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Coping Self-Efficacy Mediates the Effects of Negative Cognitions on Posttraumatic Distress

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Abstract

Although cognitive distortions have predicted posttraumatic distress after various types of traumatic events, the mechanisms through which cognitive distortions influence posttraumatic distress remain unclear. We hypothesized that coping self-efficacy, the belief in one's own ability to manage posttraumatic recovery demands, would operate as a mediator between negative cognitions (about self, about the world, and self-blame beliefs) and posttraumatic distress. In the cross-sectional Study 1, data collected among 66 adult female victims of child sexual abuse indicated that coping self-efficacy mediated the effects of negative cognitions about self and about the world on posttraumatic distress. The same pattern of results was found in a longitudinal Study 2, conducted among 70 survivors of motor vehicle accidents. Coping self-efficacy measured at 1 month after the trauma mediated the effects of 7-day negative cognitions about self and about the world on 3-month posttraumatic distress. In both studies self-blame was not related to posttraumatic distress and the effect of self-blame on posttraumatic distress was not mediated by coping self-efficacy. The results provide insight into a mechanism through which negative cognitions may affect posttraumatic distress and highlight the potential importance of interventions aimed at enhancing coping self-efficacy beliefs.

Keywords

Negative cognitions; coping self-efficacy; posttraumatic distress

1. Introduction

Several theoretical approaches have suggested that cognitive factors may contribute to the development of Posttraumatic Stress Disorder (PTSD) and are influential during recovery processes (e.g., Brewin, Dalgleish, & Joseph, 1996; Ehlers & Clark, 2000; Foa & Rothbaum, 1998; Janoff-Bulman, 1992, Horowitz, 1976). Janoff-Bulman (1992) emphasized the challenges related to beliefs about the world as a benevolent and meaningful place and the

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worthiness of the self. Ehlers and Clark (2000) focused on the sense of threat appraisals specifically related to the trauma and the development of traumatic memories. Brewin et al., (1996) emphasized the role of verbally and situationally encoded memories. Finally, Foa and Rothbaum (1998) detailed specific negative schemas about the world and self as an important cognitive component related to trauma recovery. Brewin and Holmes (2003) provided an in-depth critique of these different cognitive theories. In this paper we are particularly focused on Foa and Rothbaum's (1998) model.

Besides trauma-specific theories, the mechanisms in which cognitive factors affect PTSD development and recovery may be explained by other more general approaches to human adaptation to stressful situations, such as social cognitive theory (Bandura, 1997). Social cognitive theory is a broad theory of human motivation and behavior with specific emphasis on self-efficacy beliefs. In this set of investigations, we were particularly interested in the mediational role of coping self-efficacy between more general negative cognitions and posttraumatic distress. This hypothesis was tested in two studies. The first was a cross-sectional study conducted among adult victims of child sexual abuse (Study 1). The second was a longitudinal study investigating the recovery process among motor vehicle accidents survivors (Study 2).

1.1. Negative Beliefs about the World and Self and Their Effects on Posttraumatic Distress

Negative cognitions related to the self and the world have been seen as important in the development and maintenance of PTSD symptoms after trauma. According to Foa and Rothbaum's (1998) emotional processing theory, two broad categories of negative cognitions mediate the effects of traumatic events on PTSD development and maintenance. The first refers to a belief that the world is extremely dangerous and the second reflects victims' beliefs about being incompetent. These cognitive distortions after trauma are usually measured by means of the Posttraumatic Cognitions Inventory (PTCI; Foa, Ehlers, Clark, Tolin, & Orsillo, 1999), which distinguishes three negative cognitions: negative cognitions about self, negative cognitions about the world, and self-blame.

Many cross-sectional studies yielded that these PTCI scales correlated positively with PTSD symptoms (Foa et al., 1999; Kolts, Robinson, & Tracy, 2004; Laposa & Alden, 2003), depression (Foa et al., 1999), and anxiety (Foa et al., 1999). The PTCI scales also discriminated between trauma victims with and without PTSD (Beck et al, 2004; Foa et al., 1999). The PTCI total score predicted Acute Stress Disorder following motor vehicle accident and non-sexual assault (Nixon & Bryant 2005). Kolts et al. (2004) demonstrated that negative cognitions predicted PTSD symptom level after controlling for depression. In a longitudinal study of a sample of firefighters, Bryant and Guthrie (2005) showed that pre-trauma negative cognitions about self predicted PTSD symptoms. However, other negative cognitions indexed by the PTCI (along with the pre-trauma PTSD symptoms, the number of traumatic events, and severity of the worst trauma) were not predictive of PTSD symptoms measured at follow-up.

There is also evidence suggesting that the self-blame subscale of the PTCI does not explain PTSD symptoms, at least in some samples of trauma survivors (e.g., motor vehicle accidents survivors; Beck et al., 2004). These results indicated that cognitions measured with the PTCI may operate in different ways. Finally, experimental research demonstrated that an intervention aimed at changing negative cognitions after trauma may result in more positive beliefs and therefore less severe posttraumatic distress (Foa & Rauch, 2004).

Although these results generally support the assumption that negative cognitions are related to PTSD symptoms, the effects of negative cognitions measured with the PTCI scales on posttraumatic distress are not always clear. Moreover, previous research does not provide evidence related to the mediational processes by which negative cognitions may influence

posttraumatic distress. Further research investigating mediational models of cognitive mechanisms is critical to understanding these processes. In addition, studies employing longitudinal designs are needed. Although several mechanisms have been offered to explain the influence of negative thoughts on PTSD development and maintenance (Brewin & Holmes, 2003; Ehlers & Clark, 2000; Foa & Rothbaum, 1998), the mediating effect of trauma survivors' beliefs about their capabilities to cope with trauma has not been investigated.

1.2. Coping Self-Efficacy and Posttraumatic Distress

Trauma survivors' self-beliefs of coping capability (i.e., coping self-efficacy) are critically important for understanding the unfolding coping response to trauma and integral to the self-evaluative mechanisms of human adaptation (Benight & Bandura, 2004). Coping self-efficacy (CSE), a belief in one's ability to cope with posttraumatic stress demands, affects various aspects of human functioning through four processes: cognitive, motivational, affective, and environmental selection (Bandura, 1997). All of these processes may be involved in development and maintenance of posttraumatic distress (Benight & Bandura, 2004). Research on trauma-specific CSE showed that CSE predicted PTSD symptoms following different types of traumatic events, even after controlling for the influence of other variables (Benight et al., 1997; Benight, Ironson et al., 1999; Benight, Flores, & Tashiro, 2001). Moreover, studies on trauma-specific CSE indicated that the effects of some trauma-related factors on posttraumatic distress may be mediated by CSE. For example, in a longitudinal study, CSE mediated the effects of acute stress response on PTSD symptoms and global distress measured one year after flood and fire disaster (Benight & Harper, 2002). In a longitudinal study of Hurricane Andrew survivors, CSE mediated the influence of lost resources on subsequent distress (Benight, Ironson et al., 1999). Among Hurricane Opal survivors the effects of loss of resources and social support on trauma-related distress was mediated by CSE. Perhaps more pertinent to the present investigation, CSE mediated the effect of a cognitive factor, optimism, on posttraumatic distress (Benight, Swift, Sanger, Smith, & Zeppelin, 1999).

Overall, these studies exploring relationships between CSE and posttraumatic distress indicated that enhanced CSE helps to manage psychological recovery after trauma. Importantly, some studies testing the mediating role of CSE demonstrated that the level of CSE is influenced by the loss of resources, social support, and optimism.

Negative beliefs in one's own ability to manage posttraumatic recovery demands is not the same as low negative beliefs about oneself, as defined by Foa and Rothbaum (1998). The latter reflect more general assumptions and refer to a wide domain of human functioning. In contrast, CSE reflects the beliefs of being able to master challenging demands specifically related to the posttraumatic recovery by means of adaptive action. We argue that these general negative beliefs will reduce CSE perceptions and affect posttraumatic distress through these more specific recovery-related cognitions. There are already some data from non-traumatized samples showing that general cognitions (e.g., general self-efficacy) operate through more context-specific cognitions (e.g., task-specific self-efficacy) and in that indirect way affect performance (Chen, Gully, Whiteman, & Kilcullen, 2000).

Summarizing, although most prominent theoretical frameworks explaining PTSD symptoms assume that negative cognitions are the most proximal, direct predictors of posttraumatic distress, we argue that these general negative cognitions operate through other, trauma-specific cognitions, such as CSE. We hypothesized that the effect of negative cognitions on posttraumatic distress would be mediated by CSE (see Figure 1). This hypothesis was initially tested in Study 1 among adult survivors of child sexual abuse. We then tested this hypothesis again in a longitudinal investigation of motor vehicle accident victims.

2. Study 1

An estimated 16.8% of females have experienced sexual abuse in childhood (Gorey & Leslie, 1997). Review of studies from 19 countries showed that prevalence rates for women may vary from 7% to 36% (Finklehor, 1994). Many women who were exposed to child sexual abuse develop serious psychopathology, including depression, borderline personality disorder, and posttraumatic stress disorder (Bulik, Prescott, & Kendler, 2001; Molnar, Buka, & Kessler, 2001; Ullman & Filipas, 2001; Zanarini et al., 2002).

Numerous factors may contribute to development and maintenance of abuse-related posttraumatic distress, including characteristics of abuse (e.g., age of onset, frequency, relation of abuser, and severity; Bulik, et al., 2001; Foa & Rothbaum, 1998), coping (Whiffen & MacIntosh, 2005), and cognitive distortions (Foa & Rothbaum, 1998). Although the role of CSE in predicting posttraumatic distress has not been examined among child sexual abuse survivors, CSE has been shown to predict psychological distress and PTSD in survivors of other types of trauma (Benight, Freyaldenhoven, Hughes, Ruiz, & Zoschke, 2000; Murphy, 1987; Solomon, Benbenishty, & Mikulincer, 1991). Moreover, CSE has also mediated between trauma severity and psychological outcomes (Benight, Ironson et al., 1999).

2.1. Method

2.1.1. Participants and Procedure—Sixty-six women with a history of child sexual abuse (CSA) participated in the study. Participants were recruited from university classes ($n = 22$), correctional facilities ($n = 22$), and community private practices and support groups ($n = 22$). Inclusion criteria included being female and over the age of 18 years, a self-reported 8th grade or better reading level, and a clear memory of CSA. A total of 75 sets of questionnaires were distributed; nine participants did not meet inclusion criteria or returned incomplete questionnaires.

Participants ages ranged from 18 to 55 years old ($M = 33.95$, $SD = 10.53$). Ethnically, the sample was primarily Caucasian (75.7%), the remaining 25% of the sample comprised African Americans (9.1%), Latin Americans (7.6%), and Native Americans (7.6%). About 20% of women had completed a high school degree, about 57% reported some college education, and the remaining participants (23%) were college graduates.

Among participants, 22.8% experienced 1 to 3 incidents of sexual abuse during childhood, 21.1% survived 4 to 10 incidents, 33.4% reported 11 to 100 incidents, and 22.7% indicated over 100 acts of abuse. The mean age of onset was 7.63 years ($SD = 3.74$). CSA most often involved the biological father (28.1%) or step-father/partner of a biological parent (20.3%). Neighbors and strangers perpetrated the least number of CSA acts (4.7%). Twenty six women (39.4%) met all six criteria of PTSD as assessed with the Posttraumatic Stress Diagnostic Scale (Foa, 1995).

Inmates were recruited through individual fliers delivered via the inmate mail system or on site by the one of the researchers. Private practitioners or support group leaders recruited the community group. Students were recruited from introductory psychology classes by one of the researchers. The women were informed of the inclusion criteria and that participation in the study was completely anonymous and voluntary. If a potential respondent was interested in participating, she was given a packet of questionnaires and allowed to complete it at her convenience. The women were instructed to complete the forms individually and not to share information.

2.1.2. Measures

2.1.2.1. Negative Cognitions: The Posttraumatic Cognitions Inventory (PTCI; Foa et al., 1999) was used to assess negative cognitions. The measure consists of 36 items, with three non-diagnostic items, that form three subscales: Negative cognitions about self (21 items, e.g., “I have permanently changed for the worse.”, “My life has been destroyed by the trauma.”), negative cognitions about the world (7 items, e.g., “You can never know who will harm you.”, “The world is a dangerous place.”), and self-blame (5 items, e.g., “The event happened because of the way I acted.”, “Someone else would not have gotten into this situation.”). Each item is rated on a scale from 1 (*totally disagree*) to 7 (*totally agree*). Subscale scores were calculated as the mean item responses and the total score was calculated as the mean of the subscales (possible range 1– 7). Foa et al. (1999) reported very good internal consistency and test-retest correlations for the three subscales and the total score. In our study Chronbach’s alphas were also high (.96, .85, .84, and .95, respectively). The PTCI subscales and total scores discriminated well between trauma survivors with and without diagnosed PTSD (Foa et al, 1999) and correlated with PTSD symptom measures (Kolts et al., 2004; Laposa & Alden, 2003). Recently, Beck et al., (2004) confirmed the assumed factor structure and good reliability of the PTCI for the group of MVA survivors. However, they discovered difficulties with concurrent and discriminative validity for the self-blame subscale.

2.1.2.2. Sexual Abuse Coping Self-Efficacy Scale: Due to the lack of an existing measure, the Sexual Abuse Coping Self-Efficacy Scale (SACSE) was developed to assess perceptions of efficacy in dealing with the specific behavioral, cognitive, and emotional demands of trauma related to CSA. Demands specific to history of CSA were identified through a literature review. The SACSE is a 42-item self-report scale where participants rank their current perceived capability to successfully deal with specific demands related to surviving sexual abuse. Example items include “Talk about my abuse”, “Accept what happened”, “Share my feelings about the abuse”. The responses are given on a 7-point scale ranging from 1 (*not at all capable*) to 7 (*totally capable*). The complete scale is available from the second author. The scale demonstrated excellent internal consistency (Cronbach’s alpha = .96).

2.1.2.3. Posttraumatic Distress: The Impact of Events Scale – Revised (IES-R; Weiss, 2004) was used to measure the presence and severity of posttraumatic symptoms. The scale is related to B, C, and D criteria of PTSD diagnosis. It consists of three subscales: intrusion (8 items), avoidance (8 items), and hyperarousal (6 items). Each of 22 questions is answered on a 5- point scale ranging from 0 (*not at all*) to 4 (*extremely*). The last 7 days time frame was utilized in this study. Although the 3-factor scoring is widely used in traumatized samples, recent psychometric data suggest a unifactorial structure may be more appropriate in those with sub-clinical symptoms (Creamer, Bell, & Failla, 2003). As a total score, the IES-R demonstrates strong psychometric characteristics with internal consistency ranging from Cronbach’s alpha of .75 (Amdur & Liberzon, 2001) to .96 (Creamer et al., 2003). Convergent validity was demonstrated by high correlation ($r = .84, p < .001$) with diagnostic measures such as the PTSD Checklist (Creamer et al. 2003). Internal consistency of the scale for this study sample was very good, $\alpha = .93$.

2.1.3. Analytic Strategy—To test whether the effect of negative cognitions on posttraumatic distress was mediated by CSE, Baron and Kenny’s (1986) procedure was employed. The test for mediation consisted of three regression equations. The first tested whether negative cognitions predicted posttraumatic distress (see Figure 1, path c). The second evaluated whether negative cognitions predicted CSE (see Figure 1, path a). And the third regression equation, evaluated the effect of CSE and negative cognitions on posttraumatic distress (see Figure 1, paths b and c’, respectively). To evaluate whether the addition of the mediator

significantly reduces the direct effect of negative cognitions on posttraumatic distress, a Sobel test was performed (Preacher & Hayes, 2004).

2.2. Results

2.2.1. Preliminary Analysis—Correlational analyses revealed (see Table 1) that posttraumatic distress was positively correlated with negative cognitions about self, negative cognitions about the world, and with total score of the PTCI. Coping self-efficacy was negatively related to posttraumatic distress, negative cognitions about self, about the world, and with total score of the PTCI. Self-blame was not related to CSE or posttraumatic distress.

As the total sample consisted of three sub-samples (i.e., university students, inmates, and women enrolled in community private practices and support groups), analysis of variance was used to examine between-group differences in the variables under study. The results showed that the three groups did not differ in reported levels of traumatic distress, coping self-efficacy, PTCI total score, or self-blame (for all analyses $p > .05$). However, negative cognitions about self ($F [2, 65] = 6.34, p < .01$), negative cognitions about the world ($F [2, 65] = 4.90, p < .05$), and participants' age ($F [2, 65] = 5.98, p < .01$) did differ across groups. Bonferroni post-hoc test revealed that students had lower levels of negative cognitions about self than inmates and community sample ($M = 2.01, M = 3.28$, and $M = 3.33$, respectively) and lower levels of negative cognitions about the world than inmates ($M = 4.19$ and $M = 5.31$, respectively). Additionally, students were younger than members of the community sample ($M = 29.14$ and $M = 39.32$, respectively).

2.2.2. Testing the Mediating Effects of CSE in the Negative Cognitions-Posttraumatic Distress Relationship—Considering possible inter-group differences, all analyses that tested the mediating effect of coping self-efficacy were controlled for age and group membership. Age and two dummy variables representing groups were entered as the first block of predictors in all regression equations. After adjusting for these possible covariates, Baron and Kenny's mediation (1986) procedure was employed. Across all analyses control variables did not account for a significant portion of the outcome variance (values of ΔR^2 between .006 and .089, $ps < .05$). Thus, age and group membership were not important predictors of psychological outcome in CSA survivors.

Results of mediation analyses are summarized in Table 2. Detailed tables with results of all regressions are available from the corresponding author. Overall, we conducted four mediation analyses, three for the PTCI subscales and one for the total score of the PTCI. First, it was tested if a negative cognition (i.e., negative cognitions about self) predicted posttraumatic distress (path c). The two indices of negative cognitions were related to posttraumatic distress: Negative cognitions about self and negative cognitions about the world. Then, regression analyses revealed that low CSE level was predicted by a high level of negative cognitions about self, about the world, and total score of the PTCI (path a). The effect of self-blame was not-significant. Finally, posttraumatic distress was regressed on CSE and the respective negative cognition index (paths b and c', respectively). Low CSE predicted high posttraumatic distress in all analyses. When the effect of CSE on posttraumatic distress was controlled, general negative cognitions were no longer significantly related to posttraumatic distress. Sobel tests confirmed that the effects of three of four negative cognitions indices (i.e., negative cognitions about self, about the world, and the PTCI total score) on posttraumatic distress were mediated by CSE.

2.3. Discussion Study 1

Our data support the notion that CSE perceptions related to one's ability to cope with childhood sexual abuse recovery demands mediates the effects of negative cognitive distortions on

posttraumatic distress. Negative cognitions about self, about the world, and the total score of cognitive distortions predicted victims' perceptions about their capability to manage trauma recovery demands. Coping self-efficacy in turn was related to victims' posttraumatic distress. Self-blame was not related to posttraumatic distress either directly or indirectly via CSE.

It is unclear why self-blame was not related to posttraumatic distress in our study. Self-blame is often considered as an important predictor of revictimization and psychological functioning after CSA (Classen, Palesh, & Aggarwal, 2005). Some studies, however, showed that among women reporting child sexual abuse self-blame was not related to posttraumatic distress (Owens & Chard, 2001). Overall Whiffen and MacIntosh (2005) indicated that results of studies on the mediating effect of self-blame between CSA and emotional distress were inconclusive. One of the possible explanations of these inconclusive results is demonstrated in Breitenbecher's (2006) study indicating that characterological (i.e., trait-like self-blame), but not behavioral self-blame (i.e., situationally determined self-blame) predicted posttraumatic distress following CSA. This explanation is in line with the opinion that self-blame subscale of the PTCI does not differentiate between these two types of self-blame (Startup, Makgekene, & Webster, 2007).

Our research integrating the Foa and Rothbaum's (1998) concept of cognitive predictors of PTSD with the recovery-specific concept of CSE demonstrates how cognitive distortions may operate. The results show that posttraumatic distress may not be a result of negative cognitions themselves; these negative cognitions appear to operate through CSE beliefs. These results may suggest some modifications of the Foa and Rothbaum's (1998) model. However, the results should be confirmed in other traumatized samples, using longitudinal design to make causal interpretation of investigated relationships more justified. Hence, our next study was longitudinal and focused on explaining posttraumatic distress among motor vehicle accident trauma victims.

3. Study 2

Survivors of motor vehicle accidents develop serious negative psychological and physical consequences of trauma (e.g., Blanchard et al., 2004; Kuhn, Blanchard, & Hickling, 2003; Veazey, Blanchard, Hickling, & Buckley, 2004). From 4.7% to 34.4% of accident survivors are diagnosed with PTSD (Blanchard & Hickling, 2004). Several predictors of negative psychological outcomes following MVA trauma have been identified. These include the peritraumatic response to the accident (Ehlers, Mayou, & Bryant, 1998; Fullerton et al., 2000), having diagnosable Acute Stress Disorder (Harvey & Bryant, 1998), having prior psychiatric difficulties, the extent of physical injury incurred, not being responsible for the accident (Delahanty et al., 1997; Ho, Davidson, Van Dyke, & Agar-Wilson, 2000), and, finally, posttraumatic negative cognitions (Beck et al., 2004). The significance of cognitive factors in predicting PTSD symptoms has been demonstrated in children after MVA (Ehlers, Mayou, & Bryant, 2003) as well as in adults survivors of MVA (Mayou, Ehlers, & Bryant, 2002). So far, studies have not tested the mediating function of self-evaluative cognitions in the development and maintenance of posttraumatic distress following MVA. Study 2 investigated if CSE measured 1 month after MVA mediated the effects of 7-day negative cognitions on 3-month posttraumatic distress.

3.1. Method

3.1.1. Participants and Procedure—Participants of Study 2 were assessed 7 days following their motor vehicle accident (Time 1; $n = 163$, $M = 7.1$ days, $SD = 2.56$), approximately 1 month after the accident (Time 2; $n = 91$, $M = 36.56$ days, $SD = 8.81$), and finally approximately 3 months after the accident (Time 3; $n = 70$, $M = 98.79$ days, $SD = 17.28$). Data from those who responded to all three waves of data collection were analyzed. The final

sample consisted of 45 (63%) women and 25 (37%) men, aged 18 to 72 years ($M = 40.21$, $SD = 14.41$), the median income was \$35 000 to \$40 000. Nearly half of the participants had at least a college degree (44.3%), and slightly less than a half (48.6%) were married. Participants were self-reported as primarily Caucasian (82.9%), with the remainder reporting as Hispanic (5.7%), African American (5.7%), or other (5.7%). Seven participants (10%) met criteria of PTSD as assessed with Posttraumatic Stress Diagnostic Scale (Foa, 1995) at three months following the accident.

Individuals taken to the ER subsequent to an MVA were approached by researchers who introduced the study and invited potential respondents to enroll in the study. The following exclusion criteria were used for the study: Younger than 18 years old or older than 75, inebriated at the time of the accident, pregnancy, current abuse of illegal drugs or having a history of chronic drug/alcohol abuse, self-reported psychotic psychiatric disorder or chronic diseases (e.g., diabetes, autoimmune disease, hypertension, or coronary disease, chronic lung disease). A majority of participants completed all three assessments at the university laboratory; in cases where participants could not come to the university, the assessment was completed at the participant's home.

Respondents who participated in all three waves of data collection did not differ from those who dropped out at Time 2 or those who dropped out at Time 3 in their report of negative cognitions about self at Time 1, negative cognitions about the world at Time 1, self-blame at Time 1, total index of the PTCI at Time 1, CSE at Time 1, and posttraumatic distress at Time 1 (cf. Table 3). Analysis of variance and Bonferroni post-hoc analyses revealed that those who dropped out at Time 2 were younger than completers. Completers did not differ from dropouts at Time 2 and Time 3 in respect of gender, $\chi^2(2) = 0.82$, *ns*. The overall attrition rate was 43% from Time 1 to Time 2 and 25% from Time 2 to Time 3.

3.1.2. Measures—In order to test a longitudinal model of mediation we utilized the measures of negative cognitions at Time 1, CSE assessed at Time 2, and posttraumatic distress assessed at Time 3.

3.1.2.1. Negative Cognitions: The Posttraumatic Cognitions Inventory (PTCI; Foa et al. 1999) was used. Although there are some controversies dealing with validity of self-blame subscale for the sample of MVA survivors (Beck et al., 2004), using the same scale in Study 1 and Study 2 made it possible to compare the results from both studies. Reliability of the PTCI indices measured at Time 1 in our sample of MVA survivors was: $\alpha = .94$ for negative cognitions about self, $\alpha = .89$ for negative cognitions about the world, $\alpha = .70$ for self-blame, and $\alpha = .94$ for total score of the PTCI.

3.1.2.2. Posttraumatic Distress: The Impact of Events Scale – Revised (IES-R; Weiss, 2004) was again used in this second study. Internal consistency of scale for study sample was again very high, $\alpha = .96$ for Time 3.

3.1.2.3. Coping Self-Efficacy: A Motor Vehicle Accident Coping Self-Efficacy measure (MVA-CSE) was used to assess MVA trauma-related coping self-efficacy. Participants were asked to evaluate their capability to deal with trauma-related demands (e.g., “Returning to life as it was before my accident.”, “Complying with medical restrictions.”, “Trusting others to drive me around.”). The scale consists of 41 items with scale of response from 1 (*not capable*) to 7 (*very capable*). Items were selected from a pool of 50 items that were previously identified through a focus group of MVA survivors and then psychometrically evaluated on a separate sample of 50 MVA survivors. These individuals completed a series of questionnaires to enable psychometric evaluation of the scale. Internal reliability of the MVA-CSE was high ($\alpha = .96$). Convergent validity was supported by the negative relationships between the MVA-

CSE and distress measures (Impact of Event Scale $r = -.51, p < .001$, Global Severity Index of SCL-90-R $r = -.40, p < .001$). The MVA-CSE measure also did not demonstrate a definitive response bias (Marlowe-Crowne Social Desirability Scale; $r = .13, ns$). Internal reliability for the study sample was also good, $\alpha = .98$ for Time 2.

3.1.3. Analytic Strategy—As in Study 1, Baron and Kenny's (1986) procedure was employed to test mediating effect of CSE in the relation between negative cognitions and posttraumatic distress.

3.2. Results

3.2.1. Preliminary Analysis—Consistent with Study 1, analyses (see Table 4) showed that negative cognitions measured at Time 1 correlated with posttraumatic distress measured 3 months following the accident, except for self-blame. Coping self-efficacy at Time 2 was negatively related to posttraumatic distress at Time 3 and to negative cognitions at Time 1, except for self-blame.

3.2.2. Testing the Mediating Effect of CSE in the Negative Cognitions-Posttraumatic Distress Relationship—Results of regression analyses are summarized in Table 5. We conducted four mediation analyses, three for subtypes of negative cognitions and one for a total score of the PTCI scale. First, we tested whether a negative cognitions index measured at Time 1 predicted posttraumatic distress at Time 3 (path c). The results showed that negative cognitions about self, about the world, and the PTCI total score measured at Time 1 predicted posttraumatic distress at Time 3. Then, CSE at Time 2 was regressed on negative cognitions measured at Time 1 (path a). Again, all negative cognitions indices measured at Time 1, except for the self-blame index, predicted CSE at Time 2. Finally, posttraumatic distress at Time 3 was regressed on negative cognitions measured at Time 1 controlling for the effect of CSE at Time 2 (paths c' and b, respectively). In all analyses, low CSE at Time 2 predicted high posttraumatic distress level at Time 3. Moreover, lower beta values in column five than in column two (see Table 5) indicated that the effects of the three negative cognitions on posttraumatic distress at Time 3 were mediated by CSE at Time 2. Results of Sobel test corroborated these three mediating effects. Effect of self-blame at Time 1 on posttraumatic distress at Time 3 was not mediated by CSE at Time 2. In general, self-blame at Time 1 remained unrelated to posttraumatic distress at Time 3.

3.3. Discussion Study 2

In line with the results of Study 1, Study 2 indicates that negative cognitions about self, about the world, and the PTCI total score are related to posttraumatic distress, but these relationships are mediated by CSE perceptions. Our longitudinal design provides further support for the assumption that self-evaluative perceptions related to managing posttraumatic recovery demands mediate between general negative cognitions and posttraumatic distress. As in the first study, self-blame was not related to posttraumatic distress or CSE.

4. General Discussion

Our studies conducted among women victims of child sexual abuse (Study 1) and among motor vehicle accident survivors (Study 2) support our hypothesis that CSE mediates the effects of negative cognitions about self and about the world on posttraumatic distress. We did not find support for the mediating effect of CSE between self-blame and posttraumatic distress.

Results suggest that including the influence of CSE perceptions may be a useful addition to the cognitive model proposed by Foa and Rothbaum (1998). Future research must verify this "enhanced" model.

Emotional processing theory as applied to PTSD (Foa & Rothbaum, 1998) posits that there are two kinds of cognitions responsible for the development and maintenance of PTSD symptoms: negative beliefs about self and negative beliefs about the world. The model describes complex factors involved in the formation of negative cognitions: pretrauma schemas, the trauma memory, and posttraumatic experiences that all interrelate in the post-trauma recovery. However, it assumes a simple, direct link between negative cognitions and recovery or development of posttraumatic distress. Both of our studies provide evidence that the relationship between negative cognitions and posttraumatic distress is more complex, with CSE mediating this effect. Negative cognitions about the world and self render an individual less capable to manage trauma-related demands. The perceived incapability to manage trauma-related demands thereby contributes to development and maintenance of posttraumatic symptoms. Partial support for this reasoning is provided in other studies showing that some people with multiple traumatic events may be less distressed than those who experienced a single traumatic event (Amir & Sol, 1999). If individuals coped successfully with previous trauma, their beliefs about their own ability to cope with the current traumatic event may be stronger, facilitating faster recovery. Thus, a critical factor for PTSD symptoms development would be level of CSE, rather than generalized negative cognitions as Foa and Rothbaum (1998) suggest.

Across our studies, self-blame was unrelated to posttraumatic distress either directly or indirectly via CSE. This may result from the shortcomings of how self-blame was measured. The 5-item self-blame subscale of the PTCI combines into one index items related to characterological and behavioral self-blame (e.g., “The event happened because of the way I acted.” and “The event happened to me because of the sort of person I am.”). Psychometric weaknesses of the PTCI self-blame scale have been recognized earlier and discussed (Beck et al., 2004; Startup et al., 2007). Additionally, recent research on self-blame suggests that different sub-factors of the self-blame construct – including characterological self-blame and behavioral self-blame – have differential relationships to psychological outcomes. For instance, among CSA victims, characterological self-blame is more related to psychological distress in adulthood than behavioral self-blame (Breitenbecher, 2006). Mueller and Major (1989) reported an opposite relationship between behavioral self-blame and CSE (positive correlation $r = .20, p < .001$) and characterological self-blame and CSE (negative relationship $r = -.14, p < .05$) in a study on post-abortion adjustment. One could argue that behavioral self-blame provides an internal sense of control over future outcomes, whereas characterological self-blame or “trait” self-blame leaves one feeling helpless in the face of future obstacles. Future trauma research on the cognitive mechanisms related to self-blame and CSE are needed.

Our studies had several limitations that should also be considered. Although the mediating effects of CSE were observed in two samples that differed in type of trauma, generalization of the results to other types of trauma should be made with caution. In addition, although longitudinal analyses increase probability that investigated relations may be of causal nature, experimental studies are required to further support the assumption that growth in CSE reduces negative effects of cognitive distortion on traumatic distress. Our research did not cover a broad spectrum of negative cognitions that may appear after a traumatic event. Future studies should investigate the mediating power of CSE for a range of cognitive beliefs following trauma and also for non-cognitive predictors of posttraumatic distress. Variables that could moderate the mediating effect of CSE (e.g., social support) should also be considered to fully understand the mechanism through which negative cognitions and CSE operate in predicting posttraumatic distress.

A uniqueness of the emotional processing theory as applied to PTSD lies not only in explaining the mechanisms of the development and maintenance of PTSD, but also in formulating clinical implications for the treatment of patients who experienced trauma. Foa and Kozak (1986; see

also Foa & Rothbaum, 1998) posited that there are two conditions necessary for a successful treatment of PTSD: (1) the activation of fear structure, (2) provision of new information that is incompatible with existing pathological elements. Hembree and Foa (2003) suggest that “successful therapy for PTSD must produce changes in the patient’s erroneous beliefs about the world and oneself. The substantial reduction of PTSD symptoms observed following exposure therapy has been viewed as stemming from such cognitive changes” (p. 189). Hence, the change in negative cognitions mediates between the application of the treatment and patient’s recovery. Within this model, negative cognitions about the self and the world are typically challenged by the therapist through cognitive restructuring techniques.

Results of our studies indicate that CSE is a potentially powerful mediator that could be targeted within the treatment process. One could expect that besides modifying negative cognitions, enhancement of CSE may result in enhanced recovery. In support of this argument, a study testing the effectiveness of a group intervention for coping with HIV demonstrated that changes in CSE following a 10 week intervention mediated the treatment effects on perceived stress and burnout (Chesney, Chamber, Taylor, Johnson, & Folkman, 2003).

Social cognitive theory (Bandura, 1997), particularly as applied to PTSD (Benight & Bandura, 2004), lists several ways of enhancing self-efficacy, such as mastery experience, vicarious experience, or verbal persuasion. Specifically for trauma interventions, greater emphasis could be paid to help empower clients to cope more effectively with posttraumatic recovery demands (through goal setting, skill training, success modeling), rather than focusing on treating patients to reduce their PTSD symptoms (a worthy goal, yet only a piece of the recovery puzzle). For example with MVA survivors, therapists and clients could work collaboratively on developing a set of realistic coping goals related to dealing with accident recovery such as managing insurance company issues, or developing better skills related to relaxation when others are driving. The therapist must help the client self-monitor these goals to enhance a sense of mastery. Clients could be taught the importance of their self-evaluative judgments and how to improve them. In addition, internet based programs that target survivor empowerment through CSE enhancement could also help to augment current approaches to trauma treatment. Finally, social cognitive theory identifies mechanisms by which strong self-efficacy further affects cognitive, motivational, affective, and decisional processes that may be critical to treatment success (e.g., management of the exposure aspects of CBT trauma therapy). In conclusion, our results indicate that integrating self-efficacy enhancing strategies into current treatment approaches may increase the effectiveness of the treatment and foster posttraumatic recovery. Future research that addresses these hypotheses is needed.

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Figure 1.
Hypothesized mediating effect of coping self-efficacy on the relationship between negative cognitions and posttraumatic distress.

Table 1
Descriptive Statistics and Correlations among Variables in Group of Child Sexual Abuse Victims

Variables	M	SD	1	2	3	4	5
1. Negative cognitions about self	2.87	1.49	—				
2. Negative cognitions about the world	4.79	1.26	.63***	—			
3. Self-blame	2.85	1.60	.44***	.14	—		
4. Negative cognitions: Total score	3.49	1.13	.88***	.72***	.72***	—	
5. Coping self-efficacy	4.77	1.01	-.35**	-.40***	.10	-.26*	—
6. Posttraumatic distress	46.51	18.36	.35***	.40***	-.10	.28*	-.57***

*

$p < .05$

**
 $p < .01$

 $p < .001$

Table 2
Summary of Mediation Analyses in Group of Child Sexual Abuse Victims

Predictor	Posttraumatic distress regressed on predictor (β) (Path c)	CSE regressed on predictor (β) (Path a)	Posttraumatic distress regressed on:		Sobel's Z
			CSE (β) (Path b)	Predictor (β) (Path c')	
1. Negative cognitions about self	.30*	-.46***	-.53***	.10	2.76**
2. Negative cognitions about the world	.35***	-.46***	-.52***	.13	2.90**
3. Self-blame	-.08	.09	-.56***	.01	0.01
4. Negative cognitions: Total score	.21	-.30*	-.54***	.09	2.06*

* $p < .05$
** $p < .01$
*** $p < .001$

Table 3

Dropouts Analysis in Group of Motor Vehicle Accidents Survivors

Variables at Time 1	Dropouts at Time 2	Dropouts at Time 3	Completers	<i>F</i> (2, 162)
	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	
1. Negative cognitions about self	1.65 (0.64)	1.75 (0.75)	1.71 (0.90)	0.20
2. Negative cognitions about the world	3.62 (1.31)	3.31 (1.00)	3.49 (1.52)	0.42
3. Self-blame	1.94 (1.11)	1.85 (1.10)	1.92 (1.11)	0.05
4. Negative cognitions: Total score	2.40 (0.78)	2.30 (0.81)	2.37 (0.91)	0.10
5. Coping self-efficacy	4.99 (1.01)	5.15 (1.09)	4.93 (1.12)	0.33
6. Posttraumatic distress	44.52 (22.08)	37.55 (20.06)	43.89 (21.52)	0.85
7. Age	33.25 (12.95)	34.57 (15.84)	40.21 (14.41)	4.61*

*
 $p < .05$

Table 4
Descriptive Statistics and Correlations among Variables in Group of Motor Vehicle Accidents Survivors

Variables	M	SD	1	2	3	4	5
1. Negative cognitions about self (T1)	1.71	.90	—				
2. Negative cognitions about the world (T1)	3.49	1.52	.63***	—			
3. Self-blame (T1)	1.92	1.11	.33***	.22†	—		
4. Negative cognitions: Total score (T1)	2.37	.91	.81***	.85***	.64***	—	
5. Coping self-efficacy (T2)	5.53	1.18	-.48***	-.37**	.06	-.34**	—
6. Posttraumatic distress (T3)	20.54	25.33	.51***	.46***	-.10	.38***	-.74***

†
p < .10
*
p < .05
**
p < .01

p < .001

Table 5
Summary of Mediation Analyses in Group of Motor Vehicle Accident Survivors

Predictor at Time 1	Posttraumatic distress at Time 3 regressed on predictor at Time 1 (β) (Path c)	Posttraumatic distress at Time 3 regressed on:			Sobel's Z
		CSE at Time 2 regressed on predictor at Time 1 (β) (Path a)	CSE at Time 2 (β) (Path b)	Predictor at Time 1 (β) (Path c')	
1. Negative cognitions about self	.51***	-.48***	-.64***	.21*	4.07***
2. Negative cognitions about the world	.46***	-.36***	-.66***	.22*	3.37***
3. Self-blame	-.10***	.05	-.73***	-.06	0.72
4. Negative cognitions: Total score	.38***	-.34**	-.69***	.15 [†]	2.94**

[†] $p < .10$
* $p < .05$
** $p < .01$
*** $p < .001$