



Reaction to stressful life events: What predicts symptom severity?

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ABSTRACT

This study examined the effect of Criterion A and non-Criterion A (as defined by the DSM-IV-TR) events on symptomatology related to Posttraumatic Stress Disorder (PTSD). Two hundred and forty-one college students completed a series of questionnaires related to symptoms of Posttraumatic Stress Disorder, psychological processes and psychopathology. Participants were divided into two groups: those that experienced a Criterion A traumatic life event as defined by the DSM-IV-TR, and those that experienced a non-Criterion A event. A chi-square analysis revealed a higher percentage of those with a Criterion A event meeting criteria for PTSD, although results indicated no differences on the overall severity of PTSD symptoms, or the re-experiencing, hyperarousal or avoidance subscales of PTSD symptoms between these two groups when time since event and distress were held constant. In a logistic regression analysis, the tendency to engage in thought suppression and level of distress were related to a diagnosis of PTSD, while type of event (Criterion A or non-Criterion A) was marginally related. Results are discussed in relation to ongoing discussion examining the description, classification and impact of a Criterion A event on PTSD symptoms, and the possible impact for treatment.

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Posttraumatic Stress Disorder (PTSD) is a significant public health concern, with significant associated morbidity and mortality (e.g., APA, 1994, 2000; Green et al., 2006). A diagnosis of PTSD requires that a person “experienced, witnessed or was confronted with an event or events that involved actual or threatened death or serious injury, or a threat to the physical integrity of self or others” (Criterion A1) and “the person’s response involved intense fear, helplessness or horror” (Criterion A2) (American Psychiatric Association [APA], 2000, p. 463). Individuals meeting criteria for this diagnosis often present with complex patterns of symptoms consisting of intrusive thoughts about the event, hypervigilance, intense distress in response to cues that act as reminders of the event and will go to lengths to avoid places, objects or people associated with the event, among other symptoms (APA, 2000).

Efforts to understand and predict PTSD are complicated in light of accumulating research illustrating (1) high rates of exposure to events with no symptoms, and (2) symptoms with exposure to events deemed not traumatic. A significant percentage of the population will experience a potentially traumatic event in their lifetime, with lifetime estimates as high as 74% (Van Hoof, McFarlane, Baur, Abraham, & Barnes, 2009) and 75% (Sledjeski, Speisman, & Dierker, 2008). Estimates suggest that 12–14% of those experiencing a

potentially traumatic event will go on to experience symptoms consistent with PTSD (de Vries & Olff, 2009; Frazier et al., 2009; Watson & Haynes, 2007). Yet recent research has brought the importance of the traumatic nature of the event on psychological symptoms into question. For example, in one study of 454 college students, Gold, Marx, Soler-Baillo, and Sloan (2005) found that participants reporting an event classified as non-traumatic (i.e., non-Criterion A), indicated significantly greater levels of PTSD symptomatology than those who experienced a traumatic event that would be consistent with the DSM-IV-TR definition with a Criterion A event. The “trauma-incongruent” group in this sample also scored significantly higher on the re-experiencing subscale of the Posttraumatic Stress Diagnostic Scale (PDS; Foa, 1996) while there were no significant differences between the groups on the avoidance and hyperarousal subscales. Additionally, in a cross-sectional random sample of 2997 adults representative of the general population in the Netherlands, Mol et al. (2005) found that self-reports of symptoms based on the “worst event they experienced in their life” indicated that the average total PTSD scores measured by the Posttraumatic Stress Symptom Scale (PSS-SR; Foa, Riggs, Dancu, & Rothbaum, 1993) were actually higher after life events that were non-traumatic in nature that occurred in the past 30 years than for traumatic events. However, there were no differences between the two groups on the three PTSD symptom subscales.

In an attempt to replicate and extend the Gold et al. (2005) study, Boals and Schuettler (2009) studied traumatic vs. non-traumatic events (i.e., Criterion A vs. non-Criterion A events), but limited the definition of a traumatic event to those that included both the A1

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and the A2 criteria (response involving intense fear, hopelessness or horror). The authors compared Posttraumatic Stress Disorder Checklist (PCL-S; Weathers, Litz, Huska, & Keane, 1994) scores of those who met both Criteria A1 and A2, to those who answered yes to A1 only. Results in this case were inconsistent with the findings by Gold et al. (2005). That is, PTSD symptom severity was greater for traumatic events (i.e., Criterion A events) in comparison to non-traumatic events (i.e., non-Criterion A events), however, while statistically significant, differences between the groups were small. The authors concluded that the emotional response to the event in the moment may be an important risk factor for experiencing future PTSD symptoms. The evidence from these three studies indicate that it may not be the event itself that leads to greater psychological distress, but rather the emotional or psychological reaction to the event.

Psychological processes that are avoidant in nature, such as thought suppression, may provide insight into the development of PTSD after an event. Thought suppression is considered to be a general coping pattern, and thus differs from the avoidance cluster of PTSD symptoms that relate to specific avoidance of reminders or cues about the event. Research examining deliberate attempts to either avoid or suppress distressing thoughts related to a traumatic event has demonstrated an ironic effect of actually increasing relevant thoughts (e.g., Wegner & Zanakos, 1994). This “rebound effect” may produce a situation in which a person who tries to suppress a memory may experience an increased frequency of that same memory, resulting in further attempts to suppress that memory, and so on. Research examining the effects of thought suppression on trauma survivors indicates that suppression of trauma related thoughts produces this rebound effect (Shipherd & Beck, 2005), increasing frequency of negative autobiographical memory recall (Neufiend, Dritschel, Astell, & MacLeod, 2009) and may result in the maintenance of PTSD symptoms. Individuals who tend to engage in thought suppression as a general coping strategy exhibit higher levels of PTSD symptoms after a traumatic event (Amstadter & Vernon, 2008; Vázquez, Hervás, & Pérez-Sales, 2008) and may explain the link between negative mood and PTSD (Rosenthal, Chevanes, Lynch, & Follette, 2006). Individuals who tend to engage in thought suppression may differ from those individuals who only attempt to avoid reminders or cues about the event in that the general coping style of thought suppression may be more pervasive, potentially leading to greater avoidance across various domains of the individual's life.

To summarize, the findings regarding the risk of PTSD symptomatology based on nature of potentially traumatic events have been somewhat equivocal, with some research illustrating that Criterion A events only are associated with PTSD symptomatology and some not. The present study seeks to add to this literature by replicating and extending the previous findings by Gold et al. (2005). Additionally, it was hypothesized that greater thought suppression would increase the likelihood of reporting PTSD symptoms in response to a Criterion A event. Also, since PTSD has been associated with Major Depressive Disorder in adolescents (Kilpatrick, Ruggiero, & Best, 2003) and adults (e.g., Plotzker, Metzger, & Holmes, 2007), level of distress was controlled for in this study to attempt to isolate thought suppression and type of event as contributors to PTSD symptoms.

1. Materials and methods

1.1. Participants

Two hundred and forty-eight participants were recruited through the University of Nevada Psychology Department subject pool, undergraduate psychology courses at the University of

Table 1

Types and frequency of Criterion A events reported as the most upsetting event to occur in the participant's life.

Criterion A event	N	%
Direct combat experience in war	0	0
Involved in life-threatening accident	7	7.5%
Involved in fire, flood or natural disaster	6	6.5%
Witnessed someone being badly injured or killed	10	10.8%
Raped	15	16.1%
Sexually molested	21	22.6%
Seriously physically attacked or assaulted	12	12.9%
Physically abused as a child	5	5.4%
Seriously neglected as a child	0	0
Threatened with a weapon, held captive or kidnapped	6	6.5%
Other (hit someone w/car, sexual harassment, stalked, someone broke into house)	4	4.3%
Suffered great shock because one of these events happened to someone close	7	7.5%

Nevada, and a local community college. Participants completed a packet of questionnaires as part of a larger study. Only women were recruited because reports of trauma history are more prevalent among women in this age group compared to men (Jaycox, Ebener, Damesk, & Becker, 2004). In order to assess history of traumatic events, participants reported their most stressful life event, which was then coded as either Criterion A (traumatic) vs. non-Criterion A according to the 10 events identified by the National Comorbidity Study (Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995) as traumatic. Of the 248 participants, 241 reported experiencing either a Criterion A event or a non-Criterion A event, and 7 did not endorse any type of event. Of the 241, 148 (61%) reported a non-Criterion A event and 93 (39%) reported a Criterion A event. Frequency of types of events categorized as Criterion A are displayed in Table 1, and frequency of types of events categorized as non-Criterion A are displayed in Table 2. The mean age was 22.59 ($SD=6.4$) and 74.7% of this sample was Caucasian. Thirty-four (36.6%) participants reported a Criterion A event that also met criteria for PTSD based on a PCL severity score of 40 or above, and 35 (23.8%) participants who reported a non-Criterion A event met this cutoff score or above.

1.2. Measures

1.2.1. Beck Depression Inventory (BDI; Beck, Rush, Shaw, & Emery, 1979; Cronbach's $\alpha=.90$)

The 21-item BDI assesses intensity of depressive thoughts and attitudes. Each item is rated on a 4-point Likert scale (from 0=symptom not present to 3=symptom very intense). Item responses are summed to an overall score ranging from 0 to 63. Higher scores indicate greater severity of depression. Data on psychometric reliability and validity are abundant (Beck, Steer, & Garbin, 1988; Cohen, Swerdlik, & Phillips, 1996). BDI scores were used as covariates in order to determine whether differences, if found, are not merely a function of negative affect.

Table 2

Types and frequency of Non-Criterion A events reported as the most upsetting event to occur in the participant's life.

Non-Criterion A event	N	%
Death of friend or loved one	19	16.2%
Personal medical or mental illness	16	13.7%
Romantic breakup or difficulties	12	10.3%
Medical illness of friend or loved one	11	9.4%
Non-life-threatening accident	11	9.4%
Family problems	9	7.7%
Witnessed non-violent event	9	7.7%
Experienced childhood verbal abuse or neglect	9	7.7%
Other	21	17.9%

1.2.2. Posttraumatic Stress Disorder Checklist (PCL-S; Weathers et al., 1994; Cronbach's $\alpha = .91$)

The PCL-S is a 17-item self-report assessment of PTSD symptomatology. It has good psychometric properties and correlates with the Clinician Administered PTSD Scale (CAPS) at .93 (Blanchard, Jones-Alexander, Buckley, & Foneris, 1996). Participants completed this scale in response to their most traumatic event. Researchers have found that severity scores above 35 are predictive of clinical PTSD (Lang, Laffaye, Satz, Dresselhaus, & Stein, 2003), and we conservatively coded scores of 40 and above as meeting criteria for a diagnosis of PTSD.

1.2.3. White Bear Suppression Inventory (WBSI; Wegner & Zanakos, 1994; Cronbach's $\alpha = .89$)

The WBSI measures the general tendency to suppress unwanted negative thoughts. The total WBSI score is obtained by summing the individual items. Higher scores indicate greater attempts to suppress thoughts. The measure shows good internal and temporal reliability and correlates sensibly with variables such as obsession, depression, dissociation and anxiety (Muris & Merckelbach, 1997; Wegner & Zanakos, 1994).

2. Data analysis

Prior to all analyses, our data were examined for accuracy of entry, missing values, and fit between variables' distributions and the assumptions of the analyses performed. A chi-square analysis was performed to determine whether or not the two groups differed in number of participants who, by self-report, met diagnosis for PTSD based on a PCL severity cutoff score of 40. BDI scores and PCL severity subscales and total scores were transformed using a square root transformation to correct normality. An ANCOVA controlling for time since the event and level of distress, as measured by the BDI, was conducted to determine between-subjects differences between those individuals that experienced a Criterion A event and those that experienced a non-Criterion A event on total PCL severity score, and the three subscales of the PCL that measure hyperarousal, avoidance and re-experiencing symptoms. This same model was subsequently run only including those individuals who met the cutoff score of 40 or greater on the PCL for a diagnosis of PTSD to determine whether these scores differed between these groups at more severe levels of psychopathology.

A binary logistic regression analysis with level of distress (measured by the BDI), type of event (Criterion A or non-Criterion A) and the tendency to suppress unwanted thoughts (as measured by the WBSI) as the independent variables was conducted to predict a dichotomous variable of PTSD diagnosis (coded 1 = Yes, 0 = No) based on a PCL severity score of below, or above and including 40. The original model included gender, age, and time since event, but these variables were removed in the final model due to non-significance.

3. Results

3.1. Number of participants endorsing Criterion A or non-Criterion A events who met criteria for PTSD

A chi-square analysis revealed significant differences between number of participants who met criteria for PTSD between the two groups, with a larger percentage of those endorsing a Criterion A event meeting criteria, $\chi^2 (1, N=241) = 4.52, p < .05$. These results differ from those found in the Gold et al. study, who found that a greater percentage of those who endorsed a non-Criterion A event met criteria for PTSD.

Table 3

Means and standard deviations of total PCL severity scale and subscales for all participants as a function of event type.

	Type of event					
	Criterion A			Non-Criterion A		
	M	SD	N	M	SD	N
Total PCL severity score	35.71	13.45	77	32.49	12.26	117
Hyperarousal subscale	10.33	4.71	77	9.15	3.98	117
Avoidance subscale	14.04	5.79	77	12.56	5.29	117
Re-experiencing subscale	10.96	4.40	77	10.74	4.50	117

Note: Values represent untransformed scores. None of the means are statistically different from each other.

3.2. Differences in PTSD symptomatology between participants endorsing Criterion A and non-Criterion A events

Forty-seven participants did not indicate the time since the event and thus were not included in the ANCOVA analyses. For the remaining participants ($n = 194$), an ANCOVA controlling for time since event and level of distress, as measured by the BDI, was conducted to determine between-subjects differences between those that experienced a Criterion A event and those that experienced a non-Criterion A event on total PCL severity score, and the three subscales of the PCL that measure hyperarousal, avoidance and re-experiencing symptoms. The between-subjects main effect of total PCL severity score was not significant ($F(1,190) = 1.13, ns$) between those who met criteria for PTSD with a Criterion A event ($M = 35.71, SD = 12.26, n = 77$), and those with a non-Criterion A event ($M = 32.49, SD = 1.02, n = 117$). Similar results were found for each of three subscales of the PCL. There were no significant differences between the two groups on the hyperarousal subscale, $F(1,190) = 1.39, ns$, the avoidance subscale, $F(1,190) = 1.72, ns$, and the re-experiencing subscale $F(1,190) = 0.15, ns$, results that slightly differ from the Gold et al. (2005) study. Means and standard deviations for these scales can be found in Table 3.

3.3. Differences in PTSD symptomatology between groups

After examining differences between severity of PTSD symptoms between groups (those who experienced a Criterion A event versus those who experienced a non-Criterion A event) for all individuals regardless of their overall severity score, we decided to run the same analyses only on those individuals who scored an overall PCL severity score of 40 or greater, traditionally accepted as the cut-off score for a diagnosis of PTSD. Twenty-six individuals reported a Criterion A event and received a score of 40 or above, and 26 individuals reported a non-Criterion A event and scored 40 or above. Similar results were found between these two groups. Controlling for level of distress and time since event, there were no significant differences, $F(1, 45) = 0.78, ns$, between those who reported a Criterion A event ($M = 51.69, SD = 8.43$) and those who reported

Table 4

Means and standard deviations of total PCL severity scale and subscales for participants with a PCL score of 40 or greater as a function of event type.

	Type of event					
	Criterion A			Non-Criterion A		
	M	SD	N	M	SD	N
Total PCL severity score	51.69	8.43	26	50.85	10.10	26
Hyperarousal subscale	15.38	3.54	26	14.54	3.85	26
Avoidance subscale	19.88	5.38	26	19.96	5.25	26
Re-experiencing subscale	15.92	2.81	26	16.42	3.71	26

Note: Values represent untransformed scores. None of the means are statistically different from each other.

Table 5

Logistic regression results for prediction of PTSD diagnosis by depression score, type of event, and thought suppression scores.

	Variable	<i>B</i>	Wald	<i>p</i>	Exp(<i>B</i>)	95% CI for Exp(<i>B</i>)	
						Lower	Upper
Step 1	BDI score	.97	37.13	.000	2.64	1.93	3.61
Step 2	BDI score	.98	36.71	.000	2.66	1.94	3.64
	Type of event	.61	3.51	.06	1.84	0.97	3.50
Step 3	BDI score	.76	18.42	.000	2.33	1.51	3.02
	Type of event	.63	3.60	.057	1.88	0.98	3.63
	WBSI score	.06	7.32	.007	1.06	1.02	1.10

Note: ΔR^2 between Step 2 and Step 3 = .04, $p < .05$.

a non-Criterion A event ($M = 50.85$, $SD = 10.10$). Additionally, we again found no significant differences between the two groups on any of the subscales. Means and standard deviations can be found in Table 4. Interestingly, differences in mean scores of thought suppression were significantly different across those who met criteria for PTSD and those who did not, $F(1,241) = 38.29$, $p < .001$. Those individuals who met diagnosis for PTSD (again, regardless of the type of event) had significantly higher thought suppression scores ($M = 55.41$, $SD = 8.55$) than those who did not meet diagnosis for PTSD ($M = 46.89$, $SD = 10.08$).

3.4. Logistic regression analyses

In order to determine what variables might be significant in determining a diagnosis of PTSD if not the traumatic nature of the event itself, a step-wise logistic regression was used to model a dichotomous variable of PTSD diagnosis (coded 1 = Yes, 0 = No) based on a PCL severity score of below or above and including 40. Results indicate that the model provides a statistically significant improvement over the constant-only model, $\chi^2(2, N = 239) = 62.60$, $p < .001$. The Nagelkerke R^2 indicated that the model accounted for 33% of the total variance. Prediction success was 78.2%, with correct prediction rates of 91.8% for those with a non-Criterion A event, but only 44.9% for those with a Criterion A event. Table 5 presents the regression coefficients (*B*), the Wald statistics, significance level, odds ratio [Exp(*B*)], and the 95% confidence intervals for the odds ratio for each predictor. The strongest predictor in the model was level of distress (BDI score), with each unit increase in distress level increasing the likelihood of a diagnosis of PTSD by 2.33. The experience of a Criterion A event increased likelihood of a diagnosis of PTSD by 1.88 and the tendency to suppress unwanted thoughts increased this likelihood by 1.09.

4. Discussion

This research brings into question using the Criterion A traumatic event exclusively for a diagnosis of PTSD, and instead highlights the importance of how the individual experiences the event (as traumatic or non-traumatic), psychological processes and distress in the development and maintenance of PTSD symptoms. In this study, when asked to report on PTSD symptoms related to the most upsetting event that has occurred in their lifetime, individuals who endorsed a Criterion A event showed no differences on measures of PTSD symptomatology than those who endorsed a non-Criterion A event, controlling for time since event and distress. This study partially replicated the Gold et al. (2005) study. Gold et al. found a higher percentage of individuals endorsing a non-Criterion A event meeting diagnosis for PTSD, while this study found the opposite. However, once while Gold et al. found that those who experienced a non-Criterion A event reported higher levels of PTSD symptomatology, we found no significant differences

in overall PTSD severity between those who experienced a Criterion A event and those who did not. Like Gold et al., we found no significant differences between the groups on the PTSD subscales, results that differed slightly from their study in that the Gold et al. study found reports of greater re-experiencing symptoms in the non-Criterion A group.

Similar to previous studies (Gold et al., 2005; Mol et al., 2005), in the current sample, endorsement of a Criterion A event was not related to endorsement of PTSD symptoms. No differences were found between overall symptom severity or the three PTSD subscales between those who experienced a Criterion A event and those who experienced a non-Criterion A event that does not fall under the current definition of a traumatic event as measured by the PCL, even after controlling for depressive symptoms and time since the event occurred. However, in a logistic regression model the presence of a Criterion A event did contribute to a diagnosis of PTSD with an adjusted odds ratio of 1.88, although at a significance level of $p > .10$. Level of depression and the tendency to suppress unwanted thoughts significantly increased the likelihood of a PTSD diagnosis after either type of event.

While these results could be interpreted as an argument for extending the definition of a traumatic stressor, we argue that it may not be the type of event, but rather the behavioral response to the event that may be a significant risk factor for psychological distress. Significant differences were found on thought suppression scores between those who met diagnosis for PTSD and those who did not (regardless of type of event). Those who met diagnosis for PTSD reported significantly higher tendencies to suppress unwanted thoughts. In previous studies thought suppression has demonstrated maintaining effects in PTSD (Shipperd & Beck, 2005), increases frequency of negative autobiographical memories (Neufiend et al., 2009) and is associated with greater PTSD symptomatology following exposure to a traumatic event (Amstadter & Vernon, 2008; Rosenthal et al., 2006; Vázquez et al., 2008) and the current study suggests that investigation into the contributing factor of thought suppression to PTSD symptoms may be warranted, regardless of the nature of the event. A higher tendency to engage in thought suppression may indicate that the individual is prone to engage in other types of experiential avoidance aside from overtly avoiding people, places and reminders of the event such as in the avoidance cluster of symptoms of PTSD. For example, an individual who tends toward thought suppression as a general coping strategy may avoid even peripheral associations with the event and in addition to unassociated negative moods and thoughts. Thus, constricting their life even more than an individual solely avoiding trauma-specific reminders. These more subtle forms of experiential avoidance may be difficult for treatment providers to detect, and may undermine treatment efforts by allowing the client to avoid engaging in exposure exercises that are considered to be the most effective non-pharmacological treatment for PTSD symptoms (e.g., Chambless & Ollendick, 2001; Taylor et al., 2003).

Implications may be strongest for clinicians faced with an individual who has symptoms of PTSD but may not meet the A1 criterion. Additionally, this may provide insight into the etiology and maintenance of PTSD, and may provide a target for treatment. Clients who tend to engage in thought suppression may do so during exposure, undermining the therapeutic efficacy of engaging in exposure exercises. Additionally, the current diagnostic criteria for PTSD according to the DSM-IV may not be accurately capturing the phenomenon as it is lived by individuals who experience a disturbing event. It is possible that the course of PTSD may differ among different types of events. For example, PTSD symptoms in response to the death or illness of a loved one may take on a different course than PTSD symptoms in response to rape.

There are several limitations of the current study that merit discussion. First, information related to Criterion A2, the emotional response of the individual to the event (intense fear, helplessness, or horror) was not collected. However, it is useful to isolate the impact of just one variable (type of event) on dependent variables of interest. Additionally, a dichotomous categorization of traumatic versus non-traumatic may not adequately capture the impact that certain events may have on people. Similarly, the interaction between the type of event and the behavioral and cognitive responses that ensue may more accurately predict risk for subsequent PTSD symptomatology. Future studies might attempt to investigate cognitive and behavioral responses to events that are coded on a continuous scale of level of trauma, as well as attempt to determine implications for treatment depending on the type of event and the type of cognitive processes that the individual tends to engage in.

Findings of the current study suggest that the ongoing debate regarding the importance of a traumatic event for a diagnosis of PTSD is warranted and should continue to be examined, along with processes that may influence treatment and course of PTSD such as thought suppression. While it is clear that a precipitating event increases likelihood of developing PTSD, the contribution of the type and nature of the event, along with the individual's perception of, and responses to the event to a diagnosis of PTSD remain unclear. Further research examining these processes and types of events that may precede PTSD is needed.

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