



## The capacity of acute stress disorder to predict posttraumatic psychiatric disorders

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### ABSTRACT

**Background:** One rationale for establishing the acute stress disorder diagnosis was to identify recently trauma-exposed people who may develop later posttraumatic stress disorder (PTSD). This study conducted a multi-site assessment of the extent to which ASD predicts subsequent PTSD, and also major depressive disorder, panic disorder, agoraphobia, social phobia, specific phobia, generalized anxiety disorder, and substance use disorder, 12 months after trauma.

**Method:** Consecutive admissions to 5 major trauma hospitals across Australia ( $N = 1084$ ) were assessed during hospital admission and within one month of trauma exposure and subsequently re-assessed for psychiatric disorder 12 months after the initial assessment ( $N = 859$ ).

**Results:** Whereas 120 (10%) patients met criteria for ASD in the initial month after trauma, 83 (10%) met criteria for PTSD, and 268 (31%) had any psychiatric disorder at 12 months. In terms of those diagnosed with ASD, 28 (36%) subsequently met criteria for PTSD and 50 (65%) subsequently developed any psychiatric disorder.

**Conclusions:** Whereas the majority of people with ASD subsequently develop a psychiatric disorder, most people with a disorder at 12 months do not initially display ASD.

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Acute stress disorder (ASD) was introduced into DSM-IV, in part, to identify survivors in the acute phase after trauma exposure who were at high risk for developing posttraumatic stress disorder (PTSD) (Harvey and Bryant, 2002). The rationale for a predictive index was that the majority of people who experience post-traumatic stress reactions in the initial weeks after trauma show reduction of symptoms in the following months (Bryant, 2003). DSM-IV defines ASD as experiencing a fearful response to experiencing or witnessing a threatening event (Cluster A), satisfying three dissociative symptoms (Cluster B), one reexperiencing symptom (Cluster C), marked avoidance (Cluster D), marked anxiety or arousal (Cluster E), and evidence of significant distress or impairment (Cluster F). The disturbance must last for a minimum of two days and a maximum of four weeks (Cluster G). A major focus of the ASD diagnosis was the emphasis placed on acute dissociation; the diagnosis requires that people display at least three of the following dissociative symptoms: (a) a subjective sense of numbing

or detachment, (b) reduced awareness of their surroundings, (c) derealization, (d) depersonalization, or (e) dissociative amnesia. These criteria were adopted on the premise that acute dissociation impairs the encoding of memories and emotional responses, which limits processing of traumatic memories and leads to PTSD (Spiegel et al., 1994).

A recent review of the predictive utility of the ASD diagnosis assessed 22 longitudinal studies (Bryant, 2011). Most studies found that the majority of trauma survivors who met criteria for ASD were likely to develop subsequent PTSD (Blanchard et al., 1996; Brewin et al., 1999; Bryant et al., 2008, 2007; Bryant and Harvey, 1998; Difede et al., 2002; Elklit and Brink, 2004; Fullerton et al., 2004; Ginzburg et al., 2006; Grieger et al., 2000; Hamanaka et al., 2006; Harvey and Bryant, 1998; Harvey and Bryant, 1999; Harvey and Bryant, 2000; Holeva et al., 2001; Kangas et al., 2000; Kassam-Adams and Winston, 2009; Meiser-Stedman et al., 2005). Other studies, however, found that only a minority of those with ASD subsequently develop PTSD (Creamer et al., 2004; Fuglsang et al., 2004; Grieger et al., 2000). A consensus finding is that at least half of trauma survivors who eventually develop PTSD do not initially display ASD (Brewin et al., 1999; Bryant & Harvey, 1998; Fuglsang et al., 2004; Harvey and Bryant, 1998; Harvey and

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Bryant, 1999; Harvey and Bryant, 2000; Holeva et al., 2001; Staab et al., 1996). There is some evidence that the requirement to meet the dissociative criteria of ASD may limit the category's capacity to predict subsequent PTSD (Bryant, 2011).

An outstanding issue is the extent to which ASD predicts other psychiatric disorders. Increasing evidence indicates that many trauma survivors experience a range of psychiatric disorders including mood and anxiety disorders (Blanchard et al., 1995; O'Donnell et al., 2004; Shalev et al., 1998; Zatzick et al., 2003). Accordingly, it is important to expand the scope of studies to identify in the acute phase those patients who are high risk for a range of subsequent psychiatric disorders. To this end, we conducted a longitudinal study of survivors of traumatic injury across 5 major hospitals. We have previously reported in this study that at 12 months following trauma exposure, major depressive disorder (MDD), generalized anxiety disorder (GAD), and agoraphobia were reported as frequently as PTSD (Bryant et al., 2010). Here we report on analyses that evaluated the capacity of ASD in the initial month after trauma to predict a range of psychiatric disorders, including PTSD, MDD, GAD, panic disorder, agoraphobia, social phobia, specific phobia, obsessive compulsive disorder, and substance use disorder 12 months later.

## 1. Method

### 1.1. Participants

Randomized admissions to five level 1 trauma centers across Australia were recruited into the study between April 2004 and April 2005. The study was approved by the Research and Ethics Committee at each hospital. Inclusion criteria included hospital admissions following traumatic injury who were aged between 18 and 70 years of age; could understand and speak English proficiently; and had a hospital admission of greater than 24 h following traumatic injury. This last inclusion criterion was adopted because of the difficulty in locating and recruiting patients who remained in hospital for less than a day. Individuals were excluded from the study if they; were currently psychotic or suicidal; were non Australian visitors, cognitively impaired, or under police guard; or had moderate or severe head injury; we included participants with mild traumatic brain injury (MTBI: American Congress of Rehabilitation Medicine, 1993). Individuals who met entry criteria were randomly selected using an automated, random assignment procedure, stratified by length of stay. This approach was adopted to ensure that we did not differentially recruit patients who had longer hospital stays because they may be more accessible.

There were 1477 trauma patients who met inclusion criteria, and 1129 agreed to participate and completed the initial assessment (76%). Table 1 presents the sample characteristics, and the mean Injury Severity Score (ISS) (American Association for Automotive Medicine, 1990) was 10.75 ( $SD = 7.96$ ). Individuals who refused to participate in the current study did not differ from participants in terms of gender ( $\chi^2 = .80, df = 1, p = .23$ ), length of hospital admission ( $t(df = 1475) = .03, p = .88$ ), Injury Severity Score (American Association for Automotive Medicine, 1990) ( $t(df = 1419) = 1.1, p = .16$ ), or age ( $t(df = 1475) = 1.6, p = .14$ ). At the 12-months follow-up assessment, 859 participants completed the assessment, representing 79% of the initial sample. Participants at the follow-up assessment did not differ from those who did not participate in terms of gender ( $\chi^2 = .32, df = 1, p = .57$ ), length of hospital admission ( $t(1082) = 1.47, p = .14$ ), or MTBI ( $\chi^2 = .34, df = 1, p = .56$ ). Drop outs were more likely to have a lower ISS ( $9.70 \pm 7.12$  vs  $11.29 \pm 8.18$ ) ( $t(1054) = 2.76, p = .006$ ), be younger ( $35.27$  years  $\pm 12.92$  vs  $38.78 \pm 13.73$ ) ( $t(1082) = 3.77, p = .001$ ), and have higher acute CAPS scores

**Table 1**

Demographic characteristics of the sample according to acute stress disorder diagnosis.

	No ASD	ASD	Total
	% (N)	% (N)	% (N)
	[N = 1009]	[120]	[N = 1129]
<i>Age (years)</i>			
<24	21 (216)	22 (27)	21 (242)
25–34	22 (218)	31 (37)	22 (254)
35–44	23 (229)	23 (27)	23 (256)
45–54	20 (203)	15 (19)	20 (222)
55–64	11 (116)	9 (8)	11 (126)
64+	3 (27)	1 (1)	2 (28)
<i>Gender</i>			
Male	76 (764)	55 (66)	74 (830)
Female	24 (245)	45 (54)	26 (299)
<i>Type of injury</i>			
Transport	65 (656)	62 (75)	65 (731)
Assault	50 (5)	16 (19)	6 (69)
Traumatic Fall	15 (154)	11 (13)	15 (167)
Work Injury	7 (7)	4 (5)	7 (76)
Other Injury	8 (77)	8 (7)	7 (76)
<i>Injury severity score</i>			
Minimum	6 (62)	11 (13)	7 (75)
Moderate	27 (260)	32 (36)	28 (296)
Serious	45 (430)	35 (40)	44 (470)
Severe	15 (141)	15 (17)	15 (158)
Critical	7 (70)	7 (8)	7 (8)
<i>Marital status</i>			
Married/de facto	50 (462)	36 (36)	49 (498)
Single	50 (460)	65 (65)	51 (525)
<i>Employment status</i>			
Employed	78 (728)	60 (60)	77 (788)
Unemployed	22 (569)	40 (40)	23 (239)
<i>Education</i>			
High school	38 (341)	56 (56)	39 (397)
Additional education	62 (569)	44 (44)	61 (613)

( $21.87 \pm 19.23$  vs  $16.99 \pm 15.55$ ) ( $t(1082) = 4.31, p = .001$ ) than those who did participate.

### 1.2. Procedure

Following written informed consent, a trained clinician assessed for ASD using the Clinician Administered PTSD Scale (Blake et al., 1995). The CAPS is a structured clinical interview that possesses good sensitivity (.84) and specificity (.95) relative to the SCID PTSD diagnosis, and also possesses sound test-retest reliability (.90). We adopted the '2–1' scoring system of the CAPS, in which presence of a symptom was defined as at least a frequency score of 2 and an intensity score of 1 (Blake et al., 1995). In addition to the 17 PTSD symptoms, the CAPS also includes items pertaining to the dissociative symptoms required for an ASD diagnosis. Accordingly, the CAPS permits a structured assessment of the ASD criteria.

At 12 months after injury, participants were contacted by telephone and completed the CAPS to assess current prevalence of PTSD related to the original traumatic injury. At the 12 months assessment, the Mini-International Neuropsychiatric Interview (version 5.5; MINI) (Sheehan et al., 1998) was used to assess for other psychiatric disorders. The MINI is a short, structured diagnostic interview based on the DSM-IV and the ICD-10 classification of mental illness. We used the MINI to identify MDD, panic disorder, agoraphobia, social phobia, OCD, GAD, specific phobia, and substance abuse/dependence. Satisfaction of diagnostic criteria followed the prescribed timeframes stipulated in DSM-IV criteria (specifically, two weeks for MDD, a month for panic disorder and 6 months for GAD). All assessments were audio-recorded to ensure ongoing adherence to the protocol. Five percent of all CAPS and

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