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Childhood maltreatment and negative cognitive styles A quantitative and qualitative review

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Abstract

The current article presents both quantitative and qualitative reviews of research examining the relation between childhood maltreatment and negative cognitive styles. The results of both reviews suggest that there is a small but significant relation between childhood emotional maltreatment and cognitive styles, and that this relation may be stronger for studies including maltreatment committed by both family and nonfamily members than for studies including only family member perpetrators. Similarly, there appears to be a small but significant relation between childhood sexual maltreatment and cognitive styles, but this relation was significant only among relatively older individuals. Finally, there was no evidence for a significant relation between childhood physical maltreatment and cognitive styles. © 2001 Elsevier Science Ltd. All rights reserved.

Keywords: Child maltreatment; Abuse; Attributional style

1. Introduction

Studies have suggested links between childhood maltreatment and a number of psychological disorders including depression (e.g., Boudewyn & Liem, 1995; Gibb et al., 2001b; Silverman, Reinherz, & Giaconia, 1996), posttraumatic stress disorder (e.g., Rodriguez, Ryan, Rowan, & Foy, 1996; Schaaf & McCanne, 1998), and various personality disorders (e.g., Johnson, Cohen, Brown, Smailes, & Bernstein, 1999; Miller & Lisak, 1999; Weaver & Clum, 1993). Despite evidence for these relations, however, relatively few studies have

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examined the *process* by which childhood maltreatment may contribute to the development of psychological disorders.

In the depression literature, theorists (e.g., Beck, 1987; Clark, Beck, & Alford, 1999; Rose & Abramson, 1992) have suggested that the link between negative events in childhood and later depression may be mediated by individuals' characteristic ways of interpreting the negative events in their lives (i.e., cognitive styles). Specifically, theorists have suggested that childhood maltreatment may contribute to the development of a negative cognitive style, which may then leave the individual vulnerable to developing both symptoms and diagnoses of depression. Studies examining the relation between childhood maltreatment and negative cognitive styles, therefore, may help to clarify one pathway by which childhood maltreatment contributes to the development of depression. The current article, therefore, focuses on studies that have examined the relation between childhood emotional, physical, and sexual maltreatment and cognitive styles. Before reviewing these studies, however, the cognitive theories of depression, as they apply to this review, will be briefly outlined.

1.1. Cognitive vulnerability to depression

The learned helplessness theory of depression (Seligman, 1972, 1975; Seligman, Klein, & Miller, 1976) grew out of observations that animals exposed to uncontrollable stimuli exhibit motivational deficits similar to those found in depressed humans. The theory states that when people are repeatedly exposed to uncontrollable aversive stimuli, they develop a sense of helplessness about their ability to escape the situation. In proposing that expectations of helplessness (i.e., expectations that outcomes are independent of one's responses) are a sufficient, but not necessary, condition for depression, the learned helplessness theory presented a cognitive model of depression.

The theory was criticized, however, because it could not explain why some individuals develop depression in the presence of uncontrollable negative events whereas others do not. To account for these individual differences, Abramson, Seligman, and Teasdale (1978) proposed a reformulated theory of learned helplessness. In this reformulation, Abramson et al. hypothesized that the causal attributions people tend to make, following the occurrence of negative events, make the development of depression either more or less likely, and affect both the generality and chronicity of the depression, once developed.

Building from the attributional literature in social psychology (cf. Heider, 1958; Weiner, 1972, 1974), Abramson et al. (1978) hypothesized that these causal attributions fall along three continua: internal vs. external, stable vs. unstable, and global vs. specific. Further, they hypothesized that individuals who tend to attribute the occurrence of negative events to internal, stable, and global causes (negative attributional style) are more likely to develop helplessness and depression in the face of negative life events than are individuals who tend to attribute negative events to external, unstable, and specific causes (positive attributional style). For example, imagine two people who lose their jobs because their company is downsizing. The first person attributes the loss of his job to the fact that he is incompetent (internal) and always will be (stable), which will prevent him from keeping any job (global). In contrast, the second person attributes her job loss to the fact that the company was downsizing and firing hundreds of people (external), that downsizings occur infrequently

(unstable), and other companies are expanding rather than downsizing (specific). The reformulated theory of learned helplessness posits that the first, but not second, person in this example should be vulnerable to developing depression following his job loss.

Although the reformulated theory of learned helplessness addressed the weaknesses of the original theory of learned helplessness, it did not present a well-articulated theory of the development of depression (Abramson, Metalsky, & Alloy, 1989). It was revised, therefore, and presented as the hopelessness theory of depression (Abramson et al., 1989). The hopelessness theory presents an etiological pathway to the development of a cognitively mediated subtype of depression, hopelessness depression. Negative life events are hypothesized to contribute to the development of hopelessness and hopelessness depression in the presence, but not absence, of a negative inferential style (tendency to attribute negative events to stable, global causes and to infer negative consequences and self-characteristics). Thus, individuals' inferential styles are hypothesized to moderate the relation between negative life events and the onset of hopelessness and hopelessness depression. This hypothesis has received considerable empirical support (e.g., Dixon & Ahrens, 1992; Garber & Flynn, 2001; Hankin, Abramson, & Siler, 2001; Hilsman & Garber, 1995; Houston, 1995; Metalsky & Joiner, 1992; Metalsky, Joiner, Hardin, & Abramson, 1993; Nolen-Hoeksema, Girgus, & Seligman, 1986, 1992; Priester & Clum, 1992; Robinson, Garber, & Hilsman, 1995; but see also Bennett & Bates, 1995; Cole & Turner, 1993; Tiggemann, Winefield, Winefield, & Goldney, 1991).

1.2. Development of negative cognitive styles

Although cognitive styles¹ are often thought of as trait-like vulnerability factors, they are only relatively stable. Indeed, the explicit focus of some forms of treatment (e.g., cognitive-behavioral therapy) is to modify these cognitive styles (see DeRubeis & Hollon, 1995). Studies have suggested, however, that the stability of cognitive styles increases over time, with the greatest variability occurring before children reach the age of 12 (Garber & Flynn, 2001; Gotlib, Lewinsohn, Seeley, Rohde, & Redner, 1993; Nolen-Hoeksema et al., 1986, 1992). Thus, childhood appears to be a critical time period within which to examine factors contributing to the development of negative cognitive styles.

A growing body of research suggests that, in children, the occurrence of negative life events contributes to the development of negative cognitive styles (e.g., Garber & Flynn, 2001; Nolen-Hoeksema et al., 1986). Thus, for children, negative life events appear to not only interact with negative cognitive styles in predicting the onset of depression, but also contribute to the increasing negativity of these cognitive styles. It becomes important, therefore, to understand the nature of this relationship. Specifically, are all negative childhood events

¹ For convenience, an internal, stable, global attributional style for negative events (i.e., cognitive vulnerability as defined by the reformulated learned helplessness theory) and a stable, global attributional style coupled with the tendency to infer negative consequences and self-characteristics following negative life events (i.e., cognitive vulnerability as defined by the hopelessness theory) will be referred to simply as a negative cognitive style. The opposite pattern (i.e., the tendency to attribute negative events to external, unstable, and specific causes and to not infer negative consequences or negative self-characteristics following negative life events) will be referred to as a positive cognitive style.

equally likely to contribute to the development of negative cognitive styles? If some types of events are more deleterious than others, then the identification of these events may be a first step toward better understanding the process by which negative cognitive styles develop.

One subset of negative childhood events, childhood maltreatment, has received increasing empirical and theoretical attention in relation to negative cognitive styles. For example, Rose and Abramson (1992), in extending the etiological chain of the hopelessness theory, proposed a developmental pathway by which childhood maltreatment may contribute to the development of a negative cognitive style. Specifically, they suggested that when negative events such as maltreatment occur, children seek to understand the causes of the event. The goal of this search is to develop strategies to prevent the recurrence of the event, thereby maintaining the child's sense of hopefulness. Thus, the child may initially explain the occurrence of maltreatment by thinking that "[the abuser] was just in a bad mood today," (an external, unstable, and specific attributional explanation), thereby maintaining his or her sense of hopefulness that the maltreatment will not recur. If the maltreatment is chronic and widespread, however, the child's hopefulness-inducing attributions will meet with repeated disconfirmation. When this happens, the child may begin to explain the occurrence of the maltreatment by thinking, "there must be something wrong with me that is making [the abuser] do this," (an internal, stable, and global attributional explanation). This type of attribution serves to increase the child's sense of hopelessness about avoiding future maltreatment. The more frequently the child employs internal, stable, and global attributional explanations for experiences of maltreatment, the more likely they are to crystallize into a negative cognitive style and the more likely they are to be rigidly applied to all negative events (cf. Crick & Dodge, 1994).

Rose and Abramson (1992) hypothesized that childhood emotional maltreatment may be more likely to lead to the development of a negative cognitive style than either childhood physical or sexual maltreatment because, with childhood emotional maltreatment, the depressogenic cognitions are directly supplied to the child by the abuser. In contrast, a child experiencing either physical or sexual maltreatment must supply his or her own attributions about its cause, and may, therefore, have greater opportunity to make less negative attributions. For example, if a child is repeatedly told that his or her poor performance on academic tasks is due to his or her stupidity (an internal, stable, and global attribution), he or she may eventually come to believe it. Over time, the child may begin making these types of attributions for poor performance on any academic task, even when no one makes the attribution for the child and there is strong evidence suggesting a different attributional interpretation (e.g., the child did not study for the test). Eventually, these types of attributions may generalize to nonacademic performance situations (e.g., striking out in a baseball game) and to situations independent of the child's performance (e.g., parents' divorce). In this way, the child may develop a negative cognitive style for negative events in general.

2. The current reviews

In this article, the results of studies examining the relation between childhood emotional, physical, and sexual maltreatment and individuals' cognitive styles are reviewed.

Although there are, at present, few studies examining these relations, the current reviews may help to clarify the findings to date and allow commentary on this area of research as it now stands. Given that the results of some of the studies obtained do not lend themselves to meta-analytic techniques, both quantitative and qualitative reviews of the literature were conducted.

2.1. Literature search

Two strategies were used to obtain both published and unpublished studies examining the relation between childhood maltreatment and negative cognitive styles. First, computerized literature searches using PsycLIT, PsycINFO, and ProQuest were conducted for the years 1978–1999. The keywords used in this search were: *emotional, psychological, verbal, physical, or sexual, and maltreatment, abuse, or neglect, and attribution, attributional, explanatory, or cognitive, and style*. Second, reference sections of the obtained articles were examined for relevant studies not identified by the literature search.

Only studies examining the dimensions of negative cognitive style as defined by either the revised learned helplessness theory or the hopelessness theory (i.e., attributions of internality, stability, globality, and inferences of consequences and self-characteristics) were included in the current reviews. To be included in the quantitative review, studies were required to report results separately for each type of childhood maltreatment and to use group membership (i.e., presence vs. absence of childhood maltreatment or negative cognitive style) to predict scores on the dependent variable (i.e., a measure of cognitive style or maltreatment; cf. Rosenthal, Rosnow, & Rubin, 2000; Rosnow, Rosenthal, & Rubin, 2000). Studies simultaneously examining the relation between two types of maltreatment and cognitive style were included in the qualitative review. In addition, studies using multiple regression analyses to examine the relation between childhood maltreatment and cognitive styles were included in the qualitative review. This was done because, to the extent that the variables included in the regression analyses covaried, accurate estimates of effect sizes could not be obtained. Finally, studies using continuous measures of both childhood maltreatment and cognitive style were included in the qualitative review.

2.2. Quantitative review

As mentioned above, few studies have examined the relation between childhood maltreatment and negative cognitive styles. Of those meeting inclusion criteria for the current quantitative review, only four studies examined the relation between childhood emotional maltreatment and cognitive styles (Gibb, Alloy, Abramson, & Marx, 2001a; Gibb et al., 2001b; Gross & Keller, 1992; Moll, 1992). These same four studies were the only ones meeting inclusion criteria to examine the relation between childhood physical maltreatment and cognitive styles. Finally, 10 studies examining the relation between childhood sexual maltreatment and cognitive styles met inclusion criteria (Gibb et al., 2001a,b; Gold, 1986; Hundley, 1992; Mannarino & Cohen, 1996; McCord, 1985; Moll, 1992; Powell, 1990; Pritt, 1998; Wenniger & Ehlers, 1998). Table 1 summarizes the results from these studies.

Table 1
Summary of studies included in quantitative review

Study	Sample	Age of childhood	Cognitive style	Results	Effect size (and 95% CI)
Gibb et al. (2001a)	86 undergraduates (69 f; 17 m); mean age = 19.4 (S.D. = 3.7); 69 reported EM (17 = N-EM); 59 reported PM (27 = N-PM); 18 reported SM (68 = N-SM)	Before age 15	Stable, global attributions, and the tendency to infer negative consequences and self-characteristics following negative events	EM had more negative cognitive styles than N-EM; PM and SM did not differ from N-PM and N-SM, respectively	EM: $r = .27$ (.06–.46); PM: $r = .06$ (–.15–.27); SM: $r = .10$ (–.11–.31)
Gibb et al. (2001b)	297 undergraduates (203 f; 94 m); mean age = 19.1 (S.D. = 2.5); Ss were selected based on cognitive style; 145 Ss had a negative cognitive style (N) and 152 Ss had a positive cognitive style (P)	Before age 15	Stable, global attributions, and the tendency to infer negative consequences and self-characteristics following negative events	N reported higher levels of EM than did P; no differences on either PM or SM	EM: $r = .15$ (.04–.26); PM: $r = -.05$ (–.16–.06); SM: $r = .01$ (–.10–.12)
Gold (1986)	103 women reporting SM (mean age = 30.4; S.D. = 8.6) and 88 women with no history of SM (N-SM; mean age = 29.8; S.D. = 8.2)	Before age 17	Internal, stable, global attributions for negative events	SM had a more negative cognitive style than N-SM	SM: $r = .26$ (.12–.39)
Gross and Keller (1992) ^a	260 undergraduates (166 f; 94 m) aged 18–22 were screened; Ss meeting criteria were assigned to one of four groups: (a) PM ($n = 21$), (b) EM ($n = 47$), (c) PM + EM ($n = 17$), or (d) no maltreatment (NM; $n = 17$)	Not defined	Internal, stable, global attributions for negative events; external, unstable, specific attributions for positive events	Neither EM nor PM differed from NM	EM: $r = .13$ (–.08–.33); PM: $r = .15$ (–.06–.35)
Hundley (1992)	52 women reporting SM (mean age = 34.7; S.D. = 9.1) and 52 women with no history of SM (N-SM; mean age = 33.7; S.D. = 10.2)	Before age 18	Internal, stable, global attributions for negative events; external, unstable, specific attributions for positive events	The cognitive styles of SM did not differ from those of N-SM	SM: $r = .02$ (–.17–.21)

Mannarino and Cohen (1996)	77 girls with documented SM and 88 girls with no history of SM (N-SM); all girls were between the ages of 7 and 12 (mean age = 10.0)	N/A; all girls under age 13	Internal, stable, global attributions for negative events	SM had a more negative cognitive style than N-SM	SM: $r = .17$ (.02–.31)
McCord (1985)	56 women reporting childhood incest (SM; mean age = 31.1, S.D. = 8.6) and 44 women with no history of SM (N-SM; mean age = 31.8, S.D. = 12.2)	Before age 18	Internal, stable, global attributions for negative events	SM had a more negative cognitive style than N-SM	SM: $r = .25$ (.06–.43)
Moll (1992) ^b	42 battered women staying in a women's shelter (aged 18–57); 18 women reported EM, 13 women reported PM, and 12 women reported SM	Not defined	Internal, stable, global attributions for negative events (attributional dimensions examined separately)	History of EM, PM, or SM was not related to the negativity of the women's attributional styles	EM: $r = .01$ (–.29–.31); PM: $r = .10$ (–.21–.39); SM: $r = .11$ (–.20–.40)
Powell (1990)	50 girls seeking outpatient psychotherapy; 26 girls with documented SM (mean age = 11.9; S.D. = 2.5) and 24 girls with no history of SM (N-SM; mean age = 11.3; S.D. = 3.3)	NA; all girls under age 17	Internal, stable, global attributions for negative events; external, unstable, specific attributions for positive events	The cognitive styles of SM did not differ from those of N-SM	SM: $r = .00$ (–.28–.28)
Pritt (1998)	Adult women (95% between the ages of 20 and 50) seeking pastoral or professional counseling; 115 reporting SM and 70 reporting no SM (N-SM)	Before age 18	Internal, stable, global attributions for negative events	SM had a more negative cognitive style than N-SM	SM: $r = .36$ (.22–.48)
Wenninger and Ehlers (1998) ^b	43 women reporting SM (mean age = 38.7, S.D. = 9.5) and 29 women with no history of SM (N-SM; mean age = 41.1, S.D. = 10.0)	Before age 18	Internal, stable, global attributions for negative events (attributional dimensions examined separately)	SM had a more negative cognitive style than N-SM	SM: $r = .38$ (.16–.56)

CI = Confidence Interval; EM = childhood emotional maltreatment; PM = childhood physical maltreatment; SM = childhood sexual maltreatment.

^a Cognitive style data for 11 of Gross and Keller's (1992) participants were missing.

^b Although both Moll (1992) and Wenninger and Ehlers (1998) reported results separately for the internality, stability, and globality dimensions, these were meta-analytically combined to allow comparisons with other studies.

2.2.1. *Childhood emotional maltreatment*

Of the four studies examining childhood emotional maltreatment, three used measures consistent with Hart, Germain, and Brassard's (1987) definition of emotional maltreatment. Specifically, the measures of emotional maltreatment used in these three studies included experiences such as being rejected, degraded, terrorized, isolated, or denied emotional responsiveness. The studies differed, however, in two respects. First, whereas two of the three studies (Gibb et al., 2001a,b) included both family and nonfamily perpetrators, the third (Gross & Keller, 1992) only included maltreatment committed by parents or primary caretakers. Second, whereas two of the studies (Gibb et al., 2001a; Gross & Keller, 1992) compared the cognitive styles of participants dichotomously classified as maltreated or not, the third (Gibb et al., 2001b) compared levels of maltreatment reported by participants dichotomously classified as having a negative or positive cognitive style. Thus, Gibb et al. (2001a) classified participants as maltreated if they endorsed any form of emotional maltreatment as ever occurring before the age of 15, regardless of whether they also endorsed any forms of childhood physical or sexual maltreatment. Similarly, Gross and Keller (1992) classified participants as emotionally maltreated if they reported *frequently* experiencing any of the forms of emotional maltreatment or if they were *ever* expelled from home, forced to observe violence, or encouraged to use drugs as a child (age not defined). Participants endorsing any childhood physical or sexual maltreatment, however, were excluded from the childhood emotional maltreatment group. By contrast, in the third study (Gibb et al., 2001b), undergraduates were chosen for inclusion based upon the presence vs. absence of a cognitive vulnerability to depression as defined by both the hopelessness theory (Abramson et al., 1989) and Beck's (1967, 1987) theory. Specifically, individuals exhibiting negative inferential styles and high levels of dysfunctional attitudes were designated at high cognitive risk for depression (negative cognitive style), whereas individuals exhibiting positive inferential styles and low levels of dysfunctional attitudes were designated as at low cognitive risk for depression (positive cognitive style). These two groups were then compared on the number of different childhood emotional maltreatment experiences reported (e.g., rejection, degradation, etc.).

Of these three studies, two (Gibb et al., 2001a,b) found a significant relation between reported levels of childhood emotional maltreatment and undergraduates' cognitive styles. Specifically, Gibb et al. (2001a) found that the cognitive styles of undergraduates reporting at least one experience of childhood emotional maltreatment were significantly more negative than those of undergraduates reporting no emotional maltreatment in childhood. Similarly, Gibb et al. (2001b) found that undergraduates with negative cognitive styles reported significantly more childhood emotional maltreatment than did undergraduates with positive cognitive styles. In contrast, Gross and Keller (1992) reported that the cognitive styles of undergraduates in the childhood emotional maltreatment group did not differ significantly from the cognitive styles of undergraduates in the no childhood maltreatment group. A comparison of Gross and Keller's and Gibb et al.'s (2001b) effect sizes (see Table 1), however, suggests that this null result was probably due more to low statistical power than to a small effect. Indeed, the sample size of this comparison was relatively small ($n=64$), limiting the researchers' power to detect significant between-group differences.

The fourth study examining the relation between childhood emotional maltreatment and cognitive styles (Moll, 1992) did not provide an operational definition of childhood emotional maltreatment. In this study, the cognitive styles of women reporting childhood emotional maltreatment did not differ significantly from those of women reporting no emotional maltreatment in childhood. There are two possible reasons for the discrepancy between these results and those of other studies examining childhood emotional maltreatment. First, the difference in findings may have been due to sample characteristics. Specifically, Gibb et al.'s (2001a,b), Gibb et al.'s (in press), and Gross and Keller's (1992) participants were undergraduates, whereas Moll's (1992) participants were women staying in a battered women's shelter. Thus, potential differences in the women's cognitive styles, based upon their histories of childhood emotional maltreatment, may have been obscured by their current maltreatment, which was severe enough for them to seek refuge in a battered women's shelter. A second factor that may have contributed to the difference in findings is a possible difference in the operational definition of childhood emotional maltreatment in Moll (1992) compared to the other three studies. However, because Moll (1992) did not provide an operational definition of childhood emotional maltreatment, this possibility must remain speculative.

Meta-analytically combining the results of the four studies yielded a combined effect size (r), weighting the studies by their sample sizes, of .16. Considering the "file drawer problem," results suggest that 70 additional studies yielding null results would be needed to reduce this effect to barely significant. To have confidence in meta-analytic results, Rosenthal (1991) suggested that the file drawer number (i.e., the number of studies required to bring the meta-analytic results to barely significant) should be greater than five times the number of published studies plus 10 ($5k + 10$). Given that the current file drawer number is greater than Rosenthal's recommended minimum, we can have confidence that the current findings are robust, and that there is a significant relationship between childhood emotional maltreatment and individuals' cognitive styles.

2.2.2. *Childhood physical maltreatment*

These same studies (Gibb et al., 2001a,b; Gross & Keller, 1992; Moll, 1992) were the only four meeting inclusion criteria to examine the relationship between childhood physical maltreatment and cognitive styles. As before, only three of these studies (Gibb et al., 2001a,b; Gross & Keller, 1992) provided operational definitions of childhood physical maltreatment. Whereas all three of these studies included experiences such as being hit with a fist or object, Gross and Keller (1992) also included experiences such as spanking, shaking, and nonaccidental burning, and (Gibb et al., 2001a,b) also included experiences such as being choked and being the victim of deliberate physical pain. Also as before, Gibb et al. (2001a,b) included both family and nonfamily perpetrators, whereas Gross and Keller included only parent or primary caretaker perpetrators. Further, Gibb et al.'s (2001b) participants were selected based on their cognitive style, as described above, and participants in Gibb et al. (2001a) were classified as maltreated if they endorsed any form of physical maltreatment ever occurring before the age of 15, regardless of whether they also endorsed emotional or sexual maltreatment. Gross and Keller (1992) classified participants as physically maltreated if they reported being *frequently* shaken, hit, or injured such that a mark was left, if they were *often* slapped, or if they were *ever* burned nonaccidentally as a child. Although participants reporting

childhood sexual maltreatment were excluded from this group, participants reporting that they *sometimes* experienced the forms of childhood emotional maltreatment described in the previous section were not excluded. Indeed, participants in the childhood emotional and physical maltreatment groups did not differ significantly in levels of childhood emotional maltreatment reported.

None of the four studies found a significant relation between reported levels of childhood physical maltreatment and participants' cognitive styles. Thus, despite the studies' differences in participant selection and grouping, perpetrators included, and experiences considered physical maltreatment, none of the studies found a significant relation between the variables. Meta-analytically combining the results of the four studies yielded a combined effect size (r), weighting the studies by their sample sizes, of .01, suggesting that there is virtually no relation between childhood physical maltreatment and individuals' cognitive styles.

2.2.3. *Childhood sexual maltreatment*

There were a number of methodological differences among the 10 studies meeting inclusion criteria that examined the relation between childhood sexual maltreatment and cognitive styles. For example, two provided no operational definition of childhood sexual maltreatment (Moll, 1992; Powell, 1990). In addition, one study provided information regarding the perpetrators of maltreatment, but did not define the types of behavior considered maltreatment (Gold, 1986). Of the studies providing operational definitions of childhood sexual maltreatment, three included both unwanted contact and noncontact sexual experiences (Gibb et al., 2001a,b; Pritt, 1998); the other four included only unwanted contact sexual experiences (Hundley, 1992; Mannarino & Cohen, 1996; McCord, 1985; Wenninger & Ehlers, 1998). Whereas two of the studies included only perpetrators who were related to the child (Hundley, 1992; McCord, 1985), six of the studies included both family and nonfamily perpetrators (Gibb et al., 2001a,b; Gold, 1986; Mannarino & Cohen, 1996; Pritt, 1998; Wenninger & Ehlers, 1998). Whereas two studies classified participants as sexually maltreated during childhood only if their maltreatment was documented (Mannarino & Cohen, 1996; Powell, 1990), six of the studies considered participants sexually maltreated if they reported at least one experience of childhood sexual maltreatment (Gibb et al., 2001a,b; Gold, 1986; Hundley, 1992; McCord, 1985; Wenninger & Ehlers, 1998). Only 2 of the 10 studies (Gibb et al., 2001a,b) included both male and female participants; the other eight included only girls or women. Finally, these studies included a broad range of samples. Specifically, three of the studies included community samples (Gold, 1986; Hundley, 1992; Wenninger & Ehlers, 1998), two included clinical samples (Powell, 1990; Pritt, 1998), two included undergraduates (Gibb et al., 2001a,b), one included both clinical and community participants (McCord, 1985), one included girls referred from victims' assistance agencies or rape crisis centers matched with girls from the community (Mannarino & Cohen, 1996), and one included women staying at a battered women's shelter (Moll, 1992).²

² Although Wenninger and Ehlers' (1998) participants were recruited from the community, 78% of those reporting childhood sexual maltreatment were currently receiving psychotherapy, and only 7% had never received psychotherapy.

These 10 studies yielded a mixed pattern of results, with only five finding a significant relation between childhood sexual maltreatment and cognitive styles. Thus, whereas one study (Mannarino & Cohen, 1996) found that the cognitive styles of girls with a documented history of childhood sexual maltreatment were more negative than those of girls without a history of childhood sexual maltreatment, another study (Powell, 1990) failed to find a significant relation between documented childhood sexual maltreatment and girls' cognitive styles. Similarly, although four studies (Gold, 1986; McCord, 1985; Pritt, 1998; Wenninger & Ehlers, 1998) found that women reporting a history of childhood sexual maltreatment exhibited more negative cognitive styles than did women without a history of childhood sexual maltreatment, two studies (Hundley, 1992; Moll, 1992) found no significant relation between women's reported histories of childhood sexual maltreatment and their cognitive styles. Finally, two studies (Gibb et al., 2001a,b) failed to find a significant relation between male and female undergraduates' reported histories of childhood sexual maltreatment and their cognitive styles. Meta-analytically combining the results of these 10 studies yielded a combined effect size (r), weighting the studies by their sample sizes, of .17. Considering the "file drawer problem," results suggest that 1365 additional studies yielding null results would need to be found before the combined effect of these studies would be reduced to barely significant, which is much higher than the minimal number ($5k+10$) recommended by Rosenthal (1991).

Given the significant heterogeneity of these studies' results [$\chi^2(9)=25.54$, $P<.001$], however, a number of variables were examined as potential moderators of the relation between childhood sexual maltreatment and cognitive styles. These included: (1) whether the study used a clinical vs. nonclinical sample; (2) whether the sexual maltreatment was documented vs. reported; (3) whether the definition of sexual maltreatment included only contact or both contact and noncontact forms of maltreatment; (4) the relationship of the perpetrators to the participants; and (5) the age of the participants. Only the age of the participants appeared to moderate the relation. In exploring this relation, studies were divided into those including "younger" participants (participants' mean age ranged from 11 to 19) and those including "older" participants (participants' mean age ranged from 30 to 39). Thus, considering only those studies with younger participants yielded a combined effect size (r), weighting the studies by their sample sizes, of .07. In contrast, considering only those studies with older participants yielded a combined effect size (r), weighting the studies by their sample sizes, of .23. Only the effect for older participants was significant, and 138 additional studies yielding null results would need to be found before the combined effect of these studies would be reduced to barely significant. Thus, it appears that the relation between childhood sexual maltreatment and cognitive styles is relatively weak for younger individuals, but fairly robust for older individuals.

2.2.4. *Conclusions*

The results of the quantitative review are summarized in Table 2 and allow a few initial conclusions. These conclusions must remain tentative, however, due to the small number of studies included. First, studies have not supported a link between childhood physical maltreatment and individuals' cognitive styles. Second, there appear to be significant relations between histories of either childhood emotional or sexual maltreat-

Table 2
Results of quantitative review

Maltreatment type	<i>k</i>	<i>N</i>	<i>r_w</i>	95% confidence interval	<i>Z</i>	Fail safe <i>N</i>	<i>H</i>
Emotional	4	516	.16	.07–.24	3.53**	70	2.11
Physical	4	516	.01	–.07–.10	0.33	N/A ^a	3.23
Sexual (all studies)	10	1290	.17	.12–.22	6.10**	1365	25.54*
Sexual (studies with younger participants) ^b	4	598	.07	–.01–.15	1.61	N/A ^a	3.03
Sexual (studies with older participants)	4	465	.23	.14–.31	4.90**	138	6.67

k = number of studies; *N* = total number of participants; *r_w* = effect size weighted by study sample size; Fail safe *N* = number of studies finding null results required to bring *r_w* to just significant (*P* = .05); *H* = within-group homogeneity statistic (χ^2 based on *df* = *k* – 1).

^a Because the *Z* values associated with these weighted effect sizes were not significant, the Fail safe *N* was not applicable.

^b Studies examining childhood sexual maltreatment were dichotomized into those whose participants' mean age was between 11 and 19 (younger participants) and those whose participants' mean age was between 30 and 39 (older participants). Two of the studies examining childhood sexual maltreatment (Moll, 1992; Pritt, 1998) were not included here because they did not provide the mean ages of their participants.

* *P* < .001.

** *P* < .0001.

ment and individuals' cognitive styles. The relation between childhood sexual maltreatment and cognitive styles was significant, however, only for those studies including relatively older participants.

Although it is impossible to know exactly what happened between the end of childhood and the time at which these participants' cognitive styles were assessed, a few tentative hypotheses may be offered. First, research has shown that individuals with a history of sexual maltreatment in childhood are at greater risk for sexual maltreatment in adulthood than are individuals with no history of childhood sexual maltreatment (Cloitre, 1998). It is possible, therefore, that adult sexual victimization both mediates and moderates the relation between childhood sexual maltreatment and adults' cognitive styles (see Baron & Kenny, 1986, for a discussion of mediating moderators). That is, childhood maltreatment may increase the likelihood of sexual maltreatment in adulthood, which, if it occurs, contributes to the development of a negative cognitive styles. If childhood sexual maltreatment occurs in the absence of adult sexual maltreatment, however, then it may have a nonsignificant effect on individuals' cognitive styles. A second possibility is that the relation between childhood sexual maltreatment and cognitive styles simply increases with the passage of time. Therefore, it may take some time for the effects of childhood sexual maltreatment to become evident.

Future studies are needed to test these two hypotheses. Specifically, studies should assess maltreatment experienced in adolescence and adulthood, as well as childhood, to test the hypothesis that it serves as a mediating moderator of the relation between childhood sexual maltreatment and cognitive styles. In addition, longitudinal studies are needed in which the cognitive styles of individuals with and without a history of childhood sexual maltreatment

are assessed repeatedly over several years, to test the hypothesis that childhood sexual maltreatment has a delayed effect upon individuals' cognitive styles that does not become manifest until a number of years have passed. Until these hypotheses are examined, the current finding that participant age moderates the relation between childhood sexual maltreatment and cognitive styles will remain ambiguous.

One method of interpreting the practical importance of these results is to consider them in terms of the Binomial Effect Size Display (BESD; Rosenthal, 1991; Rosenthal et al., 2000; Rosenthal & Rubin, 1979, 1982). Generally, the BESD is a 2×2 contingency table, in which the row and column totals are set to 100 (i.e., the sum of all four cells equals 200). Thus, the BESD illustrates the effect of the independent variable on the dependent variable for a population in which both conditions of the independent and dependent variables are equally likely (i.e., occur 50% of the time).

In the current review, the BESD illustrates the extent to which a history of childhood maltreatment is related to the presence of a negative cognitive style for a population in which half of the individuals report childhood maltreatment and half do not, and half of the individuals exhibit a negative cognitive style and half exhibit a positive cognitive style. The rows of the BESD correspond to childhood maltreatment considered dichotomously (yes vs. no), and the columns correspond to cognitive styles considered dichotomously (negative vs. positive). In computing the BESD, the values of the childhood maltreatment/negative cognitive style cell and the no childhood maltreatment/positive cognitive style cell are both equal to $0.50 + r/2$. In contrast, the values of the childhood maltreatment/positive cognitive style cell and the no childhood maltreatment/negative cognitive style cell are equal to $0.50 - r/2$.

Therefore, given the r of .16 for emotional maltreatment, approximately 58 out of 100 individuals reporting a history of childhood emotional maltreatment can be expected to exhibit a negative cognitive style, whereas only 42 of 100 individuals reporting no history of childhood emotional maltreatment can be expected to exhibit a negative cognitive style. Thus, a history of childhood emotional maltreatment is associated with an increase in the risk of a negative cognitive style from 42% to 58%. Similarly, given the r of .23 for childhood sexual maltreatment among older participants, approximately 62 out of 100 individuals at least 30 years old reporting a history of childhood sexual maltreatment can be expected to exhibit a negative cognitive style, whereas only 39 of 100 individuals reporting no history of childhood sexual maltreatment can be expected to exhibit a negative cognitive style. Thus, a history of childhood sexual maltreatment is associated with an increase in the risk of a negative cognitive style from 39% to 62% among individuals 30 years old or older.

Although these effects may seem small, one should keep in mind that this line of research is still in its infancy. Refinement of measures, focusing on increasing their construct validity, will certainly reduce measurement error and may increase the sizes of the relationships found. In addition, finding any developmental antecedents of negative cognitive styles is important because evidence suggest that, once developed, a negative cognitive style significantly increases one's risk for developing both symptoms and episodes of depression (Abramson, Alloy, & Metalsky, 1995; Alloy et al., 1999; Joiner & Wagner, 1995; Peterson & Seligman, 1984).

Table 3
Summary of studies included in qualitative review

Study	Sample	Age of childhood	Cognitive style	Results
Augusto (1995)	320 female undergraduates: 128 reported EM, PM, or SM (mean age = 19.9, S.D. = 2.5) and 192 reporting no history of EM, PM, or SM (mean age = 19.5; S.D. = 1.3)	Before age 17	Internal, stable, global attributions for negative events (attributional dimensions examined separately)	Levels of neither EM nor SM were related to any of the attributional dimensions ^a
Cerezo and Frias (1994)	19 children (3 f; 16 m; mean age = 10.3 years, S.D. = 1.2) with ≥ 2 years of documented EM and PM by a parent and 26 children (12 f; 14 m; mean age 9.4 years, S.D. = 0.6) with no history of parental EM or PM	N/A; all children under age 14	Internal, stable, global attributions for negative events	Children with a history of EM and PM had a more negative cognitive style than children with no history of maltreatment
Fiering, Taska, and Lewis (1998)	142 individuals between the ages of 8 and 15 with documented SM (108 f; 34 m)	N/A; all children under age 16	Internal, stable, global attributions for negative events; external, unstable, specific attributions for positive events	Number of SM events was significantly related to negativity of cognitive style
Hankin et al. (2001)	653 undergraduates (443 f; 213 m; mean age = 18.7; S.D. = 1.0)	Before age 15	Stable, global attributions, and the tendency to infer negative consequences and self-characteristics following negative events	Undergraduates' cognitive styles were related to levels of EM, but not PM or SM
Kaufman (1991) ^b	56 children (29 f; 27 m) with documented maltreatment aged 7–12 years; children rated on five-point scale on severity of EM and PM	N/A; all children under age 13	Internal, stable, global attributions for negative events	Severity of neither EM nor PM was significantly related to the negativity of children's cognitive styles

Kuyken and Brewin (1999)	58 depressed women (mean age = 37.1; S.D. = 10.0); of these women, 19 reported no maltreatment (NM), 9 reported PM only, 10 reported SM only, and 18 reported both PM and SM	Before age 18	Internal, stable, global attributions for negative events	Controlling for participants' age and levels of depressive symptoms, neither the main effects of PM or SM nor their interaction were significantly related to participants' cognitive styles
Mandoki and Burkhart (1989)	282 female undergraduates (mean age = 19.5; range = 17–33) either reporting a history of SM ($n = 37$) or reporting no history of SM (N-SM; $n = 245$)	Before age 14	Internal, stable, global attributions for negative events	Severity of SM was not significantly related to negativity of students' cognitive styles
Mayall and Gold (1996)	669 female undergraduates (mean age = 19.0; S.D. = 2.0); 127 reported a history of SM	Before age 15	Internal, stable, global attributions for negative events (attributional dimensions examined separately)	Severity of SM was not significantly related to any of the attributional dimensions
Rose et al. (1994)	99 depressed inpatients (70 f; 29 m) aged 18–65	Before age 18	Stable, global attributions, and the tendency to infer negative consequences and self-characteristics following negative events	The cognitive styles of inpatients reporting a history of SM were more negative than those of inpatients not reporting SM
Steel (1996)	41 inpatients (27 f; 19 m; mean age = 33.9; 26 reported SM), 64 outpatients (47 f; 17 m; mean age = 23.4; 36 reported SM), and 180 undergraduates (95 f; 85 m; mean age = 19.4; 33 reported SM)	Before age 18	Internal, stable, global attributions for negative events	Of those reporting SM, the duration, but not frequency, of SM was positively correlated with the negativity of participants' cognitive styles

EM = child emotional maltreatment; PM = child physical maltreatment; SM = child sexual maltreatment.

^a Results for continuous levels of PM were not reported.

^b Although levels of SM were also assessed, they were not compared to children's cognitive styles.

2.3. *Qualitative review*

As mentioned above, a number of studies examining the relation between childhood maltreatment and cognitive styles could not be included in the quantitative review, because their data were analyzed in such a way that precluded the computation of effect sizes. Specifically, these studies used continuous measures of both maltreatment and cognitive style (Augusto, 1995; Feiring, Taska, & Lewis, 1998; Hankin, Abramson, & Miller, 2001; Kaufman, 1991; Mandoki & Burkhart, 1989; Mayall & Gold, 1995; Steel, 1996), evaluated the effects of maltreatment while simultaneously controlling for the effects of other variables (Kuyken & Brewin, 1999; Rose, Abramson, Hodulik, Halberstadt, & Leff, 1994), or examined the combined effects of two maltreatment types (Cerezo & Frias, 1994; Gross & Keller, 1992). Despite this, it may be informative to review the results of these studies qualitatively (see Table 3), comparing their results to those of the quantitative review.³

The operational definitions of childhood maltreatment provided by studies included in the qualitative review appear similar to those used by studies in the quantitative review. For example, four of the studies assessing childhood emotional maltreatment used measures that appear to be consistent with Hart et al.'s (1987) definition (Augusto, 1995; Gross & Keller, 1992; Hankin et al., 2001; Kaufman, 1991). Specifically, these studies included experiences such as degrading, rejecting, corrupting, and terrorizing. The fifth study (Cerezo & Frias, 1994) did not provide an operational definition of childhood emotional maltreatment. Only three of the studies assessing childhood emotional maltreatment provided information regarding the perpetrators of the maltreatment. Whereas one study (Hankin et al., 2001) included both family and nonfamily perpetrators, the other two (Augusto, 1995; Gross & Keller, 1992) only included maltreatment committed by parents or primary caretakers.

Of the five studies included in the qualitative review examining childhood physical maltreatment, one provided no operational definition of the maltreatment (Cerezo & Frias, 1994). The other four appeared to include experiences similar to those used in the studies reviewed quantitatively. Specifically, they included experiences such as physical aggression ranging from throwing objects to using a knife or gun (Augusto, 1995), serious physical punishment or intentionally inflicted injuries (Kaufman, 1991), and punching, kicking, or hitting with an object (Hankin et al., 2001; Kuyken & Brewin, 1999). The criteria for being considered physically maltreated in Gross and Keller (1992) is presented in the quantitative review. Of the two studies including information regarding the perpetrators of the maltreatment, one included maltreatment by both family and nonfamily members (Hankin et al., 2001) and the other included only parent or primary caretaker perpetrators (Gross & Keller, 1992).

Of the eight studies included in the qualitative review assessing childhood sexual maltreatment, two provided no operational definitions of the maltreatment (Mandoki & Burkhart, 1989; Steel, 1996). Although the other six studies did provide operational definitions of childhood sexual maltreatment, each included different forms of sexual

³ Information regarding Gross and Keller's (1992) sample, defined age of childhood, and assessed dimensions of cognitive style is presented in Table 1.

experiences. Specifically, only two studies included both contact and noncontact sexual experiences (Fiering et al., 1998; Hankin et al., 2001). The other four included only contact sexual experiences, but varied in the inclusiveness of their definitions. Ranging from least to most inclusive, these four studies included experiences such as incest or rape (Rose et al., 1994), any genital contact (Kuyken & Brewin, 1999), experiences ranging from fondling to intercourse (Augusto, 1995), and experiences ranging from kissing, to fondling, to intercourse (Mayall & Gold, 1995). All six of the studies providing information concerning the perpetrators of sexual maltreatment included both family and nonfamily perpetrators (Augusto, 1995; Fiering et al., 1998; Hankin et al., 2001; Kuyken & Brewin, 1999; Mandoki & Burkhart, 1989; Mayall & Gold, 1995). Of these six studies, only two included perpetrators of any age (Fiering et al., 1998; Hankin et al., 2001). The rest required that the perpetrator be at least 3 (Mandoki & Burkhart, 1989) or 5 (Augusto, 1995; Kuyken & Brewin, 1999; Mayall & Gold, 1995) years older than the child.

The two studies included in this qualitative review examining childhood emotional and physical maltreatment suggested that, in combination, they are related to more negative cognitive styles. Specifically, children with case histories of at least 2 years of emotional and physical maltreatment exhibited more negative cognitive styles than did children with no history of childhood maltreatment (Cerezo & Frias, 1994). Similarly, the cognitive styles of undergraduates reporting both childhood emotional and physical maltreatment were significantly more negative than those of undergraduates reporting no history of childhood maltreatment (Gross & Keller, 1992).⁴

Examining the forms of maltreatment individually, studies have provided only limited support for the relation between childhood emotional maltreatment and negative cognitive styles. Specifically, whereas one study found that levels of childhood emotional maltreatment were significantly related to the negativity of undergraduates' cognitive styles (Hankin et al., 2001), another study found no significant relation between undergraduates' reports of childhood emotional maltreatment and their cognitive styles (Augusto, 1995). In addition, one study failed to find a significant relation between reported levels of childhood emotional maltreatment and the cognitive styles of children referred to the Department of Children and Youth Services for abuse and/or maltreatment (Kaufman, 1991).

Of the three studies examining childhood physical maltreatment individually, none have found support for its relation with cognitive styles. Specifically, one study failed to find a significant relation between undergraduates' reports of childhood physical maltreatment and their cognitive styles (Hankin et al., 2001). Another study failed to find a significant relation between reported levels of childhood physical maltreatment and the cognitive styles of children referred to the Department of Children and Youth Services for abuse and/or maltreatment (Kaufman, 1991). Finally, one study failed to find a significant relation between depressed inpatient and outpatient women's reported levels of physical maltreatment and their cognitive styles (Kuyken & Brewin, 1999).

⁴ Gross and Keller (1992) tested for between-group differences in cognitive styles with an omnibus ANOVA, which yielded a nonsignificant result. However, results of a focused contrast suggest that their combined maltreatment group did exhibit a more negative cognitive style than did the control (no maltreatment) group, $t(89)=1.92, P=.03, r=.20$.

Studies examining the relation between childhood sexual maltreatment and negative cognitive styles have provided mixed results. Specifically, significant relations have not been found between reported levels of childhood sexual maltreatment and the cognitive styles of undergraduates (Augusto, 1995; Hankin et al., 2001; Mandoki & Burkhart, 1989; Mayall & Gold, 1995) or depressed inpatient and outpatient women (Kuyken & Brewin, 1999). In contrast, depressed inpatient men and women reporting a history of childhood sexual maltreatment exhibited more negative cognitive styles than did depressed inpatients reporting no history of childhood sexual maltreatment (Rose et al., 1994). Similarly, the number of documented cases of sexual maltreatment was significantly related to the negativity of children's cognitive styles (Feiring et al., 1998). Finally, the negativity of inpatients', outpatients', and undergraduates' cognitive styles were significantly related to the duration, but not frequency, of childhood sexual maltreatment (Steel, 1996).

2.3.1. *Conclusions*

Results of the qualitative review suggest that individuals with a history of both childhood emotional and physical maltreatment have more negative cognitive styles than do individuals with no history of maltreatment. The reason for this relationship is unclear, however. It may be due to the effects of emotional maltreatment, physical maltreatment, or their combination. Although, based on the results of the quantitative review, we may speculate that the significant effects were due to the inclusion of emotionally maltreated participants in the combined maltreatment groups, future studies examining both the main effects of maltreatment and interactions among the different maltreatment types are necessary to resolve this ambiguity. Supporting this hypothesis, however, studies included in the qualitative review examining childhood physical maltreatment individually found that it was not significantly related to individuals' cognitive styles.

Results for studies examining childhood emotional maltreatment individually were more mixed, with only one of three studies finding a significant relation between childhood emotional maltreatment and cognitive styles. There are two possible reasons for these mixed results. First, the negative results of Kaufman (1991) may have been due, in part, to the relatively small sample size included in this study, which limited statistical power to detect group differences in cognitive styles. Remember that the combined effect size for studies examining the relation between childhood emotional maltreatment and cognitive styles was relatively small ($r=.16$). To have adequate power (.80) to detect effects of this size, Cohen (1988) recommends a sample of 240 participants. Kaufman's sample size, by contrast, was only 56 children. A second factor that may have contributed to the mixed results for emotional maltreatment is a difference between studies in which perpetrators were included in the assessment of emotional maltreatment. Specifically, whereas Hankin et al. (2001) included emotional maltreatment committed by both family and nonfamily perpetrators, Augusto (1995) included only emotional maltreatment by parents or caretakers. Kaufman provided no information about the perpetrators of childhood emotional maltreatment. Recent evidence suggests that emotional maltreatment by nonfamily members may be significantly related to individuals' cognitive styles even after statistically controlling for the influence of maltreatment by parents (Gibb, Abramson, & Alloy, 2001). Therefore, the discrepancy between Augusto (1995) and Hankin et al. (2001) in the assessed perpetrators of emotional

maltreatment may have contributed to the difference in findings. Given that only two of the three studies of childhood emotional maltreatment included in the qualitative review provided evidence concerning the perpetrators, this conclusion must remain tentative and should be evaluated in future studies.

The reviewed studies also provided mixed support for the relation between childhood sexual maltreatment and cognitive styles. These mixed results may also have been due, in part, to the studies' relatively small sample sizes. Specifically, the combined effect size of all studies examining childhood sexual maltreatment was relatively small ($r=.17$). To have adequate power (.80) to detect effects of this size, Cohen (1988) recommends a sample of 211. Only two of the eight studies examining childhood sexual maltreatment, therefore, had sample sizes sufficiently large to detect this effect (Augusto, 1995; Hankin et al., 2001). That these two studies did not find a significant relation between childhood sexual maltreatment and cognitive styles is consistent with results of the qualitative review suggesting that the relation may be significant only for individuals who are at least 30 years old.

3. General discussion

Results of the current review partially support Rose and Abramson's (1992) hypothesis that childhood emotional maltreatment should be more strongly related to cognitive styles than either childhood physical or sexual maltreatment. Specifically, the results of the studies reviewed suggest that there is a small but significant relation between a history of childhood emotional maltreatment and the presence of a negative cognitive style. There is some evidence to suggest, however, that this relation is stronger when the assessment of emotional maltreatment includes both family and nonfamily member perpetrators than when only family member perpetrators are included. In contrast, the reviewed studies provided no evidence for a significant relation between a history of childhood physical maltreatment and the presence of a negative cognitive style. Finally, although there appears to be a significant relation between childhood sexual maltreatment and cognitive styles, the nature of this relation remains unclear. Specifically, a significant relation was found for studies including "older" participants (mean ages ranging between 30 and 39 years), but not for studies including "younger" participants (mean ages ranging between 11 and 19 years). The relation between childhood sexual maltreatment and the development of negative cognitive styles, therefore, may be indirect, mediated and/or moderated by events occurring in adulthood (e.g., revictimization).

Although the studies included in the current reviews were similar in that they all based their assessment of negative cognitive styles upon the definitions provided by the reformulated theory of learned helplessness (Abramson et al., 1978) or the hopelessness theory (Abramson et al., 1989), there were also a number of important differences among the studies. However, with the exception of studies examining childhood sexual maltreatment, there have been too few studies conducted thus far to examine whether these differences may have accounted for the inconsistent results (i.e., served as moderator variables). Probably, the most important difference between the studies is how they operationalized the three forms of childhood maltreatment. Specifically, although each study may have assessed aspects of the

three maltreatment types, minor variations in how the constructs were defined may have affected the results (for a discussion of this point, see Roosa, Reyes, Reinholtz, & Angelini, 1998). Although this type of variation across studies is inevitable, researchers should carefully define their constructs so that differences in operational definitions between studies can be identified and evaluated as possible explanations of discrepant results.

Studies also differed in both the age of the participants included and the age used to define the end of childhood. Specifically, the mean ages of the participants included ranged from 9.4 to 41.1 years, and the age used to define the end of childhood ranged from 13 to 17 years. Third, there was heterogeneity among the studies in regard to the types of samples used (e.g., children, college students, and depressed adult inpatients). Fourth, whereas the majority of the studies used the definition of negative cognitive style derived from the revised learned helplessness theory (Abramson et al., 1978), four of the studies (Gibb et al., 2001a,b; Hankin et al., 2001; Rose et al., 1994) used the definition derived from the hopelessness theory (Abramson et al., 1989). Fifth, although the majority of studies used presence vs. absence of maltreatment to predict scores on a measure of cognitive style, one study (Gibb et al., 2001b) used presence vs. absence of a negative cognitive style to predict scores on a measure of childhood maltreatment. At this point, the effect these differences in study design may have upon the results is largely unknown. For example, although tests of moderation showed that the relation between childhood sexual maltreatment and cognitive styles was stronger for older individuals than for younger individuals, this variable could not be examined in studies examining either childhood emotional or physical maltreatment because of the small number of studies to date.

In addition to commenting on results of the research to date, the current reviews also allow a comment on how research in this area has been conducted thus far. As mentioned above, the majority of previous studies have selected participants based on the presence vs. absence of a single type of childhood maltreatment and then used this dichotomous classification to predict scores on a measure of cognitive style. Although this type of data analytic strategy allows results from multiple studies to be meta-analytically combined, it does not allow conclusions about which type of childhood maltreatment has the strongest *unique* relation to individuals' cognitive styles. If, however, researchers assessed not just the presence vs. absence of a single type of maltreatment, but also levels of each of the three types of maltreatment, conclusions about unique relationships could be drawn. Specifically, by entering levels of each type of maltreatment simultaneously into a regression equation, the overlap among them could be statistically controlled, thereby allowing the researcher to examine the unique relation of each with cognitive styles. Therefore, researchers should consider analyzing and reporting their results both ways in future studies, thus providing the greatest amount of information (cf. Gibb et al., 2001a,b). Future studies should also seek to better understand the constructs of emotional and sexual maltreatment, to determine which characteristics of these experiences are most deleterious. For example, are certain forms of emotional maltreatment (e.g., degradation) more likely than others to contribute to the development of a negative cognitive style? Also, is the number of perpetrators more important than the duration of the maltreatment? Answers to these questions will help refine our search for the process by which cognitive styles develop.

Finally, one should keep in mind the limitations of the current reviews. First, care should be exercised in generalizing the current results, because they are based on a small sample of studies. Second, the results of the studies reviewed do not allow causal conclusions. Therefore, although the results are consistent with Rose and Abramson's (1992) hypothesis that childhood maltreatment may contribute to the development of a negative cognitive style, the causal hypothesis has not yet been adequately tested. Therefore, future studies should begin to examine whether levels of childhood maltreatment prospectively predict changes in children's cognitive styles. In addition, researchers should examine children's attributions for specific maltreatment experiences to see whether their degree of negativity varies as a function of the chronicity of the maltreatment they experienced. If childhood maltreatment does indeed lead to the development of negative cognitive styles and if the process by which this occurs can be understood, then therapeutic interventions can be designed to prevent it. By intervening before individuals develop cognitive vulnerabilities to depression, we may help buffer against one pathway to the development of depression.

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