

Posttraumatic stress disorder symptoms in trauma-exposed college students: The role of trauma-related cognitions, gender, and negative affect

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Received 12 October 2005; received in revised form 27 July 2006; accepted 20 October 2006

Abstract

Considerable evidence indicates a prominent role for trauma-related cognitions in the development and maintenance of posttraumatic stress disorder (PTSD) symptoms. The present study utilized regression analysis to examine the unique relationships between various trauma-related cognitions and PTSD symptoms after controlling for gender and measures of general affective distress in a large sample of trauma-exposed college students. In terms of trauma-related cognitions, only negative cognitions about the self were related to PTSD symptom severity. Gender and anxiety symptoms were also related to PTSD symptom severity. Theoretical implications of the results are discussed.

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Keywords: Posttraumatic stress disorder; PTSD; Cognitions; Anxiety; Trauma

Exposure to traumatic events is quite common, with estimated lifetime rates ranging from 26 to 92.2 percent in men and from 17.7 to 87.1 percent in women (Breslau, Chilcoat, Kessler, Peterson, & Lucia, 1999; Breslau, Davis, Andreski, & Peterson, 1991; Creamer, Burgess, & McFarlane, 2001; Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995; Norris, 1992; Perkonig, Kessler, Storz, & Wittchen, 2000; Resnick, Kilpatrick, Dansky, Saunders, & Best, 1993; Stein, Walker, Hazen, & Forde, 1997). Although many people experience trauma, only a subset of these

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individuals subsequently develops posttraumatic stress disorder (PTSD). Lifetime prevalence rates for PTSD range from 1 to 12.3 percent (Breslau et al., 1991; Davidson, Hughes, Blazer, & George, 1991; Kessler et al., 1995; Resnick et al., 1993) and current rates of PTSD range from .4 to .9 percent (Andrews, Henderson, & Hall, 2001; Perkonig et al., 2000). PTSD tends to have a chronic course, with as many as 40 percent continuing to exhibit significant symptoms of the disorder 10 years after its onset (Kessler et al., 1995).

Several theories underscore the role that cognitive variables play in the development and maintenance of PTSD (Ehlers & Clark, 2000; Epstein, 1991; Foa & Cahill, 2001; Foa & Jaycox, 1999; Foa & Riggs, 1993; Foa & Rothbaum, 1998; Horowitz, 1986; Janoff-Bulman, 1992; McCann & Pearlman, 1990; Resick & Schnicke, 1992). Utilizing the framework of emotional processing theory (Foa & Kozak, 1986), Foa and colleagues have emphasized the role of cognitions about the self and the world in natural recovery from trauma, the development of PTSD, and the CBT processes that ameliorate PTSD symptoms. The theory is rooted in information processing models of memory and psychopathology and posits a central role of a so-called “fear structure/network” containing interconnected representations of feared stimuli, fear responses, and their meanings (see Cahill & Foa, *in press*; Foa & Cahill, 2001 for reviews).

Essentially, the theory holds that PTSD develops as a function of how the traumatic experience is incorporated into pretrauma knowledge structures. According to Foa and colleagues, PTSD develops when a traumatic experience interacts with an individual’s pre-existing perceptions about their competence and the safety of the world. Specifically, a traumatic event can lead to PTSD if it either: (1) disconfirms rigid perceptions that the world is completely safe and that the self is completely competent or (2) confirms pre-existing perceptions that the world is completely dangerous and the self is completely incompetent. Foa and Cahill (2001) suggested that following a trauma, survivors typically adopt negative perceptions about the self and world; however, for most of them, these perceptions are disconfirmed through their daily interactions where they are not retraumatized and function well. On the other hand, Foa and Cahill (2001) suggested that trauma survivors who limit their daily experiences by avoiding thoughts, stimuli, and activities related to the trauma fail to receive information that disconfirms the negative posttraumatic cognitions, thus fostering the development of chronic PTSD (*cf.* Cahill & Foa, *in press*; Foa & Rothbaum, 1998).

Recent work has been dedicated to investigating the adequacy of emotional processing theory in explaining the role of trauma-related cognitions in the development and maintenance of PTSD. Foa, Ehlers, Clark, Tolin, and Orsillo (1999), for example, developed the Posttraumatic Cognitions Inventory (PTCI) to assess negative trauma-related cognitions. The PTCI comprises scales measuring negative cognitions about the self (e.g., “I can’t stop bad things from happening to me”), the world (e.g., “The world is a dangerous place”), and self-blame (e.g., “The event happened because of the way I acted”). The validation study of the PTCI included a large sample of treatment-seeking individuals with PTSD, community volunteers, and college students. In support of the emotional processing theory of PTSD, Foa et al. (1999) found that individuals who met criteria for current PTSD had more negative beliefs about the world and themselves (including self-blame) compared to traumatized individuals without PTSD and non-traumatized individuals.

More recently, Foa and Rauch (2004) utilized the PTCI to measure the relationship between changes in trauma-related cognitions and changes in PTSD symptoms following prolonged exposure (PE) therapy in a small sample of female assault survivors with PTSD. Through the systematic repeated exposure to the traumatic memory and trauma-related stimuli, clients undergoing PE were presented with information that disconfirmed their negative posttraumatic beliefs (Foa & Rothbaum, 1998). Consistent with their hypothesis that changes in negative

posttraumatic cognitions would be associated with reduction of PTSD symptoms, Foa and Rauch (2004) found that reductions in both negative cognitions about the self and world were associated with reductions in PTSD symptoms. Association between changes in cognitions about the world and reduction in PTSD symptoms, however, were mediated by cognitive changes about the self.

The main goal of the present study was to extend this previous work by examining the relationship between trauma-related cognitions and a dimensional rating of concurrent PTSD symptom severity rather than dichotomizing participants into those with and without PTSD (as was done in Foa et al., 1999). Because data suggest that PTSD is better characterized as a dimensional construct rather than a categorical one (Ruscio, Ruscio, & Keane, 2002), and that evaluation of symptoms on a continuum may yield higher reliabilities and reflect the complete spectrum of a disorder (Brown, Campbell, Lehman, Grisham, & Mancill, 2001; Brown, Di Nardo, Lehman, & Campbell, 2001), we utilized regression analysis to examine the relationship between negative trauma-related cognitions and a dimensional rating of PTSD symptom severity in a large sample of trauma-exposed college students. The current paper includes data from our first wave of data collection in a longitudinal study aimed at determining the role of trauma-related cognitions in the development of PTSD. Therefore, the current data are cross-sectional and represent a first look at the relationship between negative cognitions and PTSD symptoms in this sample.

In addition, we sought to examine the unique relationship between trauma-related cognitions and PTSD symptoms after controlling for factors that have been associated with PTSD severity in previous studies. Specifically, epidemiologic studies consistently demonstrate higher rates of full and partial PTSD in females than in males (Breslau et al., 1991; Breslau, Davis, Andreski, Peterson, & Schultz, 1997; Davidson et al., 1991; Helzer, Robins, & McEvoy, 1987; Kessler et al., 1995; Norris, 1992; Stein et al., 1997) despite the fact that males are characterized by higher rates of trauma exposure. Thus, we included participants' gender in the analyses both as a unique predictor of PTSD as well as a control variable. In addition, PTSD is an affective disorder characterized by anxiety, depressive symptoms, hyperarousal, and restricted range of emotion (APA, 1994); therefore, we felt that it was important to examine the relationship between measures of PTSD symptom severity and both anxiety and depression, as well as to control for anxiety and depression in determining the unique relationship between negative cognitions and PTSD symptoms. The PTCI validation study relied on the Beck Depression Inventory (BDI; Beck, Rush, Shaw, & Emery, 1979) and State-Trait Anxiety Inventory (STAI; Spielberger, 1983) to control for depression and anxiety, respectively; however, a large number of BDI items has been shown to assess somatic symptoms that are not necessarily specific to depression (Lovibond & Lovibond, 1995), and the STAI has been shown to assess depressive symptoms (Beiling, Antony, & Swinson, 1998). To avoid these potential confounds, we utilized the Depression Anxiety Stress Scales-21 item version (DASS-21; Clara, Cox, & Enns, 2001; Lovibond & Lovibond, 1995), which has been shown to better assess symptoms specific to anxiety and depression (Antony, Bieling, Cox, Enns, & Swinson, 1998; Brown, Chorpita, Korotitsch, & Barlow, 1997; Clara et al., 2001; Lovibond & Lovibond, 1995). Importantly, the DASS has been shown to differentiate anxiety from mood disorders in clinical samples (Brown et al., 1997).

1. Method

1.1. Participants and procedure

Participants for the present study were drawn from a sample of 853 (394 males, 436 females, and 23 participants who did not report gender) college students who were recruited through the

Table 1
Percentage of students endorsing each type of target trauma assessed by the PDS

Trauma type	Male (<i>N</i> = 161) (percent)	Female (<i>N</i> = 218) (percent)
Serious accident	31.06	25.23
Natural disaster	9.94	5.05
Non-sexual assault	13.66	8.26
Sexual assault	3.11	11.47
Combat or war zone	.62	.46
Child sexual abuse	2.48	5.05
Imprisonment	1.86	1.38
Torture	0	1.38
Illness	20.50	26.61
Other	16.77	15.14

University of Delaware Psychology department subject pool during the Fall 2002, Fall 2003 and Spring 2004 semesters to participate in an ongoing longitudinal study examining college students' reactions to stressful life events. Participants completed a battery of questionnaires including the Posttraumatic Diagnostic Scale (PDS, Foa, 1995; Foa, Cashman, Jaycox, & Perry, 1997), the DASS-21, and the PTCI during mass screening sessions in order to receive course credit for introductory psychology. Students were assessed in large lecture halls (approximately 300 students per session), given detailed instructions regarding how to fill out the battery of questionnaires using scantron answer forms, and proctored by small groups of graduate and undergraduate research assistants. Testing sessions lasted approximately 1 hr. Although these data were collected as part of a longitudinal study, only data from the initial screening session are presented here.

Because the current study examined the relationship between trauma-related cognitions and concurrent posttraumatic stress symptoms, only participants who endorsed a traumatic event on the PDS were included in the analyses described below. Electronic data files were generated from the scantron forms completed by the students and transferred into SPSS (version 13.0) for scoring and analysis. Only data from students who had completed all items in the battery were retained for the current study. Four hundred and fourteen (48.5 percent of the total sample; 170 males, 237 females, and 7 participants who did not report their gender) participants endorsed at least one traumatic event on the PDS. Of these, we identified 379 (161 males and 218 females) participants who endorsed only one target trauma and had usable data to include in the current study sample. Approximately 71 percent of these students were freshman. In addition, the majority (81.8 percent) of students were Caucasian. These proportions were highly similar to those observed for the entire sample (72.5 percent freshman and 83.5 percent Caucasian). Percentages of participants experiencing each of the target traumas assessed by the PDS are presented in Table 1.

1.2. Measures

1.2.1. Posttraumatic Diagnostic Scale (PDS)

The PDS (Foa, 1995; Foa et al., 1997) is a 31-item self-report measure that assesses the occurrence of a number of traumatic events as well as posttraumatic stress symptoms. Participants are first asked to report the occurrence of a number of traumatic events and then they are asked to choose the traumatic event that has bothered them the most. Participants rate the occurrence of the 17 PTSD symptoms (with reference to the most bothersome traumatic event) in

the past month using a four-point Likert scale ranging from 0 (“not at all”) to 3 (“almost always”). Total PTSD symptom severity scores can be derived by summing the ratings for all 17 symptoms. The PDS total symptom severity scale demonstrates high internal consistency, test–retest reliability, and convergent validity with other measures of PTSD diagnosis and severity (Foa et al., 1997).

1.2.2. *Posttraumatic Cognitions Inventory (PTCI)*

The PTCI (Foa et al., 1999) is a 36-item self-report measure that assesses trauma related thoughts and beliefs. Three of these items are experimental and are not included when calculating subscale scores. Individuals rated the occurrence of thoughts and beliefs using a seven-point Likert scale ranging from 0 (“totally disagree”) to 3 (“totally agree”). The measure loads on three factors that include negative cognitions about self (*PTCI-Self*; 21 items), negative cognitions about the world (*PTCI-World*; 7 items), and self-blame (*PTCI-Blame*; 5 items). The negative cognitions about self scale measures the extent to which the individual has a negative view of him/herself and symptoms and thoughts of helplessness and alienation. The negative cognitions about the world scale measures the degree to which the individual lacks trust in other people and believes the world to be unsafe. Finally, the self-blame scale measures the extent to which the individual attributes occurrence of the traumatic event to something that he or she did or did not do. The three factors have shown excellent internal reliability as well as good test–retest reliability. The PTCI has excellent convergent and discriminant validity. Furthermore, the PTCI better discriminated traumatized individuals with and without PTSD compared to the World Assumptions Scale (Janoff-Bulman, 1989, 1992) and the Personal Beliefs and Reactions Scale (Resick, Schnicke, & Markway, 1991) which do not include cognitions specific to the sequelae of traumatic events (Foa et al., 1999). In accordance with the original scoring procedure, scale scores were calculated as the mean item score (Foa et al., 1999).

1.2.3. *Depression Anxiety Stress Scales-21-item version (DASS-21)*

The DASS-21 (Lovibond & Lovibond, 1995) is a 21-item self-report measure that assesses negative affect. Participants were asked to rate how much a particular statement applied to them over the past week using a four-point Likert scale ranging from 0 (“did not apply to me at all”) to 3 (“applied to me very much”). The measure loads on three factors, each comprising seven items, including Depression (*DASS-D*), Anxiety (*DASS-A*), and Stress Reactivity (*DASS-S*). The DASS-21 has been shown to have excellent psychometric properties in clinical (Antony et al., 1998; Brown et al., 1997) and non-clinical samples (Clara et al., 2001; Lovibond & Lovibond, 1995). Since the DASS-21 is a short version of the original 42-item scale, subscale scores were converted to full scale scores by multiplying by 2 as per Lovibond and Lovibond.

2. Results

2.1. *Descriptive statistics and first order correlations*

Descriptive statistics and correlations are presented in Table 2. The mean PDS total score for this sample is below the diagnostic cutoff of 15 (cf. Sheeran & Zimmerman, 2002), and falls between scores observed for traumatized samples without PTSD and traumatized samples with PTSD (Foa et al., 1997, 1999). In terms of the DASS subscales, the current sample’s scores are highly consistent with the original descriptives reported by Lovibond and Lovibond (1995), resemble scores observed for patients diagnosed with simple phobias (Brown et al., 1997), and

Table 2
Descriptive statistics and correlations

Variable	Mean (SD)	MALE	DASS-D	DASS-A	DASS-S	PTCI-Self	PTCI-World	PTCI-Blame
PDSTOT	6.03 (8.29)	-.15**	.39***	.41***	.39***	.55***	.43***	.32***
MALE	.42 (.49)		-.08	-.06	-.07	-.11*	-.08	-.02
DASS-D	7.51 (6.96)			.58***	.75***	.51***	.36***	.27***
DASS-A	5.97 (6.56)				.67***	.43***	.34***	.27***
DASS-S	12.75 (8.38)					.39***	.34***	.21***
PTCI-Self	.58 (.85)						.67***	.60***
PTCI-World	1.74 (1.35)							.50***
PTCI-Blame	.85 (1.23)							

Note. * $p < .05$, ** $p < .01$, *** $p < .001$. For all variables, $N = 379$. PDS: Posttraumatic Diagnostic Scale; MALE: comparison of males vs. females; DASS-D: Depression Anxiety Stress Scales-Depression; DASS-A: Depression Anxiety Stress Scales-Anxiety; DASS-S: Depression Anxiety Stress Scales-Stress; PTCI-Self: Posttraumatic Cognitions Inventory-negative cognitions about self; PTCI-World: Posttraumatic Cognitions Inventory-negative cognitions about world; PTCI-Blame: Posttraumatic Cognitions Inventory-self-blame.

generally fall below those reported for patients diagnosed with other anxiety and mood disorders (Antony et al., 1998; Brown et al., 1997). Finally, the current sample's average scores on the PTCI subscales are similar to those reported for non-traumatized and traumatized samples without PTSD, but fall well below those reported for PTSD samples (Beck et al., 2004; Foa et al., 1999).

Consistent with previous studies on the relationship between PTSD and negative cognitions, the self, world, and blame subscales of the PTCI were significantly related to PTSD symptom severity ($r = .55$, $p < .001$; $r = .43$, $p < .001$; and $r = .32$, $p < .001$, respectively). These correlations indicate that increased negative trauma-related cognitions were related to more severe PTSD symptoms.

Also consistent with previous reports, correlations indicated that gender ($r = -.15$, $p < .01$) was related to PTSD symptom severity, such that women had more severe PTSD symptoms. PTSD symptom severity was also positively related to depression ($r = .39$, $p < .001$), anxiety ($r = .41$, $p < .001$), and stress reactivity ($r = .39$, $p < .001$), as measured by the DASS-21.

2.2. Regression analysis

A block entry regression analysis was employed in the present study to predict PTSD symptoms as a function of trauma related cognitions after accounting for gender and DASS-21 subscale scores. There were six Likert scale predictors that included the *DASS-D*, *DASS-A*, *DASS-S*, *PTCI-Self*, *PTCI-World*, and *PTCI-Blame*. Additionally, one dummy variable was included: the comparison of males versus females where males were coded 1 and females 0 (*MALE*).

Gender (*MALE*) was entered as Block 1, followed by the DASS-21 subscales (*DASS-D*, *DASS-A*, and *DASS-S*) entered as Block 2, followed by trauma related cognitions (*PTCI-Self*, *PTCI-World*, and *PTCI-Blame*) entered as Block 3. Means and standard deviations for the seven predictor variables and PTSD symptom scores measured by the PDS are presented in Table 2. The results of the regression analysis are presented in Table 3.

As Table 3 shows, gender (Block 1), accounted for a significant amount of the variance in posttraumatic stress symptoms ($R^2 = .02$, $p < .01$). The DASS-21 subscales (Block 2) accounted for a significant amount of additional variance in posttraumatic stress symptoms after partialling

Table 3

Block entry regression showing amount of variance in Posttraumatic stress symptoms accounted for by student gender, negative affect, and trauma cognitions

Block	ΔR^2	<i>df</i>	ΔF
1	.02	1, 377	8.41**
2	.20	3, 374	31.37***
3	.14	3, 371	26.66***
R^2 Total (adj)	.35		

Note. Block 1: gender; Block 2: negative affect; Block 3: trauma related cognitions. *** $p < .001$. ** $p < .01$.

out variance accounted for by gender ($\Delta R^2 = .20, p < .001$). Finally, trauma-related cognitions (Block 3) accounted for a significant amount of additional variance in posttraumatic stress symptoms after partialling out variance accounted for by the first two blocks ($\Delta R^2 = .14, p < .001$). The final model accounted for approximately 35 percent of the total variance in posttraumatic stress symptoms.

The unstandardized (*B*) and standardized regression (β) coefficients for Blocks 1–3 are presented in Table 4. Table 4 shows that three variables in Block 2 significantly predicted posttraumatic stress symptom severity. In particular, the *DASS-A* was associated with the largest significant predictive value in posttraumatic stress symptoms ($\beta = .25, p < .001$) with higher anxiety being associated with more severe posttraumatic stress symptoms. *DASS-D* was associated with the second largest predictive value in posttraumatic stress symptoms ($\beta = .18, p < .05$) with higher depression being associated with more posttraumatic stress symptoms.

Table 4

Unstandardized and standardized regression coefficients

Variable	<i>B</i>	β	<i>t</i>
Block 1			
MALE	−2.47	−.15	−2.90**
Block 2			
MALE	−1.90	−.11	−2.47*
DASS-D	.21	.18	2.54*
DASS-A	.31	.25	3.92***
DASS-S	.08	.08	1.07
Block 3			
MALE	−1.41	−.08	−2.00*
DASS-D	−.02	−.01	−.20
DASS-A	.18	.14	2.42*
DASS-S	.12	.12	1.67
PTCI-Self	3.81	.39	5.80***
PTCI-World	.60	.10	1.70
PTCI-Blame	−.16	−.02	−.45

Note. For all variables, $N = 379$. MALE: comparison of males vs. females; DASS-D: Depression Anxiety Stress Scales-Depression; DASS-A: Depression Anxiety Stress Scales-Anxiety; DASS-S: Depression Anxiety Stress Scales-Stress; PTCI-Self: Posttraumatic Cognitions Inventory-negative cognitions about self; PTCI-World: Posttraumatic Cognitions Inventory-negative cognitions about world; PTCI-Blame: Posttraumatic Cognitions Inventory-self-blame. *** $p < .001$. ** $p < .01$. * $p < .05$.

Finally, gender (*MALE*) remained a significant predictor of posttraumatic stress symptoms ($\beta = -.11, p < .05$) in Block 2, indicating more severe PTSD symptoms in females.

In terms of the PTCI subscales entered in Block 3, *PTCI-Self* accounted for the greatest amount of predictive value in posttraumatic stress symptoms ($\beta = .39, p < .001$) with more negative cognitions about the self associated with more posttraumatic stress symptoms. On the other hand, both the *PTCI-World* and *PTCI-Blame* subscales were not significantly related to PTSD symptom severity after controlling for gender, negative affect, and *PTCI-Self* ($\beta = .10, p > .05$ and $\beta = -.02, p > .65$, respectively).

Once the PTCI subscale scores were entered into the regression in Block 3, the depression subscale of the DASS-21 was no longer a significant predictor of PTSD symptom severity ($\beta = -.01, p > .80$). *DASS-A* remained a significant predictor and was associated with the second largest significant predictive value in posttraumatic stress symptoms ($\beta = .14, p < .05$) with greater levels of self-reported anxiety associated with more posttraumatic stress symptoms. Finally, gender (*MALE*) remained a significant predictor of posttraumatic stress symptoms in the final model ($\beta = -.08, p < .05$).

3. Discussion

Consistent with the emotional processing theory of PTSD (Cahill & Foa, in press; Foa & Riggs, 1993; Foa & Rothbaum, 1998), the present study demonstrated a positive relationship between negative trauma-related cognitions regarding the self and concurrent PTSD severity. Regression analyses indicated that this relationship was not accounted for by gender, depression, anxiety, or other trauma-related cognitions. More specifically, the *PTCI-Self* scale was the only PTCI subscale that was uniquely related to PTSD symptom severity; after accounting for all other variables, negative cognitions about the self demonstrated the strongest relationship with PTSD symptom severity. Together, these data provide support for the unique importance of negative cognitions about the self in relation to PTSD symptom severity. These data are consistent with the findings of Foa and Rauch (2004), who reported that reductions in negative cognitions about the self were related to decreases in PTSD symptoms following prolonged exposure therapy whereas reduction in negative cognitions about the world were related to reduction of PTSD through their relations to cognitions about self. Overall, cognitions about the self appear to be more related to PTSD symptom severity than other types of trauma-related cognitions.

Consistent with previous studies, females had more severe PTSD symptoms than males in the current sample even after controlling for negative affect and trauma-related cognitions. Although the reason for this gender difference is not completely clear at present, some have suggested that women might experience more PTSD symptoms because they are more likely to have been a victim of sexual abuse in childhood and adulthood—traumas associated with higher rates of PTSD. Our current data hint at such a possibility, as females were approximately three times as likely to report sexual abuse or childhood sexual abuse as males. However, given the small sample sizes of females and males experiencing sexual abuse, we were unable to adequately test this hypothesis in the current study. Other examples of why females might experience more PTSD include having less social support following a trauma and genetic and biological vulnerabilities (for a review, see Nemeroff et al., 2006). Future studies will be needed to better understand gender differences in PTSD prevalence and symptom severity.

Higher levels of self-reported anxiety symptoms in the present study were associated with higher levels of posttraumatic stress symptoms. This is not surprising, as PTSD is an anxiety disorder and the DASS-21 anxiety scale includes items specific to autonomic arousal and the

subjective experience of anxious affect typically experienced by individuals with PTSD (APA, 1994).

Several studies have noted high rates of comorbidity between PTSD and depression (Kessler et al., 1995; Perkonig et al., 2000). To some extent, the present study supports the relationship between depression and PTSD symptom severity. That is, depressive symptoms were related to PTSD symptoms. However, once negative trauma-related cognitions were taken into account, PTSD symptoms were unrelated to symptoms specific to depression. These findings suggest that the relationship between depressive symptoms and PTSD may be accounted for by negative trauma-related cognitions, further highlighting the significance of negative trauma-related cognitions in understanding the development and maintenance of PTSD.

It is important to note that the present study utilized a non-clinical college sample, although it is probable that some of the individuals in the current study did meet criteria for PTSD given the range of responses reported by the students. Interestingly, the present results are consistent with those of Foa and Rauch (2004) that were obtained in a patient population who found a stronger relationship between PTSD symptom severity and negative cognitions about the self than negative cognitions about the world. In addition, gathering data from a large sample of individuals who report a range of posttraumatic stress symptoms is important because PTSD can best be viewed as a dimensional construct rather than a categorical construct (Ruscio et al., 2002). Nevertheless, future studies should continue to examine the relationship between cognitions and PTSD in larger representative samples to address the potential causal role of trauma-related cognitions in individuals reporting a wide range of PTSD symptoms.

One important limitation of the current study is that it was cross-sectional and therefore cannot speak to causality. Thus, it is impossible to determine whether negative trauma-related cognitions result from, or cause, PTSD. This question can only be answered by a longitudinal design. We are currently investigating these issues in an ongoing longitudinal study of college students. Specifically, students who participated in the initial screening session are being contacted 2 years later to complete a similar set of questionnaires. We plan to collect a large enough sample to begin answering some of the questions pertaining to the development and maintenance of PTSD that have eluded past research. For instance, unlike previous prospective studies of PTSD (Dunmore, Ehlers, & Clark, 2001) that assessed negative cognitions after a traumatic experience, our methodology will allow us to examine the relationship between pretrauma negative cognitions and later PTSD symptoms.

Acknowledgements

The first and second authors contributed equally to the current paper, and therefore the order of authorship was determined randomly. This research was supported in part by National Institutes of Mental Health (NIMH) predoctoral fellowship MH069047 (GH).

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