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Posttraumatic Stress Disorder and Fear of Emotions: The Role of Attentional Control

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Abstract

Individuals with posttraumatic stress disorder (PTSD) experience elevated concerns about their capacity to control, and the consequences of, strong emotions that occur in response to trauma reminders. Anxiety is theorized to compromise attentional control (Eysenck, Derakshan, Santos, & Calvo, 2007). In turn, diminished attentional control may increase vulnerability to threat cues and emotional reactivity (Ehlers & Clark, 2001). Consequently, attentional control may play a role in the fear of emotions frequently experienced by individuals with PTSD. Study participants included 64 men and 64 women with a mean age of 37 years, 86% of whom were White, non-Hispanic. Participants experienced an average of 7.68 types of traumatic events, most commonly including motor vehicle accidents and intimate partner violence. PTSD symptoms positively correlated with fear of emotions ($r = .53$) and negatively correlated with attentional control ($r = -.38$). Attentional control was negatively correlated with fear emotions ($r = -.77$) and partially mediated the link between PTSD and fear of emotions ($R^2 = .22$). Given the findings regarding top-down attentional control, these results have implications for cognitive and emotional processing theories of PTSD and emphasize the importance of clinical consideration of fear of emotions and attentional control in the treatment of PTSD.

Cognitive processing biases are fundamental to posttraumatic stress disorder (PTSD). One such bias is anxiety sensitivity (i.e., negative evaluation and fear of anxiety-related symptoms due to their potential consequences; Elwood, Hahn, Olatunji, & Williams, 2009). Because PTSD is characterized by a broader array of emotions, research on fear of emotions may be more informative because it defines fear of all strong emotions and one's capacity to control or respond adaptively to such emotions (Williams, Chambless, & Ahrens, 1997). Although PTSD symptoms and fear of emotions positively correlate (e.g., Tull, Jakupcak, McFadden, & Roemer, 2007), mechanisms for their relation have not been explicated.

Eysenck et al.'s (2007) attentional control theory posits that anxiety impairs attentional control (i.e., the ability to focus and shift attention). Anxiety is theorized to increase influence of the stimulus-driven attentional system that is triggered by perceived threat and decrease influence of the goal-directed system that strategically avoids threat (Eysenck et

al., 2007). Indeed, PTSD is associated with attentional control deficits (Bardeen & Orcutt, 2011), which appear to leave individuals with elevated PTSD symptoms vulnerable to escalations in, and slow recovery from, negative emotions (Bardeen & Read, 2010). Such vulnerability to emotionally evocative stimuli could elevate fear of emotions. Thus, cognitive theories of PTSD implicate attentional control deficits in maladaptive emotional processing (Ehlers & Clark, 2000).

We hypothesized that PTSD symptom severity would be positively correlated with fear of emotions and negatively correlated with attentional control. Further, attentional control would be negatively correlated with fear of emotions and would partially mediate the association between PTSD symptom severity and fear of emotions.

Method

Participants and Procedures

Participants included 128 individuals from 64 heterosexual cohabitating couples recruited for a larger study of PTSD and relationship functioning using advertisements placed on the Internet and in newspapers, businesses, and an outpatient mental health clinic. Advertisements targeted couples in which a partner had experienced a stressful life event. Of 276 couples who responded to recruitment advertisements, 192 couples completed telephone-based eligibility screening and 84 couples were not interested. Couples were ineligible if neither partner met PTSD screening criteria (i.e., >44 on the PTSD Checklist; Weathers, Litz, Herman, Huska, & Keane, 1993, October; $n = 122$ couples), partners' combined income exceeded \$100,000 per year or either partner had more than 6 years post-high school education ($n = 3$), they could not be contacted for scheduling ($n = 2$), or they ended their relationship ($n = 1$). Income and education restrictions ensured a sample representative of the understudied population of individuals living in rural communities who are typically served by community clinics. Participants were financially compensated. The research protocol was approved for compliance with the policies of the Human Subjects Institutional Review Board at the Pennsylvania State University. Written informed consent was obtained.

On average, participants were 37.06 ($SD = 12.72$) years old, with an individual monthly income of \$1,731.00 ($SD = \$1,522.00$) and 14.3 ($SD = 2.32$) years of education. Most participants were White, non-Hispanic (85.9%), employed (68.7%), and married (72.7%).

Measures

The Clinician Administered PTSD Scale (CAPS; Blake, Weathers, Nagy, & Kaloupek, 1995) measures the frequency and intensity of current PTSD symptoms, each on a 4-point scale. The CAPS exhibits high interrater reliability and convergent validity with other PTSD measures. The criterion for PTSD according to the *Diagnostic and Statistical Manual of Mental Disorders* (4th ed., *DSM-IV*; American Psychiatric Association, 1994) is determined when the requisite number of symptoms are assigned minimum frequency and intensity ratings of 1 and 2, respectively (Weathers, Ruscio, & Keane, 1999; $\alpha = .94$ in the current study). The Traumatic Life Events Questionnaire (Kubany et al., 2000), which lists 22 types

of potentially traumatic events, was used in determining the trauma assessed during the CAPS interview.

The Affective Control Scale (Williams et al., 1997) measures fear of experiencing, losing control over, and behavioral reactions to a variety of emotions. Participants rate their agreement with 42 statements on a 7-point scale (1 = *very strongly disagree*; 7 = *very strongly agree*); higher scores indicate greater fear of emotions. This scale exhibits good construct and predictive validity and adequate test-retest reliability (Williams et al., 1997; $\alpha = .95$ in the current study).

The Attentional Control Scale (Derryberry & Reed, 2002) measures voluntary capacity for attentional control, including ability to focus and shift attention. Participants answer 20 items on a 4-point scale (1 = *almost never*; 4 = *always*); higher scores indicate better attentional control. The scale exhibits good predictive utility (Derryberry & Reed, 2002; $\alpha = .90$ in the current study).

The Wechsler Test of Adult Reading (Wechsler, 2001), a test of reading recognition and pronunciation, estimates intellectual functioning.

Data Analysis

Analyses were conducted using SPSS. Continuous PTSD scores were used because some research suggests that PTSD is a dimensional disorder (e.g., Broman-Fulks et al., 2006). Continuous scores improve statistical power, are more reliable and valid, and yield more information than categorical measures.

Guidelines from Kenny, Kashy, and Cook (2006) were used to test for within-couple dependency and expectation-maximization (EM) was used to address missing data (Little & Rubin, 2002). Participants with missing data ($n = 28$) did not differ from those without missing data in terms of PTSD symptom severity, $t(126) = 1.26$; income, $t(110) = -.88$; age, $t(121) = .46$; years of education, $t(120) = .35$; race, $\chi^2(4) = 6.5$; or employment status, $\chi^2(2) = .20$; although this lack of differences may partly be a function of unequal group sizes. Little's χ^2 test established that data were missing completely at random, $\chi^2(1) = 2.04, p = .15$.

We examined bivariate correlations and mediation models using Preacher and Hayes' (2004) bootstrapping methods, which do not assume distributional normality and increase power while avoiding Type I and II errors. Bootstrapping assumes independent residuals and accurate model specification in terms of causal directionality, nonexistence of moderation, and measurement precision. Observations are repeatedly sampled with replacement from the dataset (we used 1000 resamples) to approximate the sampling distribution of the indirect effect, as indicated by point estimates and a percentile confidence interval.

Tests of skew and kurtosis indicated that variables were normally distributed. EM and bootstrapping methods are robust against minor nonnormality (Little & Rubin, 2002; Preacher & Hayes, 2004).

Results

On study variables, bivariate correlations between partners within couples ranged from $-.17$ to $.10$; none were statistically significant, nor of meaningful effect size. Therefore, analyses were performed using individuals' data.

Participants experienced an average of 7.68 ($SD = 3.65$) types of potentially traumatic events, most commonly motor vehicle accidents, intimate partner violence, and friends/loved ones experiencing life-threatening events/sudden death. *DSMIV* criteria for PTSD were met by 47 participants (36.7% of the sample), of whom 66% were female and 81% were White, non-Hispanic.

Study variables were correlated in the manner hypothesized (see Table 1 and online supporting materials). The relationship between PTSD symptoms and fear of emotions was positive and exhibited a large effect size. PTSD symptoms and attentional control exhibited a medium-sized negative relationship. Attentional control and fear of emotions exhibited a large-sized negative relationship (Cohen, 1988).

As displayed in Figure 1, all direct effects were statistically significant. The effect of PTSD symptom severity on fear of emotions was reduced when accounting for attentional control, indicating partial mediation ($R^2 = .22$). The confidence interval represents 95% confidence that the true indirect effect (i.e., the degree to which the direct effect was reduced when accounting for attentional control) lies between $.14$ and $.58$.

Results of the mediation model were unchanged with general intelligence in the model ($M = 0.35$, $SE = 0.09$; 99% $CI = [0.14, 0.60]$).

We tested alternative models, including (a) fear of emotions mediating the PTSD-attentional control relation, (b) attentional control mediating the fear of emotions-PTSD relation, (c) attentional control mediating the relation between each CAPS subscale and fear of emotions, (d) each attentional control subscale mediating the PTSD-fear of emotions relation, and (e) gender, race, and trauma type as moderators of the primary mediation model. All indirect effects or moderators were nonsignificant except alternative Model A (see online supporting materials).

Discussion

In conjunction with theories positing that PTSD is characterized by negative beliefs about the meaning of PTSD-related processes (e.g., Ehlers & Clark, 2000), the current results indicate that trauma-related anxiety may impair attentional control, in turn inhibiting regulation of emotions, which are appraised as threatening, attributed to a loss of control, and become feared. Because anxiety sensitivity appears to exacerbate psychiatric symptoms (Elwood, Mott, Williams, Lohr, & Schroede, 2009), fear of emotions may reciprocally maintain PTSD. Further explication of this model will benefit from knowledge regarding (a) the possible reciprocal nature of PTSD and fear of emotions, (b) whether the model is specific to fear of anxiety or applies to other PTSD-relevant emotions, and (c) the role of cognitive appraisals and attributions.

These results have several clinical implications. Fear of emotions may interfere with exposure-based treatments for PTSD by reinforcing avoidance, thus preventing habituation. Clinicians might consider challenging patients' concerns about experiencing emotions to improve treatment engagement. Although preliminary, these results support development of treatments to improve attentional control (e.g., attention bias modification training; Wadlinger & Isaacowitz, 2011). Results also support mindfulness-based interventions for PTSD, as they improve attentional control and decrease fear of emotions (Lykins & Baer, 2009).

Methodological improvements of the current study over prior studies include assessment of PTSD with the CAPS to query subtle indicators of avoidance and emotional reactivity that participants fearful of emotions may not acknowledge via self-report. Despite the limits of self-report, it may be especially clinically relevant to measure subjective attentional control as negative beliefs about one's ability to redirect attention may contribute to broader maladaptive beliefs (Ehlers & Clark, 2000). Further, our measure of attentional control predicts behavioral indicators of attentional control (Derryberry & Reed, 2002). Finally, we demonstrated that the results are not due to many possible confounds.

The primary limitation of this study is the cross-sectional design. Other models are conceivable (e.g., attentional control may confer risk for PTSD), and fear of emotions mediated the relation between PTSD and attentional control. This model, however, is less theoretically sound and may be attributable to the strong correlation between attentional control and fear emotions (potentially due to shared method variance or assessment of one broader construct such as perceived ability to control internal states). Further, although theory suggests that study results are specific to PTSD (Ehlers & Clark, 2000), comorbid conditions may have contributed to the observed processes. Additionally, inclusion of couples from rural and semirural communities limits generalizability because couples may have had unusually strong relationships that motivated them to participate, and a high degree of stress at recruitment that diminished prior to their laboratory session, which occurred an average of 6 weeks later (thus potentially explaining why only 37% of the sample met diagnostic criteria for PTSD during the laboratory session). Finally, the small within-couple associations could have impacted results. Use of multiple methods, measures of comorbid conditions, and inclusion of diverse community and clinic samples of individuals rather than couples are indicated. We hope that these initial results stimulate additional work aimed at understanding and treating dysfunctional cognitive and emotional processing in PTSD, including improving attentional control and decreasing fear of emotions.

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References

- American Psychiatric Association. Diagnostic and statistical manual of mental disorders. 4th ed.. Arlington, VA: Author; 1994.
- Bardeen JR, Orcutt HK. Attentional control as a moderator of the relationship between posttraumatic stress symptoms and attentional threat bias. *Journal of Anxiety Disorders*. 2011; 25:1008–1018. [PubMed: 21782385]
- Bardeen JR, Read JP. Attentional control, trauma, and affect regulation: A preliminary investigation. *Traumatology*. 2010; 16:11–18.
- Blake DD, Weathers FW, Nagy LM, Kaloupek DG. The development of a clinician-administered PTSD scale. *Journal of Traumatic Stress*. 1995; 8:75–90. [PubMed: 7712061]
- Broman-Fulks JJ, Ruggiero KJ, Green BA, Kilpatrick DG, Danielson CK, Resnick HS, Saunders BE. Taxometric investigation of PTSD: Data from two nationally representative samples. *Behavior Therapy*. 2006; 37:364–380. [PubMed: 17071214]
- Cohen, J. Statistical power analysis for the behavioral sciences. 2nd ed.. Hillsdale, NJ: Erlbaum; 1988.
- Derryberry D, Reed M. Anxiety-related attentional biases and their regulation by attentional control. *Journal of Abnormal Psychology*. 2002; 111:225–236. [PubMed: 12003445]
- Ehlers A, Clark DM. A cognitive model of posttraumatic stress disorder. *Behaviour Research and Therapy*. 2000; 38:319–345. [PubMed: 10761279]
- Elwood LS, Hahn KS, Olatunji BO, Williams N. Cognitive vulnerabilities to the development of PTSD: A review of four vulnerabilities and the proposal of an integrative vulnerability model. *Clinical Psychology Review*. 2009; 29:87–100. [PubMed: 19008028]
- Elwood LS, Mott J, Williams NL, Lohr JM, Schroeder DA. Attributional style and anxiety sensitivity as maintenance factors of posttraumatic stress symptoms: A prospective examination of a diathesis- stress model. *Journal of Behavior Therapy and Experimental Psychiatry*. 2009; 40:544–557. [PubMed: 19726028]
- Eysenck MW, Derakshan N, Santos R, Calvo MG. Anxiety and cognitive performance: Attentional control theory. *Emotion*. 2007; 7:336–353. [PubMed: 17516812]
- Kenny, DA.; Kashy, DA.; Cook, DL. Dyadic data analysis. New York: Guilford Press; 2006.
- Kubany ES, Leisen MB, Kaplan AS, Watson SB, Haynes SN, Owens JA. Development and preliminary validation of a brief broad-spectrum measure of trauma exposure: The Traumatic Life Events Questionnaire. *Psychological Assessment*. 2000; 12:210–224. [PubMed: 10887767]
- Little, RJA.; Rubin, DB. Statistical analysis with missing data. 2nd ed.. New York: Wiley; 2002.
- Lykins ELB, Baer RA. Psychological functioning in a sample of long-term practitioners of mindfulness meditation. *Journal of Cognitive Psychotherapy*. 2009; 23:226–241.
- Preacher KJ, Hayes AF. SPSS and SAS procedures for estimating indirect effects in simple mediation models. *Behavior Research Methods, Instruments, and Computers*. 2004; 36:717–731.
- Tull MT, Jakupcak M, McFadden ME, Roemer L. The role of negative affect intensity and the fear of emotions in posttraumatic stress symptom severity among victims of childhood interpersonal violence. *Journal of Nervous and Mental Disease*. 2007; 195:580–587. [PubMed: 17632248]
- Wadlinger HA, Isaacowitz DM. Fixing our focus: Training attention to regulate emotion. *Personality and Social Psychology Review*. 2011; 15:75–102. [PubMed: 20435804]
- Weathers, FW.; Litz, BT.; Herman, DS.; Huska, JA.; Keane, TM. The PTSD Checklist (PCL): Reliability, validity, and diagnostic utility. Paper presented at the meeting of the International Society for Traumatic Stress Studies; San Antonio, TX. 1993 Oct.
- Weathers FW, Ruscio AM, Keane TM. Psychometric properties of nine scoring rules for the Clinician-Administered Posttraumatic Stress Disorder Scale. *Psychological Assessment*. 1999; 11:124–133.
- Wechsler, D. Wechsler Test of Adult Reading. San Antonio, TX: the Psychological Corp; 2001.
- Williams KE, Chambless DL, Ahrens AH. Are emotions frightening? An extension of the fear of fear concept. *Behaviour Research and Therapy*. 1997; 35:239–248. [PubMed: 9125104]

Indirect effect: $b = 0.39^{**}$; $M = 0.34$, $SE = 0.08$, 95% CI [0.14, 0.58]

Figure 1.

Mediating effect of attentional control on the relation between posttraumatic stress disorder (PTSD) and fear of emotions. *CI* = confidence interval; *M* = mean; *SE* = standard error; *b* = unstandardized beta. $**p < .01$, two-tailed; $***p < .001$, two-tailed.

Table 1

Means, Standard Deviations, and Correlations Among Study Variables

Variable	<i>M</i>	<i>SD</i>	Range	1	2	3
1. PTSD symptom severity	36.02	24.37	0–102	–		
2. Fear of emotions	133.87	33.95	52–233	.53***	–	
3. Attentional control	52.90	9.20	32–74	–.38***	–.77***	–
4. General intelligence	37.90	6.82	16–50	–.06	.08	–.14

Note. *N* = 128. PTSD = posttraumatic stress disorder.***
p < .001, two-tailed.