < .001$	74%	.19–.20	--
Emotional Neglect	58	$Z = .30$ (.26–.34)	$Z = 15.83$, $p < .001$	$Q = 444.84$, $p < .001$	87%	.30–.30	− in population-based samples
Physical Neglect	48	$Z = .23$ (.20–.27)	$Z = 13.15$, $p < .001$	$Q = 237.41$, $p < .001$	80%	.23–.24	− in population-based samples

Note. CTQ = childhood trauma questionnaire.

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Table 3.

Summary of Meta-Analysis Statistics by Depression Diagnosis and Childhood Trauma Questionnaire Scores

Outcome	k	Coeff. (95% CI)	Effect estimate differed from 0	Test for heterogeneity	I^2	Pooled *g* range using leave-one-out analyses	Moderators with significant associations
Total CTQ scores	39	$g = 1.07$ (0.95–1.19)	$Z = 16.98$, $p < .001$	$Q = 248.65$, $p < .001$	85%	1.02–1.09	+ CTQ-53; + English language
Emotional Abuse	35	$g = 0.85$ (0.77–0.94)	$Z = 18.16$, $p < .001$	$Q = 64.94$, $p < .001$	48%	0.84–0.87	--
Physical Abuse	35	$g = 0.47$ (0.37–0.57)	$Z = 9.42$, $p < .001$	$Q = 77.88$, $p < .001$	56%	0.45–0.49	--
Sexual Abuse	35	$g = 0.44$ (0.36–0.53)	$Z = 10.17$, $p < .001$	$Q = 58.89$, $p = .005$	42%	0.42–0.46	+ English language
Emotional Neglect	35	$g = 0.96$ (0.85–1.08)	$Z = 16.52$, $p < .001$	$Q = 102.43$, $p < .001$	67%	0.93–0.98	+ English language
Physical Neglect	35	$g = 0.65$ (0.53–0.78)	$Z = 10.39$, $p < .001$	$Q = 129.67$, $p < .001$	74%	0.58–0.68	--

Note. CTQ = childhood trauma questionnaire. CTQ-53 = original 53 item version of the CTQ (vs. the short form with 25 scorable items).