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Are Negative Cognitions Associated With Severe Acute Trauma Responses?

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Recent cognitive models of trauma response predict that negative trauma appraisals are central to the development of psychopathological stress reactions. Fifty-nine civilian survivors of motor vehicle accidents (MVA; $n = 24$) and non-sexual assaults ($n = 35$) were assessed within 4 weeks of their traumatic event for acute stress disorder (ASD), prior traumatic events and prior mental health contact, and were administered the Anxiety Sensitivity Index and the Posttraumatic Cognitions Inventory. Participants who were diagnosed with ASD displayed more maladaptive appraisals about their functioning following their trauma and reported higher levels of concern regarding anxiety symptoms than those who were not diagnosed with ASD. Negative beliefs were strongly associated with acute stress severity. These findings are discussed in the context of cognitive mechanisms that may influence maladaptive adjustment following trauma.

Recent cognitive models of trauma response posit that an individual's appraisal of a traumatic event and their capacity to respond to the experience is pivotal to how they will adapt (Ehlers & Clark, 2000). This perspective holds that catastrophic or negative perceptions about the trauma and its resultant sequelae lead to a sense of current threat that is responsible for the maintenance of a maladaptive trauma response. For example, following an assault a person may develop the belief that they are constantly in danger from further attacks, which may lead to ongoing anxiety and unhelpful behavioural changes, such as avoiding their former daily routines. According to this view, catastrophic appraisals will contribute to the development of posttraumatic stress disorder (PTSD) because they will impede the processing of corrective information which allows the individual to recognise that the threat has passed (Dunmore, Clark, & Ehlers, 1999; Resick & Schnicke, 1992). There is consistent evidence that individuals who have been traumatised display exaggerated negative appraisals about themselves and their worlds (Engelhard, Macklin, McNally, van den Hout, & Arntz, 2001; Janoff-Bulman, 1989; Mechanic & Resick, 1993; Owens & Chard, 2001). Moreover, there is evidence that catastrophic thinking 3 to 4 months after trauma is a predictor of subsequent PTSD at 1 year after trauma (Ehlers, Mayou, & Bryant, 1998; Dunmore et al., 1999).

To date, there has been insufficient research on the role of cognitive style in the acute phase after trauma. Appraisals in the immediate posttrauma phase are

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relevant because acute trauma reactions can be strongly predictive of subsequent PTSD (Bryant, 2003; Harvey & Bryant, 2002). There is initial evidence that feelings of humiliation, betrayal and guilt in the acute phase are predictors of posttraumatic and depressive symptoms 1 month later (Kaysen, Morris, Rizvi, & Resick, in press). There is also evidence that a maladaptive cognitive style within a month after a train crash contributed to PTSD 4 months later (Engelhard, van den Hout, Arntz, & McNally, 2002). Finally, there is convergent evidence that people who have acute stress disorder (ASD) in the initial month after the trauma are at high risk of developing PTSD (Brewin, Andrews, Rose, & Kirk, 1999; Harvey & Bryant, 1998). These individuals also display catastrophic appraisals of both trauma-related (Warda & Bryant, 1998) and general concerns (Smith & Bryant, 2000) in the weeks following the trauma. Recent findings indicate that these concerns include heightened awareness of bodily sensations, and that individuals with ASD are more likely to interpret these sensations catastrophically (Nixon & Bryant, 2003; Smith & Bryant, 2000). This pattern suggests a convergence of cognitive appraisals following trauma and the type of maladaptive thinking associated with panic (McNally, 1990).

This study tested the proposition that posttrauma beliefs are associated with the severity of trauma response within the initial month after the trauma. Previous research has implicated a range of variables that are highly predictive of PTSD development, including female gender, prior trauma and psychiatric history (Bernat, Ronfeldt, Calhoun, & Arias, 1998; Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995; Kilpatrick, et al., 1989). Predictors of ASD, however, are less studied; accordingly, we used the aforementioned variables in the present study. We hypothesised that catastrophic cognitive style would be more highly associated with ASD than these other vulnerability factors.

Method

Participants

The sample was comprised of 59 individuals who had been involved in a nonsexual assault or motor vehicle accident (MVA) in the previous 4 weeks. Inclusion criteria were (a) proficiency in English, (b) aged between 16 and 65, (c) no use of a narcotic analgesia within the previous 24 hours, and (d) no current diagnosis of organic mental disorder, psychosis or substance abuse. Participants had all been referred within 4 weeks of the trauma to the PTSD unit of a major metropolitan hospital by hospital staff and community mental health workers for assessment of posttraumatic stress. The ASD group consisted of 41 participants (25 male, 16 female) who met all the criteria for an ASD diagnosis. The nonASD group comprised 18 participants (12 male, 6 female) who did not satisfy the dissociative, reexperiencing and avoidance clusters of the ASD diagnostic criteria.

Procedure

Following written informed consent, a clinical psychologist interviewed participants using the Acute Stress Disorder Interview (ASDI; Bryant, Harvey, Dang, & Sackville, 1998) to determine ASD diagnostic status. The ASDI is a 19-item clinical interview that demonstrates good test-retest reliability (.88), sensitivity (91%) and specificity (93%) relative to independent clinical diagnosis. A semistructured clinical interview was used to obtain information regarding the participants' recent trauma experience, previous trauma experiences and prior psychiatric treatment. The presence of prior

trauma and mental health contact was coded dichotomously. Participants then completed the following self-report measures: the Anxiety Sensitivity Index (ASI; Reiss, Peterson, Gursky, & McNally, 1986), the Posttraumatic Cognitions Inventory (PTCI; Foa, Ehlers, Clark, Tolin, & Orsillo, 1999), and the Acute Stress Disorder Scale (ASDS; Bryant, Moulds, & Guthrie, 2000).

The ASI is a 16-item questionnaire that measures individuals' beliefs about the harmfulness of anxiety symptoms using a 5-point Likert-type scale (1 = *very little*, 5 = *very much*). Examples of questions are 'It is important to me not to appear nervous' and 'It scares me when I become short of breath'. Reiss et al. (1986) report that the measure has a test-retest reliability of .75 (over 2 weeks) and differentiates anxiety disorder patients from healthy controls. The total score was used in the present study. The PTCI is a 33-item measure that is used to assess trauma-related cognitions using a 7-point Likert-type scale (1 = *totally disagree*, 7 = *totally agree*). The measure has three subscales (reported as means), all of which were used in the study: Negative Cognitions About Self (NCS; e.g., I am a weak person), Negative Cognitions About the World (NCW; e.g., The world is a dangerous place), and Self-Blame (SB; e.g., The event happened because of the sort of person I am). The ASDS is a 19-item questionnaire that measures the severity of ASD symptoms. It uses a 5-point Likert-type scale (1 = *not at all*, 5 = *very much*). Bryant et al. (2000) report that the measure has an internal consistency of .96, and test-retest reliability of .94 (over 2 to 7 days).

Results

Participant Characteristics

Participants' characteristics are summarised in Table 1. Multiple comparisons that adopted a Bonferroni adjustment to provide an alpha rate of $p < .001$ were conducted. The ASD group scored higher than the nonASD group on all psychopathology measures except the Self-Blame and World subscales on the PTCI. That is, although ASD participants had stronger negative beliefs about themselves following their trauma (e.g., 'I am a weak person'), they did not appear to catastrophise about their world to the same extent or blame themselves for the trauma occurring (e.g., 'The event happened because of the way I acted'). There were no differences between the two groups in terms of age, gender, trauma-assessment interval, type of trauma experienced, previous psychiatric history and previous trauma.

Prediction of ASD Caseness

In order to examine the variables that predicted group membership, we conducted a logistic regression analysis. In order to increase power, we only included variables as predictors if they correlated significantly with ASD severity (see Table 2). Previous psychiatric contact was entered on the first step, and posttrauma cognitions (PTCI-Total) and anxiety sensitivity (ASI) was entered (simultaneously) on the second step. The order of entry reflected the logical temporal sequence for these variables.

As indicated in Table 3, logistic regression analysis showed that a full model of the three predictors was significant against a constant-only model, $\chi^2(4, N = 59) = 23.82, p = .000$. Predictive accuracy of the model, however, was modest, with an overall success rate of 73%. The sensitivity of the model was adequate, with 80% of participants with ASD being correctly identified, compared to the specificity of the model, with 58% of participants without ASD being correctly identified. Table 3

TABLE 1
Participant Characteristics

Variable	ASD		Non-ASD		<i>t</i> or χ^2	<i>p</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
Age (years)	34.12	12.31	29.28	11.09	1.43	<i>ns</i>
Male gender (%)	61 (<i>n</i> = 25)		67 (<i>n</i> = 12)		0.17	<i>ns</i>
Time since trauma (days)	22.81	15.14	19.22	10.18	0.91	<i>ns</i>
Trauma type						<i>ns</i>
MVA (%)	37 (<i>n</i> = 15)		50 (<i>n</i> = 9)		0.93	
Assault (%)	63 (<i>n</i> = 26)		50 (<i>n</i> = 9)			
Prior trauma (%)	72 (<i>n</i> = 28)		67 (<i>n</i> = 12)		0.16	<i>ns</i>
Psychiatric history (%)	42 (<i>n</i> = 17)		28 (<i>n</i> = 5)		1.00	<i>ns</i>
ASDS	63.86	14.92	34.22	9.61	7.67	< .001
ASI	25.09	13.56	11.41	7.73	3.85	< .001
PTCI-Self	2.84	1.15	1.62	0.59	4.24	< .001
PTCI-World	4.90	1.41	3.60	1.37	3.26	< .01
PTCI-Blame	2.07	1.10	1.99	1.30	0.24	<i>ns</i>
PTCI-Total	104.53	35.63	69.06	21.55	3.89	< .001

Note: ASDS = Acute Stress Disorder Scale, ASI = Anxiety Sensitivity Scale, PTCI = Posttraumatic Cognitions Inventory
N = 59

summarises the findings of the logistic regression analysis, and examination of the Walds tests indicated that general anxiety cognitions (ASI) and trauma-specific beliefs (PTCI) predicted ASD caseness following trauma.

Discussion

Consistent with our predictions, catastrophic cognitive style following exposure to a traumatic event was uniquely associated with ASD in this sample of MVA and non-sexual assault victims. Although we are cautious in our conclusions due to the modest sample size, this finding is consistent with the cognitive model of Ehlers and Clark (2000) that posits that a pathological response to trauma is characterised by a catastrophic cognitive style. Our findings are also consistent with findings that maladaptive cognitive styles following trauma are predictors of the severity of the post-trauma response (Dunmore et al., 1999; Engelhard et al., 2002; Kaysen et al., in press). The observation that catastrophic cognitions were particularly elevated in reference to self-referent thoughts suggests that ASD is associated with negative appraisals of how people manage their responses during and following the trauma, lending further support to Ehlers and Clark's (2000) model. This pattern also accords with evidence that crime victims who attribute blame to themselves in the initial month following the incident are more likely to have PTSD 6 months later (Andrews, Brewin, Rose, & Kirk, 2000). It should be noted, however, that the link

TABLE 2
Correlations for Predictor Variables and ASDS scores

Predictors and Dependent Variable	1	2	3	4	5	6	7	8
1. Female gender ⁱ	—							
2. Prior psychiatric contact ⁱ	.20	—						
3. Prior trauma ⁱ	.02	.36 ^b	—					
4. Days posttrauma	.04	-.12	.16	—				
5. MVA ⁱ	-.28 ^a	-.07	.01	-.05	—			
6. PTCI-Total	.21	.24	.24	.16	-.14	—		
7. ASI	.04	.28 ^a	.15	-.01	-.06	.50 ^c	—	
8. ASDS	.26	.39 ^b	.16	.25	-.17	.64 ^c	.54 ^c	—

Note: ⁱCorrelations with dichotomous variables are Spearman rank-order correlations
^a*p* < .05, ^b*p* < .01, ^c*p* < .001.

between attributing blame to oneself and developing PTSD may be distinct to certain types of trauma only. For example, a study of MVA survivors found that those who attributed responsibility for the MVA to another person in the initial weeks following the accident were more likely to report experiencing PTSD 12 months later than those who did not (Delahanty et al., 1997). Our finding that ASD was associated with maladaptive thoughts about oneself, rather than maladaptive thoughts about the world or self-blame, may be distinct to this sample. There is a need for future research to address the specific appraisals made after different types of trauma.

The finding that ASI scores predicted ASD status suggests that maladaptive interpretations of somatic reactions and anxiety symptoms may be associated with a maladaptive response to trauma. Although participants' attributions regarding somatic sensations were not assessed in this study, considering that panic reactions are commonplace in ASD (Nixon & Bryant, 2003), the present findings suggest that the effect of misinterpreting somatic reactions, as well as the effect of other trauma responses, warrants further study. The observation that those participants who had previously accessed mental health services had more-severe ASD symptoms is not surprising — it suggests the presence of an increased vulnerability to

TABLE 3
Logistic Regression Analysis to Classify ASD Following Trauma

Variables	<i>B</i>	<i>SE</i>	Wald	<i>p</i>
Step 1: Vulnerability				
Prior psychiatric contact	-0.73	0.61	1.42	.234
Step 2: Cognitions				
ASI	0.10	0.04	5.61	.018
PTCI-Total	0.03	0.02	4.58	.032
(Constant)	-3.74	1.52	6.03	.014

Note: *N* = 59

mental health difficulties following traumatic exposure, and it might be evidence of a preexisting risk factor for ASD.

We recognise several limitations of the present study. Participants were only assessed at the acute phase. Longitudinal assessments over varying time intervals would clarify the influence that catastrophic thoughts have on longer-term adaptation to trauma. Our coding of previous psychiatric contact and trauma history was rudimentary, and future work would benefit from the use of structured clinical interviews to determine premorbid psychiatric history and to obtain a more sophisticated assessment of prior trauma exposure. Despite these limitations, the current study underscores the growing attention towards acute cognitive responses to trauma. Considering that catastrophic cognitive styles appear to be predictive of poor adjustment (Engelhard et al., 2002) and that they result in poorer treatment outcome (Ehlers, Clark et al., 1998), the present findings underscore the need for better understanding of the role of cognitive responses in the acute phase after trauma. Taken in the context of previous research, the present findings suggest that catastrophic posttrauma appraisals are characteristic of individuals with ASD and may mediate the relationship between initial trauma response and long-term difficulties, such as PTSD. Finally, our findings suggest that cognitive therapy techniques are likely to be a useful adjunct to current treatment approaches in early intervention following trauma.

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