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Understanding the relationship between posttraumatic stress disorder and trauma cognitions: The impact of thought control strategies

Shira A. Bennett^{a,*}, J. Gayle Beck^a, Joshua D. Clapp^b

^aThe University of Memphis, Department of Psychology, 202 Psychology Building, Memphis TN 38152, USA

^bUniversity at Buffalo – SUNY, Department of Psychology, Park Hall, Buffalo NY 14260, USA

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ABSTRACT

Several models of PTSD suggest that dysfunctional beliefs play an important role in the maintenance of PTSD. This study examined whether thought control strategies intermediated in the relationship between PTSD and dysfunctional cognitions. It was hypothesized that PTSD would be positively associated with dysfunctional cognitions and that negative thought control strategies (worry and self-punishment) would partially account for this relationship. These maladaptive strategies were predicted to be associated with increased levels of PTSD and more trauma-related beliefs. Additionally, it was predicted that positive thought control strategies (social control and reappraisal) would be associated with decreased levels of PTSD and fewer trauma-related beliefs. Finally, because the literature supports distraction as both an adaptive and a maladaptive thought control strategy, no a priori hypothesis was made. Results support worry and self-punishment as maladaptive intervening variables in the association between PTSD and dysfunctional cognitions, resulting in greater levels of PTSD and trauma cognitions. Social control and distraction emerged as adaptive strategies, resulting in lower levels of PTSD and trauma cognitions, while reappraisal showed no relationship with PTSD severity. Although the results are cross-sectional, continued focus on the effects of thought control strategies as mediational maintenance variables over time appears warranted.

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A central focus in the literature on posttraumatic stress disorder (PTSD) has been identifying factors that contribute to the development and maintenance of posttrauma symptoms (Ozer, Best, Lipsey, & Weiss, 2003). Although much attention has been paid to factors that increase risk for the development of PTSD, research is beginning to examine factors that help to maintain symptomatology. Resick and Schnicke (1992) highlighted the importance of identifying negative cognitions that may contribute to the persistent nature of PTSD. Related research has examined individual efforts to manage these dysfunctional cognitions (Reynolds & Wells, 1999) with emphasis on the role that thought control strategies play in maintaining posttrauma problems. The aim of the present study is to examine whether specific thought control strategies intervene in the relationship between PTSD symptoms and negative posttrauma cognitions.

A number of theoretical models have emphasized the importance of cognitions in the psychopathology of PTSD. Resick and Schnicke (1993) highlight the significance of dysfunctional cognitions associated with the traumatic event. These authors suggest

that the failure to cognitively process the trauma leads to both PTSD symptoms and to distorted beliefs regarding the event; these beliefs in turn foster PTSD in a positive feed-forward system (Resick & Schnicke, 1993). Likewise, according to Foa and Rothbaum (1998), negative schemas about the self (e.g., “I am incompetent and cannot handle stress”) and the world (e.g., “The world is a dangerous place”) interfere with the integration of traumatic material and further perpetuate PTSD (Foa & Rothbaum, 1998). Similarly, Ehlers and Clark (2000) discuss the role of maladaptive cognitions leading to a sense of current threat. They emphasize negative appraisals and dysfunctional beliefs about the trauma as prominent maintaining factors for PTSD. Although each of these models highlights somewhat different cognitive factors that contribute to posttrauma symptoms, each model emphasizes the salient role of maladaptive cognitions as a maintenance factor in PTSD.

Numerous studies have examined the relationship between PTSD and negative cognitions, with particular attention to whether dysfunctional cognitions play a role in the persistence of PTSD symptoms. Ali and Dunmore (2002) assessed the role of negative beliefs in physical and sexual assault victims. The sample was divided into a no assault group ($n = 72$), a persistent PTSD group ($n = 57$), and a no PTSD group ($n = 43$), and administered a questionnaire to assess post-assault cognitions. Results indicated that

* Corresponding author. Tel.: +1 901 678 2914; fax: +1 901 678 2579.
E-mail address: sbennett1@memphis.edu (S.A. Bennett).

the persistent PTSD group reported more negative cognitions, relative to the no assault group and the no PTSD group.

Research also has examined the long term effects of negative cognitions on PTSD severity. One study sampled 253 traumatic injury survivors and assessed them for both trauma-related thoughts and PTSD at three separate time points (O'Donnell, Elliott, Wolfgang, & Creamer, 2007). To measure negative cognitions, participants were administered the Posttraumatic Cognitions Inventory (PTCI; Foa, Ehlers, Clark, Tolin, & Orsillo, 1999). Results suggest that negative cognitions about the self, the world, and one's responsibility for the trauma intensify over time and are associated with higher levels of PTSD. Similarly, a study conducted by Dunmore, Clark, and Ehlers (2001) investigated the longitudinal effects of negative cognitions associated with the maintenance of PTSD. This study compared a group of physical and sexual assault victims who had recovered from PTSD with a similar group of assault victims who had persistent PTSD. Individuals were assessed 4 months after the traumatic event and followed up 6 and 9 months later. Results suggest that the persistent PTSD group reported more negative cognitions regarding the traumatic event at both follow-up time points, relative to the recovered PTSD group. As evidenced by these longitudinal studies, dysfunctional cognitions seem to play an essential role in the maintenance and severity of PTSD.

Although research has supported the association between severity of PTSD symptoms and posttrauma cognitions, current studies also suggest that reactions to dysfunctional cognitions play an essential role in the maintenance of PTSD (Halligan, Michael, Clark, & Ehlers, 2003). In particular, maladaptive coping strategies such as the avoidance of trauma-related cognitions seem to contribute to the maintenance of PTSD (Horowitz, 1976; Litz & Keane, 1989). According to the metacognitive model of PTSD (Wells, 2000), cognitive strategies used to control unwanted thoughts can interfere with the successful processing of a traumatic event. Specifically, strategies such as persistently thinking about the event, avoiding reminders of the event, and experiencing heightened awareness towards threat stimuli use up valuable resources needed to emotionally process a traumatic event, which in turn, can lead to the development of posttrauma symptoms. Support for the metacognitive model has been evidenced by several studies. Wells and Davies (1994) have identified five thought control strategies in a nonclinical sample (distraction, worry, punishment, social control, and reappraisal) that are used to manage intrusive thoughts. Results from this study showed that self-punishment and worry held a positive relationship with emotional problems such as trait anxiety, self-consciousness, and impaired mental control (Wells & Davies, 1994). Likewise, Roussis and Wells (2008) examined thought control strategies in a sample of college students who experienced a stressful life event. Participants were assessed for predictors of stress symptoms twice over a 3 month period. Results found worry to be a significant predictor of stress reactions after a difficult life event. Additionally, Roussis and Wells (2006) examined the role of worry in the relationship between metacognitive beliefs and stress symptoms in a nonclinical sample. Results supported the meditational relationship of worry between beliefs about worry and stress symptoms. Further analyses showed that the thought control strategies of worry and punishment held a positive association with stress symptoms, while social control and reappraisal held a negative relationship.

The use of thought control strategies also has been investigated in clinical populations. Warda and Bryant (1998) examined the use of thought control strategies by individuals with Acute Stress Disorder (ASD). Results indicated that individuals with ASD used negative thought control strategies such as punishment and worry more frequently than individuals without ASD. This study provides additional support for the association

between negative thought control strategies and posttrauma symptomatology.

Research additionally has supported the use of various thought control strategies as predictors of ASD and PTSD over time following motor vehicle accidents. In one study, participants were assessed at Time 1 (2–4 weeks post-accident) and again at Time 2 (4–6 months post-accident; Holeva, Tarrier, & Wells, 2001). Results showed that negative thought control strategies such as self-punishment and worry helped to predict ASD at time 1 and PTSD at Time 2. Additionally, distraction and social control were negatively associated with the development of ASD and PTSD, suggesting that they are more adaptive thought control strategies. Additionally, Ehlers, Mayou, and Bryant (1998) examined thought suppression and rumination as potential maintaining factors for PTSD among 967 individuals who had experienced a serious motor vehicle accident. Participants were assessed post-accident, and again at 3 months, and at 1 year. Results showed that increases in rumination about the traumatic event, and increases in the suppression of these recollections were both strongly associated with PTSD at 3 months and at 1 year. Results from these studies provide support for the casual role played by thought control strategies in the development of acute stress symptoms and PTSD.

Although dysfunctional cognitions and negative thought control strategies have been shown to be individually associated with PTSD, researchers have yet to examine the effects of thought control strategies in the relationship between PTSD severity and posttrauma dysfunctional beliefs. For example, individuals who worry in response to intrusive thoughts may reinforce their negative beliefs regarding their symptoms of PTSD, which in turn, may be associated with greater levels of dysfunctional cognitions. In contrast, individuals who reappraise and deal with symptoms in a more functional manner may experience a decrease in dysfunctional cognitions. Although significant correlations between maladaptive cognitions and thought control strategies have been reported (Beck et al., 2004), no study to date has examined if thought control strategies serve as intermediate variables in the relationship between PTSD and posttrauma cognitions. In particular, do both positive and negative thought control strategies intermediate the relationship between PTSD and dysfunctional cognitions?

The present study will examine this issue using a sample of motor vehicle accident (MVA) survivors who were assessed for mental health problems following their accident. In conceptualizing this study, a variety of thought control strategies were examined. In particular, negative thought control strategies such as ruminating over negative consequences of the event (worry), and giving up pleasurable activities (self-punishment) were assessed. Additionally, positive thought control strategies such as social validation or seeking social support (social control), and reevaluation of the event in a more positive manner (reappraisal) were evaluated. Finally, the avoidance of distressing stimuli (distraction) was examined. Distraction has been regarded in the literature as a technique used to avoid experiencing distressing stimuli, which may in turn, prevent the habituation of distress and further perpetuate PTSD symptomatology (Horowitz, 1976). However, research also has conceptualized distraction as a beneficial thought control technique because it forces individuals to engage in more positive avoidant behaviors such as recalling pleasurable thoughts (Holeva et al., 2001). Because the literature supports distraction as both an adaptive and a maladaptive thought control strategy, this study did not make an a priori hypothesis regarding distraction.

It was hypothesized that PTSD would be positively associated with dysfunctional cognitions, and the negative thought control strategies of worry and self-punishment would partially account for this relationship. Specifically, it was predicted that these maladaptive strategies would contribute to the maintenance of PTSD,

and significantly increase PTSD severity and posttrauma cognitions. Conversely, it was predicted that positive thought control strategies such as social control and reappraisal would also partially account in this relationship, and result in an overall reduction in PTSD severity and posttrauma cognitions.

Method

Participants

The sample included 295 individuals who had experienced a serious MVA and were seeking mental health evaluation at a university-based clinic. Individuals were recruited from multiple sources including health care facilities, pain and rehabilitation specialists, public service announcements, and via community agencies such as churches and recreational centers. Individuals were included in the sample if they experienced threatened death or serious injury and responded with fear, helplessness, and horror (Criterion A of the diagnostic criteria for PTSD, *DSM-IV*; American Psychiatric Association, 2000), which was assessed using the Motor Vehicle Accident Interview (Blanchard & Hickling, 1997).

The sample consisted of 215 (73%) women and 80 (27%) men who ranged in age from 18 to 79 ($M = 43.27$, $SD = 12.23$). Eighty percent ($n = 236$) were Caucasian, 15% ($n = 43$) were African American, 2.7% ($n = 8$) were Hispanic, 1% ($n = 3$) were Native American, and .7% ($n = 2$) were Asian. Two hundred and seventy-eight (94%) were driving a vehicle at the time of their MVA, 3 (1%) were passengers, 6 (2%) were motorcyclists, 3 (1%) were cyclists, and 5 (2%) were pedestrians. Participant elapsed time since their MVA was calculated in years from the time of the MVA to the date of the assessment and ranged from 1 month to 23 years ($M = 1.80$, $SD = 2.97$).

Measures

Motor Vehicle Accident Interview (Blanchard & Hickling, 1997)

This interview was used to collect details about each individual's MVA, including questions about their emotional responses during and immediately after the accident to determine whether the MVA qualified as a traumatic event. Individual's emotional reactions such as feelings of fear, helplessness, and horror were rated on a Likert-type scale ranging from 0 (*not at all*) to 100 (*extreme*). For the purpose of the present research, Criterion A for PTSD was operationalized as a score of 50 or higher on the scales of fear, helplessness, and horror. Individual responses to the MVA Interview were calculated for fear ($M = 80.33$, $SD = 31.38$), helplessness ($M = 86.63$, $SD = 24.18$), and horror ($M = 78.16$, $SD = 32.38$).

Clinician-Administered PTSD Scale (CAPS; Blake et al., 1990)

This is a semi-structured clinical interview that assesses post-traumatic symptoms as defined in the current *DSM-IV*. The CAPS uses standardized questions to identify both symptom frequency and intensity. Symptoms were assessed at least 1 month following the accident on a 5-point Likert scale ranging from 0 (*the symptom does not occur or does not cause distress*) to 4 (*the symptom occurs nearly every day or causes extreme distress and discomfort*). Severity scores (CAPS Total) were calculated as the sum of frequency and intensity ratings across all *DSM-IV* symptoms of PTSD. The CAPS has been shown to be sensitive to the detection of PTSD in individuals who have experienced MVAs (Blanchard & Hickling, 1997). The CAPS also demonstrates excellent test-retest reliability with alpha coefficients ranging from .73 to .89 (Weathers, Keane, & Davidson, 2001). CAPS interviews were conducted by trained graduate students supervised by the second author. Assessments were videotaped and approximately 30% ($n = 85$) were randomly selected for review by an independent clinician to establish inter-rater

reliability. Interclass correlations between raters for the CAPS total score is strong as evidenced by the kappa statistic ($k = .93$; Beck et al., 2004). One hundred and sixty-four (56%) participants met full criteria for PTSD based from *DSM-IV* criteria. CAPS totals ranged from 0 to 111 ($M = 46.60$, $SD = 23.16$).

Thought Control Questionnaire (TCQ; Wells & Davies, 1994)

This 30-item scale was used to identify strategies for controlling unwanted thoughts. The TCQ consists of 5 separate subscales: Distraction (e.g., "I think about something else"), Worry (e.g., "I focus on different negative thoughts"), Punishment (e.g., "I punish myself for thinking the thought"), Social Control (e.g., "I talk to a friend about the thought"), and Reappraisal (e.g., "I analyze the thought rationally"). Each domain contains 6 items rated on a 4-point Likert scale from 1 (*never*) to 4 (*almost always*). Each factor demonstrates adequate internal consistency: Distraction ($\alpha = .72$); Social Control ($\alpha = .79$); Worry ($\alpha = .71$); Punishment ($\alpha = .64$); and Reappraisal ($\alpha = .67$; Wells & Davies, 1994). Test-retest reliability also appears good with coefficients ranging from .67 to .83 across the five subscales (Wells & Davies, 1994). TCQ subscale totals were calculated by summing the items of each subscale.

Posttraumatic Cognitions Inventory (PTCI; Foa et al., 1999)

This 36-item measure is designed to assess the severity of dysfunctional, trauma-related cognitions. Specifically, the assessment contains 3 separate factors including Negative Cognitions About the Self (21 items), Negative Cognitions About the World (7 items), and Self-Blame (5 items). Items are rated on a 7-point Likert scale from 1 (*totally disagree*) to 7 (*totally agree*). Previous research has demonstrated evidence in support of the factorial validity of the measure (Foa et al., 1999). PTCI total scores are calculated as the sum of 36 items.

Procedure

Participants were scheduled for inclusion in the research after completing a brief phone screening. Following provision of informed consent, participants were given the MVA interview to determine inclusion criteria for the study. The CAPS was administered and participants were provided with self-report measures to return during a subsequent feedback session. All procedures received Institutional Review Board approval.

Results

To assess whether thought control strategies intermediate the relationship between PTSD and dysfunctional cognitions, an approach used to examine mediation was conducted, following the recommendations of Baron and Kenney (1986). Before conducting a mediation analysis, a significant relationship must be demonstrated between the predictor variable and the outcome variable (CAPS – PTCI). After this relationship has been established, the first step of the analysis is to show that the predictor variable is related to the intervening variable (CAPS – TCQ subscale). The second step is to support a relationship between the intervening variable and the outcome variable (TCQ subscale – PTCI), while the third step is to further support this association after controlling for the effects of the predictor variable. In this report, five such analyses were conducted, one for each subscale of the TCQ (distraction, worry, punishment, social control, and reappraisal). Significance of the hypothesized indirect pathways were tested using the Sobel's (1982) procedure.

To establish a relationship between PTSD and dysfunctional cognitions, the PTCI was regressed onto the CAPS ($B = .74$, $\beta = .42$, $p < .001$). This relationship was used for each of the regression models conducted. This association suggests that greater severity of PTSD is associated with an increase in dysfunctional cognitions.

Table 1
Intercorrelations between posttraumatic stress disorder, dysfunctional cognitions, and thought control questionnaire subscales.

	1.	2.	3.	4.	5.	M	SD
1. PTCI						6.8	2.2
2. CAPS	.42**					46.6	23.1
3. TCQ Distraction	-.34***	-.20***				15.5	3.7
4. TCQ Worry	.41***	.19***	-.22**			10.2	3.0
5. TCQ Punishment	.37***	.13*	-.14*	.41**		9.7	2.8
6. TCQ Social Control	-.23***	-.14*	.19*	-.03	-.15**	12.3	4.1
7. TCQ Reappraisal	-.09	-.15**	.21**	.02	.12	13.6	3.2

Note. PTCI = Posttraumatic Cognitions Inventory; CAPS = Clinician-Administered PTSD Scale; TCQ = Thought Control Questionnaire; *** $p < .001$, ** $p < .01$, * $p < .05$.

The first step of the regression analyses examined the relationships between PTSD and thought control strategies. Each thought control strategy was regressed onto the CAPS with significant effects noted for distraction ($B = -.03$, $\beta = -.20$, $p < .001$), worry ($B = .03$, $\beta = .19$, $p < .001$), punishment ($B = .02$, $\beta = .13$, $p < .05$), and social control ($B = -.03$, $\beta = -.14$, $p < .05$) subscales of the TCQ. Reappraisal was not found to hold an association with PTSD severity ($B = -.01$, $\beta = -.09$, $p = .11$). Because these data suggest that the thought control strategy of reappraisal failed to meet the first step of Baron and Kenny's procedure, this subscale was not included in further analyses. Means, standard deviations, and correlations for these variables are presented in Table 1. Relationships examined in Step 1 are shown in Table 2.

Next, the PTCI was regressed onto the CAPS, as well as the thought control strategies found to hold a significant relationship in Step 1. Four separate analyses were conducted (see Table 2). The results showed that distraction held a significant negative association with the PTCI, after controlling for the CAPS. Sobel's test of the indirect effect of the CAPS on the PTCI through distraction was significant ($c - c' = .12$; $z = 3.39$; $p < .01$). This finding suggests that greater PTSD severity is associated with decreased levels of distraction which, in turn, are associated with lower levels of dysfunctional cognitions.

Worry held a significant positive association with the PTCI, after controlling for the CAPS. Sobel's test of the indirect effect of the CAPS on the PTCI through worry was significant ($c - c' = .13$; $z = 2.17$; $p < .05$). This finding suggests that greater PTSD severity is associated with increased levels of worry which, in turn, are associated with higher levels of dysfunctional cognitions.

Punishment also held a significant positive association with the PTCI, after controlling for the CAPS. Sobel's test of the indirect effect of the CAPS on the PTCI through punishment was significant ($c - c' = .09$; $z = 2.15$; $p < .05$). This finding suggests that greater PTSD severity is associated with increased levels of self-punishment which, in turn, are associated with higher levels of dysfunctional cognitions.

Social control held a significant negative association with the PTCI, after controlling for the CAPS. Sobel's test of the indirect effect of the CAPS on the PTCI through social control was significant ($c - c' = .05$; $z = 2.31$; $p < .05$). This suggests that greater PTSD severity is associated with decreased levels of social support which, in turn, are associated with lower levels of dysfunctional cognitions.¹

¹ To examine relationships between the PTCI and the TCQ subscales, each thought control strategy was regressed onto the PTCI world subscale and again onto the PTCI self subscale. Sobel's tests of significance for the indirect pathways failed to reach significance except for the indirect effect of the CAPS on the PTCI self through the TCQ subscale of worry ($c - c' = .01$; $z = 4.44$; $p < .05$). For subsequent analyses, the self-blame subscale was not included, as previous psychometric analysis of the PTCI with a similar sample of MVA survivors indicated poor concurrent and discriminant validity of this subscale (Beck et al., 2004).

Discussion

This study examined the impact of thought control strategies in the relationship between PTSD and posttrauma cognitions. Results evidenced a significant indirect relationship between PTSD and dysfunctional cognitions through the maladaptive thought control strategies of worry and punishment. Specifically, increased PTSD severity was associated with increases in worry and self-punishment. In turn, worry and self-punishment held a positive relationship with dysfunctional cognitions. Neither worry nor punishment fully accounted for the relationship between PTSD and dysfunctional cognitions. Distraction emerged as an adaptive strategy and was associated with lower levels of PTSD and lower levels of dysfunctional cognitions. In turn, distraction partially intervened in the relationship between PTSD and dysfunctional cognitions. Additionally, the adaptive thought control strategy of social control partially accounted for the relationship between PTSD and dysfunctional cognitions. Specifically, decreased PTSD severity was associated with increases in social control, and in turn, social control was negatively associated with dysfunctional cognitions. Finally, the adaptive thought control strategy of reappraisal failed to hold a significant relationship between PTSD and dysfunctional cognitions. Because none of the thought control strategies fully accounted for the relationship between PTSD and dysfunctional cognitions, the current study suggests that there are additional factors involved in the association between PTSD severity and posttrauma cognitions. Future research might wish to include variables such as the severity or duration of trauma exposure in exploring this association.

The current findings suggest that the strategies which individuals use to control their symptoms after a traumatic event partially account for the relationship between PTSD and dysfunctional cognitions. Specifically, the use of maladaptive thought control strategies such as worry and punishment seem to affect the relationship between PTSD and dysfunctional cognitions, and further contribute to the maintenance of the disorder by increasing PTSD symptoms and trauma cognitions. The more adaptive thought control strategy of social control also appears to influence this relationship and result in reduced PTSD symptoms and dysfunctional cognitions regarding the traumatic event.

Interestingly, the role played by distraction in the relationship between PTSD and dysfunctional cognitions suggests that disruptive behaviors potentially divert individual's attention from the traumatic event which, in turn, may contribute to lower levels of PTSD and dysfunctional cognitions. It should be noted that other studies have likewise reported that increased distraction is not always associated with higher levels of pathology. For instance, Reynolds and Wells (1999) showed that distraction is negatively associated with PTSD and depressive symptomatology. In considering these findings, it is notable that three of the distraction items on the TCQ resemble positive responses of thought control such as recalling positive images, thinking pleasant thoughts, and doing something enjoyable. Thus, these methods of distraction appear to be more adaptive with respect to controlling unwanted thoughts, relative to negative responses of distraction such as avoiding traumatic thoughts about the event. In turn, positive distraction techniques seem to be associated with reduced PTSD severity and dysfunctional cognitions.

Additionally, contrary to prediction, the thought control strategy of reappraisal showed no significant association with PTSD, indicating that reevaluation and logical thinking seem to hold no association with PTSD severity. This finding may suggest that rationally analyzing a traumatic event has little effect on the relationship between PTSD and posttrauma cognitions.

Table 2
Summary of regression analyses.

	Distraction			Worry			Punishment			Social Control			Reappraisal		
	B	SE B	β	B	SE B	β	B	SE B	β	B	SE B	β	B	SE B	β
Step 1															
Intervening variable Predictor: CAPS	-.03	.01	-.20***	.03	.01	.19***	.02	.01	.13*	-.03	.10	-.14*	-.01	.01	-.09
Step 2															
Intervening variable Outcome: PTCI	-3.69	.54	-.34***	5.47	.65	.41***	5.47	.96	.37***	-2.22	.50	-.23***			
Step 3															
Outcome: PTCI Intervening variable Predictor: CAPS	.62	.09	.36***	.60	.08	.35***	.65	.08	.37***	.68	.09	.39***			

Note. CAPS = Clinician-Administered PTSD Scale; PTCI = Posttraumatic Cognitions Inventory; *** $p < .001$, ** $p < .01$, * $p < .05$.

The present findings show some concordance with current theoretical models of PTSD. In particular, these results are consistent with the metacognitive model (Roussis & Wells, 2006; Wells, 2000) which suggests that maladaptive thought control strategies interfere with the processing of traumatic material, and in turn, maintain posttrauma symptoms. Based from this theory, the results found in this study could lead one to believe that posttrauma symptoms give rise to dysfunctional cognitions via negative metacognitive strategies of thought control. More specifically, the current findings appear to support the idea that maladaptive aspects of metacognition, or negative thought control strategies, contribute to the severity of PTSD and posttrauma cognitions, while more adaptive aspects of metacognition, or positive thought control strategies, reduce the severity of PTSD and posttrauma cognitions. Thus, these findings seem to suggest that metacognition plays an influential role in the relationship between PTSD and dysfunctional cognitions. Future studies should consider the presence of metacognition in the development and maintenance of posttrauma symptomatology.

In addition, results from this study offer support for the schema-based models of PTSD (Ehlers & Clark, 2000; Foa & Rothbaum, 1998; Resick & Schnicke, 1993) which suggest that dysfunctional cognitions act as maintenance factors in the severity of PTSD. In particular, our results evidenced several positive associations between greater levels of PTSD and posttrauma cognitions via the thought control strategies of worry and self-punishment, and showed negative associations between lower levels of PTSD and posttrauma cognitions via the thought control strategies of social control and distraction. This suggests that the link between PTSD severity and posttrauma cognitions may not be simple and direct, but instead involve other variables such as thought control strategies that impact the severity of their relationship. Thus, strategies used to control posttrauma symptoms and dysfunctional cognitions should be considered in future studies examining this particular association. Additionally, because the thought control strategies examined in this study did not fully account for the relationships between PTSD and dysfunctional cognitions, future studies should examine other potential intermediate variables that may account in this association.

Although these results are interesting, this study is not without limitations. Because these data are cross-sectional, one cannot attribute causation to the observed relationships between variables. In order to determine if thought control strategies play a causal role in maintaining PTSD via increasing dysfunctional cognitions, a longitudinal study would be necessary. However, the present findings are consistent with the results from previous longitudinal studies examining the impact of thought control strategies in the maintenance of PTSD. Specifically, the positive

associations found between worry and self-punishment, and PTSD are similar to Warda and Bryant's (1998) finding that negative thought control strategies predict acute distress symptoms. Similarly, Holeva et al. (2001) found that the thought control strategy of worry predicted the development of acute stress and PTSD in individuals who had experienced a severe motor vehicle accident.

Additionally, the current sample is somewhat restricted in regard to ethnicity, which may limit the extent to which the results can be generalized. Future studies should be advised to recruit a more diverse sample in order to understand the influence of thought control strategies on minorities who report chronic PTSD and dysfunctional cognitions. The current sample was also predominately female, thus limiting the generalizability of the results. Finally, although the selected sample included individuals who experienced a common traumatic event, it should be noted that these results may only generalize to individuals who had experienced a severe MVA.

In conclusion, results from this study provide support for the role of thought control strategies in the relationship between PTSD and dysfunctional cognitions. Overall, negative thought control strategies partially account for the relationship between PTSD and dysfunctional cognitions and may contribute to the severity of PTSD and posttrauma cognitions. Additionally, more positive thought control strategies may also account in this relationship, and aid in controlling the severity of PTSD and posttrauma cognitions. The findings from this particular study highlight thought control strategies as potential maintenance factors that may contribute to the prevalence and course of PTSD. The implications of this study help us to understand how efforts to manage reactions to a traumatic event further perpetuate PTSD severity. Although these results are cross-sectional, future studies are encouraged to examine the effects of thought control strategies as meditational maintenance variables over time.

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