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## ACUTE STRESS DISORDER

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In 1994 DSM-IV introduced the new diagnosis of acute stress disorder (ASD). This diagnosis was established to describe acute stress reactions that occur in the initial month after a trauma, and to identify those acutely traumatized people who will subsequently develop post-traumatic stress disorder (PTSD). The ASD diagnosis differed from PTSD in terms of its emphasis on acute dissociation and its focus on reactions that occur in the initial month. DSM-IV decreed that to meet criteria for an ASD diagnosis, one should (a) suffer a traumatic experience, (b) display at least three acute dissociative symptoms, (c) have at least one reexperiencing symptom, (d) display marked avoidance, (e) display marked hyperarousal, and (f) experience these symptoms between two days and four weeks after the trauma. The emphasis on peritraumatic dissociation was based largely on the perspective that dissociative responses to a trauma are pivotal in longer-term psychopathology, and supported by limited evidence from firestorm survivors that three acute dissociative symptoms combined with reexperiencing, avoidance, and arousal symptoms best predicted subsequent distress (Spiegel et al., 1996).

The ASD diagnosis has received a very mixed reception. A major reason for the skepticism about the diagnosis was that it was introduced with very little empirical justification, and did not adhere to the strict requirements that other diagnoses needed to demonstrate before being recognized in DSM-IV. The most common complaints about the diagnosis are that it potentially pathologizes transient stress reactions in acutely traumatized individuals and it places excessive emphasis on the role of peritraumatic dissociation (Bryant & Harvey, 1997; Marshall et al., 1999). There is also concern about the utility of having a diagnosis that functions predominantly to predict another diagnosis. Accordingly, there has been a vocal response in recent years expressing the view that it is more appropriate to use existing PTSD criteria to identify acutely traumatized people who are at risk of PTSD rather than introducing a qualitatively distinct diagnosis.

*Prospective Evidence for Acute Stress Disorder.* The major task for the ASD diagnosis has been to identify the relatively small proportion of trauma survivors who do not recover from their transient stress reactions and develop long-term PTSD. This is a difficult task because prospective studies indicate that more than half of trauma survivors who show

PTSD symptoms in the initial weeks remit in the following three months. There have now been six prospective studies that have indexed the relationship between ASD and PTSD. In a study of motor vehicle accident victims who had not sustained brain injury, Harvey and Bryant (1998a) found that whereas 78% of those who initially met criteria for ASD suffered PTSD six months posttrauma, so did 60% of those who met ASD criteria but without any dissociative symptoms (subclinical ASD). A two year follow-up of the same sample indicated a similar pattern in that comparable proportions of ASD and subclinical ASD patients had PTSD two years posttrauma (Harvey & Bryant, 1998a). Similarly, in a study of motor vehicle accident victims who sustained mild traumatic brain injury, 80% of those who initially had ASD still had PTSD six months later (Bryant & Harvey, 1998) and two years later (Harvey & Bryant, 2000). Importantly, 40% of those who developed PTSD at six months, and 27% of those who had PTSD at two years, did not initially meet criteria for ASD. Brewin and colleagues (1999) found that 83% of assault victims who initially satisfied ASD criteria were subsequently diagnosed with PTSD at 6 months follow-up. Classen and colleagues (1998) found that a diagnosis of ASD within 8 days of the trauma was found to be a significant predictor of the level of posttraumatic stress symptoms (rather than PTSD diagnosis) at 7 to 10 months posttrauma. Finally, Staab and colleagues (1996) reported that typhoon survivors who met criteria for ASD had higher rates of PTSD than those with subclinical or no ASD one week posttrauma.

Overall, these studies indicate that whereas the ASD criteria accurately identify many people who subsequently develop PTSD, the emphasis on acute dissociation results in a significant proportion of people who are at risk of developing PTSD not being identified. Importantly, some prospective studies have found that equivalent predictive power can be obtained by using existing PTSD symptoms rather than resorting to the new ASD diagnosis. For example, studies have demonstrated comparable or better prediction of PTSD relative to existing ASD criteria by requiring three reexperiencing symptoms (Brewin et al., 1999), three hyperarousal symptoms (Harvey & Bryant, 1998a), or requiring emotional numbing rather than three dissociation symptoms (Harvey & Bryant, 1999a). These studies demonstrate that the current ASD criteria, and particularly the emphasis on acute dissociation, are not

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supported by evidence from prospective studies.

*Biological Mechanisms in Acute Stress Disorder.* Two recent studies have shed interesting light on the role of sympathetic activation as an acute mediator of PTSD. Shalev and colleagues (1998) demonstrated that resting heart rates on admission to an emergency room and also 1 week later were significantly higher in those who subsequently developed PTSD than in those who did not develop PTSD. This finding was replicated by Bryant, Harvey, and colleagues (in press), who interestingly found the same difference in resting heart rates between those who did and did not develop PTSD as that observed by Shalev et al. Moreover, Bryant et al. found that whereas those with ASD and no ASD displayed comparable resting heart rates, those with subclinical ASD (i.e., no dissociation) displayed markedly elevated heart rates. On the basis of this finding, Bryant et al. reported that by using a formula that involved having a diagnosis of ASD or a resting heart rate of >90 beats per minute, they could predict PTSD with sensitivity of 88% and specificity of 85%.

*Cognitive Mechanisms in Acute Stress Disorder.* There is an increasing body of research that suggests that cognitive responses in the acute phase play a critical role in the medication of PTSD. Some work has investigated the proposal that impaired access to trauma memories (i.e., dissociation) is associated with ASD. Harvey and colleagues (1998) found that trauma survivors with ASD displayed poorer retrieval of specific memories pertaining to the period immediately after their trauma than those without ASD. Interestingly, this deficit in retrieval significantly predicted severity of PTSD six months later. Contrary to the dissociation hypothesis, however, those with ASD had deficits in retrieving positive, rather than negative, memories. One explanation for the difficulty in retrieval of trauma memories may be Bryant and Harvey's (1998) finding that the narratives of people with ASD were characterized by fragmentation and poor organization. There is also evidence that people with ASD manage their memories with avoidant cognitive strategies (Guthrie & Bryant, in press) and engage in effortful suppression of their memories (Harvey & Bryant, 1998b). These maladaptive strategies reduce following resolution of ASD (Bryant, Moulds et al., in press). There is also evidence that people with ASD exaggerate the likelihood of future threat (Warda & Bryant, 1998) and that (in contrast to other anxiety disorders) this cognitive bias extends to a wide range of potential threats, including social, somatic, and external events (Smith & Bryant, in press). The importance of cognitive responses in the acute phase is also indicated by findings that subsequent PTSD is predicted by attributing responsibility to others (Delahanty et al., 1997), shame (Andrews et al., 2000), and negative interpretations of intrusions and anger cognitions (Ehlers et al., 1998).

*Assessment of Acute Stress Disorder.* A major obstacle to the study of ASD has been the lack of psychometrically sound assessment tools. There are currently three established measures of ASD. The earliest measure was the

Stanford Acute Stress Reaction Questionnaire (SASRQ; Spiegel et al., 1996), which has been modified to a 30-item inventory that indexes ASD symptoms. This self-report measure has been used widely and encompasses all of the ASD symptoms. At this stage, however, there is no available data supporting its utility in identifying individuals who meet ASD diagnostic criteria or who subsequently satisfy PTSD criteria. The Acute Stress Disorder Interview (ASDI; Bryant, Harvey, Dang, & Sackville, 1998) is a structured clinical interview that is based on DSM-IV criteria and possesses reasonable sensitivity (92%) and specificity (93%) reactive to independent clinical diagnosis. The Acute Stress Disorder Scale (ASDS; Bryant et al., 2000) is a self-report version of the ASDI and has been shown to predict 91% of those who subsequently develop PTSD and 93% of those who do not. The major flaw of the ASDS is that one-third of those scoring above the designated cut-off do not develop PTSD.

*Treatment of Acute Stress Disorder.* The underlying goal of the ASD diagnosis was to permit early intervention for those who are at risk of PTSD. Three treatment studies have now been reported. In the first study, motor vehicle accident survivors were allocated to either cognitive behavior therapy (CBT) or supportive counseling (SC) within 2 weeks of their trauma (Bryant, Harvey, Dang, Sackville, & Basten, 1998). CBT comprised education, prolonged imaginal exposure, cognitive therapy, and anxiety management. There were fewer cases of PTSD in the CBT (17%) group than in the SC (67%) group at 6 months posttrauma. At follow-up there were greater statistically and clinically significant reductions in intrusive, avoidant, and depressive symptomatology in the CBT than in the SC participants. This finding was supported by a larger replication study that randomly allocated 45 civilian trauma survivors to either prolonged exposure (PE), a combination of PE and anxiety management (PE+AM), or supportive counseling (SC) (Bryant et al., 1999). At 6 months follow-up, there were fewer cases of PTSD in the PE (15%) and PE+AM (23%) than in the SC (67%) conditions. These studies provide initial evidence of the utility of CBT in preventing PTSD in those who meet ASD criteria. Bryant et al. (1999) emphasize, however, that early intervention is by no means a panacea because 20% did not respond to treatment and a further 20% dropped out of treatment. Importantly, the finding that those who dropped out were characterized by more extreme levels of ASD suggests that active early intervention may not be warranted for all acutely traumatized people. In the only treatment study with children, Robert and colleagues (1999) randomly provided pediatric burn victims with ASD with either imipramine or chloral hydrate for 7 days. This study found that imipramine was more effective than chloral hydrate in reducing ASD symptoms.

*Future Directions.* There is currently considerable debate concerning the merits of retaining the ASD diagnosis in DSM-V. One view states that the available evidence indicates that the current ASD criteria do not provide greater

predictive power for identifying those who will develop PTSD than do existing PTSD criteria (Marshall et al., 1999). This view is supported by the evidence that many people who do not display acute dissociation subsequently develop PTSD, and that comparable predictions of PTSD can be achieved by focusing more on hyperarousal symptoms (Harvey & Bryant, 1998a), reexperiencing symptoms (Brewin et al., 1999), or emotional numbing (Harvey & Bryant, 1999a). There is little doubt that the ASD diagnosis has served an important function in facilitating research on acute trauma

reactions. The effectiveness of early interventions studies that can prevent PTSD points to the clinical utility of having the means of identifying people who are at risk of PTSD. Although the current criteria are clearly not optimal, the extent to which a redefined ASD diagnosis should be retained in DSM-V will be better clarified through future prospective studies of acute and longer-term post-traumatic reactions. At this stage, the evidence is probably more critical than favorable of this new diagnosis.

## SELECTED ABSTRACTS

BREWIN, C.R., ANDREWS, B., ROSE, S., & KIRK, M. (1999). **Acute stress disorder and posttraumatic stress disorder in victims of violent crime.** *American Journal of Psychiatry*, 156, 360-366. **OBJECTIVE:** In a group of crime victims recruited from the community, the authors investigated the ability of both a diagnosis of acute stress disorder and its component symptoms to predict PTSD at 6 months. **METHOD:** A mixed-sex group of 157 victims of violent assaults were interviewed within 1 month of the crime. At 6-month follow-up 88% were reinterviewed by telephone and completed further assessments generating estimates of the prevalence of PTSD. **RESULTS:** The rate of acute stress disorder was 19%, and the rate of subsequent PTSD was 20%. Symptom clusters based on the DSM-IV criteria for acute stress disorder were moderately strongly interrelated. All symptom clusters predicted subsequent PTSD, but not as well as an overall diagnosis of acute stress disorder, which correctly classified 83% of the group. Similar predictive power could be achieved by classifying the group according to the presence or absence of at least three reexperiencing or arousal symptoms. Logistic regression indicated that both a diagnosis of acute stress disorder and high levels of reexperiencing or arousal symptoms made independent contributions to predicting PTSD. **CONCLUSIONS:** This exploratory study provides evidence for the internal coherence of the new acute stress disorder diagnosis and for the symptom thresholds proposed in DSM-IV. As predicted, acute stress disorder was a strong predictor of later PTSD, but similar predictive power may be possible by using simpler criteria.

BRYANT, R.A., & HARVEY, A.G. (1997) **Acute stress disorder: a critical review of diagnostic issues.** *Clinical Psychology Review*, 17, 757-773. Acute stress disorder (ASD) is a recently developed diagnosis that describes posttraumatic stress reactions that occur in the first month following a trauma. Diagnostic criteria include dissociative, intrusive, avoidance, and arousal symptoms. ASD was driven by the proposal that trauma leads to dissociative reactions, and these are predictive of longer-term psychopathology. This paper reviews a series of anomalies in the diagnostic criteria, highlights discrepancies between criteria for ASD and PTSD, and illustrates the lack of empirical evidence for some assumptions inherent in the conceptualization of ASD. It is argued that future revisions of ASD criteria need to be based on empirical evidence of acutely traumatized individuals.

BRYANT, R.A. & HARVEY, A.G. (1998). **Relationship between acute stress disorder and posttraumatic stress disorder following mild traumatic brain injury.** *American Journal of Psychiatry*, 155, 625-629. **OBJECTIVE:** The aim of this study was to index the frequency of occurrence of acute stress disorder (ASD) following mild traumatic brain injury and to determine its utility in predicting PTSD. **METHOD:** Consecutive adult patients who sustained a mild traumatic brain injury following a motor vehicle accident ( $n = 79$ )

were assessed for ASD within one month of their trauma with the Acute Stress Disorder Inventory, a structured clinical interview based on DSM-IV criteria. Patients were followed up 6 months posttrauma ( $n = 63$ ), and administered the PTSD module of the Composite International Diagnostic Interview. **RESULTS:** ASD was diagnosed in 14% of patients, and at follow-up 24% satisfied criteria for PTSD. Six months posttrauma PTSD was diagnosed in 82% of patients who were diagnosed with ASD, and 11% of those who were not diagnosed with ASD. **CONCLUSIONS:** These findings point to the frequency of PTSD following mild traumatic brain injury. Whilst the ASD criteria are useful in identifying those individuals who are at risk of developing chronic PTSD, the findings suggest that current criteria require modification to optimally predict PTSD following mild traumatic brain injury.

BRYANT, R.A., & HARVEY, A.G. (2000). **Acute stress disorder: A handbook of theory, assessment, and treatment.** Washington, DC: American Psychological Association. This book aims to provide a comprehensive handbook of ASD, traversing the theoretical and empirical bases of the disorder and providing guidelines for its assessment and treatment. Part I contains a descriptive overview of ASD in terms of its historical antecedents and the assumptions underpinning its current description. Theoretical perspectives on ASD, including the dissociative, cognitive, and biological approaches, are described, and the empirical evidence for each is reviewed. Part II is devoted to the assessment of ASD and contains detailed descriptions of the means available to assess ASD. Part III begins by reviewing treatments of posttraumatic stress and outlines the treatments of choice for ASD. Practical guidelines for treating ASD are then described. In Part IV, we address clinical issues that are particularly relevant to ASD. [Adapted from Text]

BRYANT, R.A., HARVEY, A.G., DANG, S., & SACKVILLE, T. (1998). **Assessing acute stress disorder: Psychometric properties of a structured clinical interview.** *Psychological Assessment*, 10, 215-220. This study presents the development of a structured clinical interview to diagnose acute stress disorder (ASD). The Acute Stress Disorder Interview (ASDI) is a 19-item dichotomously scored interview schedule that is based on DSM-IV criteria. It was validated against clinician-based diagnoses of ASD on 65 trauma survivors assessed between 1 and 3 weeks posttrauma. It possessed good internal consistency ( $r = 0.90$ ), sensitivity (91%), and specificity (93%). Test-retest reliability was evaluated on 60 trauma survivors between 1 and 3 weeks posttrauma, with a re-administration interval of 2 to 7 days. Test-retest reliability of ASDI severity scores was strong ( $r = 0.88$ ), and diagnostic agreement for presence (88%) and

absence (94%) of ASD diagnosis was high. The ASDI appears to be a useful tool to identify those individuals who suffer ASD and are at risk of long-term PTSD.

BRYANT, R.A., HARVEY, A.G., DANG, S., SACKVILLE, T., & BASTEN, C. (1998). **Treatment of acute stress disorder: A comparison of cognitive-behavioral therapy and supportive counseling.** *Journal of Consulting and Clinical Psychology, 66*, 862-866. Acute stress disorder (ASD) is a precursor of chronic PTSD. 24 participants with ASD following civilian trauma were given five sessions of either cognitive behavior therapy (CBT) or supportive counseling (SC) within two weeks of their trauma. Fewer participants in CBT (8%) than SC (83%) met criteria for PTSD at post-treatment. There were also fewer cases of PTSD in the CBT (17%) than SC (67%) conditions 6 months posttrauma. There were greater statistically and clinically significant reductions in intrusive, avoidance, and depressive symptomatology in the CBT than SC participants. This study represents the first demonstration of successful treatment of ASD with CBT, and its efficacy in preventing chronic PTSD.

BRYANT, R.A., HARVEY, A.G., GUTHRIE, R., & MOULDS, M. (in press). **A prospective study of acute psychophysiological arousal, acute stress disorder, and posttraumatic stress disorder.** *Journal of Abnormal Psychology.* This study investigated the role of acute arousal in the development of PTSD. Hospitalized motor vehicle accident survivors ( $n = 146$ ) were assessed for acute stress disorder (ASD) within one month of the trauma, and reassessed ( $n = 113$ ) for PTSD 6 months posttrauma. Heart rates (HR) were assessed on the day of hospital discharge. Participants with subclinical ASD had higher HR than those with ASD and no ASD. Participants who developed PTSD had higher HR in the acute posttrauma phase than those without PTSD. Diagnosis of ASD and resting HR accounted for 36% of the variance of the number of PTSD symptoms. These findings are discussed in terms of acute arousal and longer-term adaptation to trauma.

BRYANT, R.A., MOULDS, M., & GUTHRIE, R. (2000). **Acute stress disorder scale: A self-report measure of acute stress disorder.** *Psychological Assessment, 12*, 61-68. This study presents the development of a self-report inventory to (a) index acute stress disorder (ASD) and (b) predict subsequent development of PTSD. The Acute Stress Disorder Scale (ASDS) is a 19-item inventory that is based on DSM-IV criteria and is scored on a 5-point scale. It was validated against the Acute Stress Disorder Interview on 99 civilian trauma survivors assessed between 2 and 10 days posttrauma. Using a formula to identify ASD caseness, the ASDS possessed good sensitivity (95%), and specificity (83%). Test-retest reliability was evaluated on 107 bushfire survivors 3 weeks posttrauma, with a re-administration interval of 2 to 7 days. Test-retest reliability of the ASDS scores was strong ( $r = 0.94$ ). Although the factor structure of the ASDS differed somewhat across the two samples, dissociative symptoms loaded on a separate factor from other acute stress symptoms in both samples. Predictive ability of the ASDS was investigated in 82 trauma survivors who completed the ASDS and were subsequently assessed for PTSD 6 months posttrauma. A cut-off score of 56 on the ASDS predicted 91% of those who developed PTSD and 93% of those who did not. One-third of those scoring above the cut-off did not develop PTSD, however. The ASDS shows initial promise as an initial screening instrument to identify acutely traumatized individuals who warrant more thorough assessment for risk of developing long-term PTSD.

BRYANT, R.A., SACKVILLE, T., DANG, S.T., MOULDS, M., & GUTHRIE, R. (1999). **Treating acute stress disorder: An evaluation of cognitive behavior therapy and supportive counseling techniques.** *American Journal of Psychiatry, 156*, 1780-1786. **OBJECTIVE:** Acute stress disorder permits an early identification of trauma survivors who are at risk of developing chronic PTSD. This study aimed to prevent PTSD by an early provision of cognitive behavior therapy. Specifically, this study indexed the relative efficacy of prolonged exposure and anxiety management in the treatment of acute stress disorder. **METHOD:** 45 civilian trauma survivors with acute stress disorder were given five sessions of (1) prolonged exposure ( $n = 14$ ), (2) a combination of prolonged exposure and anxiety management ( $n = 15$ ), or (3) supportive counseling ( $n = 16$ ) within 2 weeks of their trauma. 41 trauma survivors were assessed at the 6-month follow-up. **RESULTS:** Fewer patients with prolonged exposure (14%,  $n = 2$  of 14) and prolonged exposure plus anxiety management (20%,  $n = 3$  of 15) than supportive counseling (56%,  $n = 9$  of 16) met the criteria for PTSD after treatment. There were also fewer cases of PTSD in the prolonged exposure group (15%,  $n = 2$  of 13) and the prolonged exposure plus anxiety management group (23%,  $n = 3$  of 13) than in the supportive counseling group (67%,  $n = 10$  of 15) 6 months after the trauma. Chronic PTSD in the supportive counseling condition was characterized by greater avoidance behaviors than in the prolonged exposure condition or the prolonged exposure plus anxiety management condition. **CONCLUSIONS:** These findings suggest that PTSD can be effectively prevented with an early provision of cognitive behavior therapy and that prolonged exposure may be the most critical component in the treatment of acute stress disorder.

CLASSEN, C., KOOPMAN, C., HALES, R., & SPIEGEL, D. (1998). **Acute stress disorder as a predictor of posttraumatic stress symptoms.** *American Journal of Psychiatry, 155*, 620-624. **OBJECTIVE:** Using the DSM-IV diagnostic criteria for acute stress disorder, the authors examined whether the acute psychological effects of being a bystander to violence involving mass shootings in an office building predicted later posttraumatic stress symptoms. **METHOD:** The participants in this study were 36 employees working in an office building where a gunman shot 14 persons (8 fatally). The acute stress symptoms were assessed within 8 days of the event, and posttraumatic stress symptoms of 32 employees were assessed 7 to 10 months later. **RESULTS:** According to the Stanford Acute Stress Reaction Questionnaire, 12 (33%) of the employees met criteria for the diagnosis of acute stress disorder. Acute stress symptoms were found to be an excellent predictor of the subjects' posttraumatic stress symptoms 7-10 months after the traumatic event. **CONCLUSIONS:** These results suggest not only that being a bystander to violence is highly stressful in the short run, but that acute stress reactions to such an event further predict later posttraumatic stress symptoms.

DELAHANTY, D.L., HERBERMAN, H.B., CRAIG, K.J., HAYWARD, M.C., FULLERTON, C.S., URSANO, R.J., & BAUM, A. (1997). **Acute and chronic distress and posttraumatic stress disorder as a function of responsibility for serious motor vehicle accidents.** *Journal of Consulting and Clinical Psychology, 65*, 560-567. In this study on the effects of attributions of responsibility for traumatic events, stress, coping, and symptoms of PTSD were measured, including intrusive thoughts among 130 victims of serious motor vehicle accidents (MVAs) 14-21 days and 3, 6, and 12 months after their accident. MVA victims and 43 control participants were categorized by accident and attribution of

responsibility for their accidents (self-responsible, other-responsible, and control). Although initially all MVA victims reported higher levels of intrusive thoughts and were more likely to meet criteria for PTSD diagnoses, only other-responsible participants continued to demonstrate increased distress 6 and 12 months postaccident. Self-responsible participants used more self-blame coping than other-responsible participants, although within the self-responsible group, use of self-blame was associated with more distress.

HARVEY, A.G., & BRYANT, R.A. (1998a). **The relationship between acute stress disorder and posttraumatic stress disorder: A prospective evaluation of motor vehicle accident survivors.** *Journal of Consulting and Clinical Psychology, 66*, 507-512. Motor vehicle accident survivors ( $n = 92$ ) were assessed for acute stress disorder (ASD) within 1 month of the trauma and reassessed ( $n = 71$ ) for PTSD 6 months posttrauma. ASD was diagnosed in 13% of participants, and a further 21% had subclinical levels of ASD. At follow-up, 78% of ASD participants and 60% of subclinical ASD participants met criteria for PTSD. The strong predictive power of acute numbing, depersonalization, a sense of reliving the trauma, and motor restlessness, in contrast to the low to moderate predictive power of other symptoms, indicates that only a subset of ASD symptoms is strongly related to the development of chronic PTSD. Although these findings support the use of the ASD diagnosis, they suggest that the dissociative and arousal clusters may require revision.

HARVEY, A.G., & BRYANT, R.A. (1999a). **The relationship between acute stress disorder and posttraumatic stress disorder: A 2-year prospective evaluation.** *Journal of Consulting and Clinical Psychology, 67*, 985-988. Previous research established that 78% of a sample of motor vehicle accident (MVA) survivors initially diagnosed with acute stress disorder (ASD) were subsequently diagnosed with PTSD at 6-months posttrauma. While this study provided initial evidence for the utility of the ASD diagnosis, the relationship between ASD and PTSD was assessed over a relatively short period. This study re-assessed that original sample 2 years following the trauma to establish the longer-term relationship between ASD and PTSD. ASD was diagnosed in 13% of participants and 21% were diagnosed with subsyndromal ASD. In terms of participants who participated in all three assessments, 63% who met criteria for ASD, 70% who met criteria for subsyndromal ASD, and 13% who did not meet criteria for ASD were diagnosed with PTSD at 2-years posttrauma. These findings indicate the importance of considering multiple pathways to the development of PTSD.

HARVEY, A.G., & BRYANT, R.A. (2000). **A two-year prospective evaluation of the relationship between acute stress disorder and posttraumatic stress disorder following mild traumatic brain injury.** *American Journal of Psychiatry, 157*, 626-628. To determine the relationship between acute stress disorder (ASD) and PTSD over a period of 2 years following mild traumatic brain injury, motor vehicle accident survivors who sustained a mild traumatic brain injury were assessed for ASD within 1-month posttrauma ( $n = 79$ ) and for PTSD at 6-months ( $n = 63$ ) and at 2-years posttrauma ( $n = 50$ ). ASD was diagnosed in 14% of patients. In terms of patients who participated in all three assessments, 80% who met criteria for ASD were diagnosed with PTSD at 2-years posttrauma. Expressed as a percentage of the total initial sample, 73% diagnosed with ASD had PTSD at 2 years posttrauma. This study provides further support for the utility of the ASD diagnosis as a precursor to the development of PTSD but indi-

cates that the predictive power of ASD criteria can be increased by placing greater emphasis on reexperiencing, avoidance, and arousal symptoms.

HARVEY, A.G., BRYANT, R.A., & DANG, S.T. (1998). **Autobiographical memory in acute stress disorder.** *Journal of Consulting and Clinical Psychology, 66*, 500-506. Survivors of motor vehicle accidents with either acute stress disorder (ASD) or no ASD participated in a study on autobiographical memory within one week of their trauma. In Experiment 1, participants were provided cue words to elicit autobiographical memories of both an unconstrained time period and of their trauma. Participants with ASD reported fewer specific memories to positive cue words than non-ASD participants even when the influence of depression was controlled. In experiment 2, the same participants were assessed for PTSD 6-months posttrauma. Poor recall of specific memories of the trauma in Experiment 1 accounted for 25% of the variance of PTSD severity. Accessibility of trauma memories in the acute posttrauma phase may have significant implications for longer-term adjustment.

MARSHALL, R.D., SPITZER, R., & LIEBOWITZ, M.R. (1999). **Review and critique of the new DSM-IV diagnosis of acute stress disorder.** *American Journal of Psychiatry, 156*, 1677-1685. **OBJECTIVE:** A new diagnosis can greatly influence scientific research, access to resources, and treatment selection in clinical practice. The authors review the historical evolution, rationale, empirical foundation, and clinical utility to date of the recently introduced diagnosis of acute stress disorder. **METHOD:** The conceptual basis and relevant methods for identifying a psychiatric syndrome are reviewed with respect to acute stress disorder, including selection of criteria for core symptoms; considerations of sensitivity and specificity of a syndrome definition; longitudinal course; and distinctions between normative and pathological phenomena. Particular attention is devoted to two major issues: the implications of the core feature requirement of three of five dissociative symptoms, and the question of whether there should be two separate diagnoses (acute stress disorder and PTSD) describing posttraumatic syndromes. The widely divergent approaches in DSM-IV and ICD-10 are also reviewed. **RESULTS:** The diagnosis of acute stress disorder does not appear to achieve the important objective of providing adequate clinical coverage for individuals with acute posttraumatic symptoms. The validity and utility of requiring peritraumatic dissociative symptoms as a core feature are questionable, as is the separation of essentially continuous clinical phenomena into two disorders with different criteria sets (acute stress disorder and PTSD) based on persistence of symptoms for 30 or more days. **CONCLUSIONS:** Longitudinal studies using acute stress disorder criteria, as well as broader considerations of the clinical and scientific functions that posttraumatic diagnoses should serve, suggest a need to reevaluate the current DSM-IV approach to posttraumatic syndromes.

ROBERT, R., BLAKENEY, P.E., VILLARREAL, C., ROSENBERG, L., & MEYER, W.J. (1999). **Imipramine treatment in pediatric burn patients with symptoms of acute stress disorder: A pilot study.** *Journal of the American Academy of Child and Adolescent Psychiatry, 38*, 873-882. This pilot study used a prospective, randomized, double-blind design to test whether thermally injured children suffering acute stress disorder (ASD) symptoms benefit from imipramine. 25 Ss (aged 2-19 years) received either imipramine or chloral hydrate for 7 days. 11 females and 14 males participated, with a mean total burn surface area of 45% and mean age of 8 years. A structured interview

(clinically useful, but validity and reliability not yet established) was used to assess the presence and frequency of ASD symptoms both before treatment and 3 times during the treatment period. Imipramine was more effective than chloral hydrate in treating ASD symptoms. Five of 13 were positive responders to chloral hydrate (38%). Ten of 12 were positive responders to low-dose imipramine (83%). The authors conclude that the results suggest a place for cautious initial use of imipramine to reduce ASD symptoms in burned children. However, care must be taken to minimize cardiovascular risks in an off-label application of imipramine in children, especially those receiving additional medications.

SHALEV, A.Y., SAHAR, T., FREEDMAN, S., PERI, T., GLICK, N., BRANDES, D., ORR, S.P., & PITMAN, R.K. (1998). **A prospective study of heart rate response following trauma and the subsequent development of posttraumatic stress disorder.** *Archives of General Psychiatry*, 55, 553-559. **BACKGROUND:** Physiological arousal during traumatic events may trigger the neurobiological processes that lead to PTSD. This study prospectively examined the relationship between heart rate and blood pressure recorded immediately following a traumatic event and the subsequent development of PTSD. **METHOD:** 86 trauma survivors who presented at the emergency department of a general hospital were followed up for 4 months. Heart rate and blood pressure were recorded on arrival at the emergency department. Heart rate, anxiety, depression, and PTSD symptoms were assessed 1 week, 1 month, and 4 months later. The Clinician-Administered PTSD Scale defined PTSD status at 4 months. **RESULTS:** 20 subjects (23%) met PTSD diagnostic criteria at the 4-month assessment (PTSD group), and 66 (77%) did not (non-PTSD group). Subjects who developed PTSD had higher heart rates at the emergency department (95.5 +/- 13.9 vs 83.3 +/- 10.9 beats per minute,  $t = 4.4$ ,  $P < .001$ ) and 1 week later (77.8 +/- 11.9 vs 72.0 +/- 9.5 beats per minute,  $t = 2.25$ ,  $P < .03$ ), but not after 1 and 4 months. The groups did not differ in initial blood pressure measurement. Repeated-measures analysis of variance (ANOVA) for heart rate showed a significant group effect ( $P < .02$ ), time effect ( $P < .001$ ), and group X time interaction ( $P < .001$ ). The time effect and group X time interaction remained significant when adjusted for sex, age, trauma severity, immediate response, and dissociation during the traumatic event. **CONCLUSION:** Elevated heart rate shortly after trauma is associated with the later development of PTSD.

SPIEGEL, D., KOOPMAN, C., CARDEÑA, E., & CLASSEN, C. (1996). **Dissociative symptoms in the diagnosis of acute stress**

**disorder.** In L.K. Michelson & W.J. Ray (Eds.), *Handbook of dissociation: Theoretical, empirical, and clinical perspectives* (pp. 367-380). New York: Plenum. After giving a brief description of ASD [acute stress disorder], where the essential component is the presence of dissociative symptomatology during or shortly after traumatic events, we review the following converging lines of evidence: (1) the conceptual and empirical association between PTSD and dissociation, (2) the evidence for the presence of dissociative responses during or shortly after trauma in a substantial percentage of the population, (3) the association between level of exposure to trauma and dissociative response, and (4) the association between peritraumatic dissociative responses and later full-fledged PTSD. We make the case that dissociative symptomatology is a frequent accompaniment of trauma that, if untreated, may lead to short- and long-term distress and malfunction. We analyze the dissociative and anxiety symptoms reported among respondents in the immediate aftermath of the 1991 Oakland/Berkeley fires.

STAAB, J.P., GRIEGER, T.A., FULLERTON, C.S., & URSANO, R. J. (1996). **Acute stress disorder, subsequent posttraumatic stress disorder and depression after a series of typhoons.** *Anxiety*, 2, 219-225. From August to November 1992, 5 typhoons struck the U.S. Pacific island territory of Guam. 320 subjects exposed to all five typhoons participated in a population survey measuring their acute stress symptoms and subsequent diagnoses of PTSD and depression. A 23-item scale approximating the new DSM-IV diagnosis of acute stress disorder (ASD) was used to classify subjects into three groups based on their symptoms one week after the first typhoon: (1) probable ASD, (2) an early traumatic stress response (ETSR) of fear intrusion, avoidance, and arousal, without dissociation, and (3) no acute diagnosis. A multi-dimensional measure of PTSD and the Zung Self-Rating Depression Scale were used to assess PTSD and depression 8 months after the first storm. The point prevalence of ASD at one week was 7.2%. An additional 15% of subjects had ETSR. Subjects with probable ASD at one week had significantly increased rates of PTSD and somewhat higher rates of depression at 8 months than those without ASD. In contrast, subjects with ETSR at one week did not have a poorer outcome than those with no acute diagnosis. These findings suggest that ASD is prognostically important, but also indicate that all acute stress symptoms do not have the same discriminative value. In this study, the acute dissociative symptoms of emotional numbing and derealization differentiated highly symptomatic subjects at risk for subsequent psychopathology (ASD) from others who were highly symptomatic at one week, but then had a more benign, posttraumatic course.

## ADDITIONAL CITATIONS

### Annotated by the Editor

ANDREWS, B., BREWIN, C.R., ROSE, S., & KIRK, M. (2000). **Predicting PTSD in victims of violent crime: The role of shame, anger, and childhood abuse.** *Journal of Abnormal Psychology*, 109, 69-73.

Examined the role of cognitive-affective appraisals and childhood abuse as predictors of crime-related PTSD symptoms by interviewing 157 victims of violent crime within 1 month postcrime and 6 months later. In multivariate analysis, shame and anger with others predicted PTSD symptoms at 1 month, and shame predicted PTSD symptoms at 6 months.

BARTON, K.A., BLANCHARD, E.B., & HICKLING, E.J. (1996). **Antecedents and consequences of acute stress disorder**

**among motor vehicle accident victims.** *Behaviour Research and Therapy*, 34, 805-813.

Compared 14 ASD subjects and 28 PTSD subjects on functioning and symptom severity before and after MVA, and 6 months thereafter. Prevalence of prior Axis I and Axis II disorders was higher in the ASD group than in the PTSD group, who did not differ in 6-month outcomes.

BRYANT, R.A., & HARVEY, A.G. (1999). **The influence of traumatic brain injury on acute stress disorder and post-traumatic stress disorder following motor vehicle accidents.** *Brain Injury*, 13, 15-22.

Compared ASD and PTSD symptom profiles in MVA survivors,

63 of whom sustained a mild TBI and 71 of whom did not. Groups were comparable in ASD and PTSD prevalence, and in most symptoms, except the non-injured group reported intrusions and trauma-related fears during the acute phase.

BRYANT, R.A., MOULDS, M., & GUTHRIE, R.M. (in press). **Cognitive strategies and the resolution of acute stress disorder.** *Journal of Traumatic Stress.*

Assessed thought control strategies in 45 civilian trauma survivors with ASD before and after either cognitive behavior therapy or supportive counseling. Receiving cognitive behavior therapy was associated with reductions in the use of punishment and worry, and increases in the use of reappraisal and social control.

CREAMER, M., & MANNING, C. (1998). **Acute stress disorder following an industrial accident.** *Australian Psychologist, 33,* 125-129.

Assessed 47 men following a fatal explosion in the oil refinery where they worked. Two weeks after the explosion, 6% had ASD. Two months later, no one had PTSD. The authors discuss factors that possibly led to the low prevalence of these disorders.

EHLERS, A., MAYOU, R.A., & BRYANT, B. (1998). **Psychological predictors of chronic posttraumatic stress disorder after motor vehicle accidents.** *Journal of Abnormal Psychology, 107,* 508-519.

Assessed 967 patients who attended an emergency clinic shortly after an MVA, again at 3 months, and at 1 year. PTSD prevalence was 23.1% at 3 months and 16.5% at 1 year. Chronic PTSD was related to objective measures of trauma severity, perceived threat, and dissociation, female gender, previous emotional problems, and litigation. Maintaining psychological factors, (e.g., rumination) enhanced the accuracy of prediction.

GUTHRIE, R., & BRYANT, R.A. (in press). **Attempted thought suppression over extended periods in acute stress disorder.** *Behaviour Research and Therapy.*

Investigated the influence of attempted suppression and thought control strategies on traumatic memories in 20 survivors of civilian trauma with ASD and without ASD. Results revealed no evidence for an increase in trauma-related thoughts following suppression instructions. Punishment and worry thought control strategies correlated significantly with both anxiety and suppression ratings.

HARVEY, A.G., & BRYANT, R.A. (1998b). **The effect of attempted thought suppression in acute stress disorder.** *Behaviour Research and Therapy, 36,* 583-590.

Investigated suppression of traumatic memories in survivors of MVAs with ASD ( $n = 24$ ) and without ASD ( $n = 24$ ). Participants monitored their trauma-related thoughts for three 5-minute periods. ASD participants reported higher ratings of anxiety, frequency of trauma-related thoughts, and attempted suppression of trauma-related thoughts than non-ASD participants.

HARVEY, A.G., & BRYANT, R.A. (1999b). **Acute stress disorder across trauma populations.** *Journal of Nervous and Mental Disease, 187,* 443-446.

Assessed ASD in emergency room patients following motor vehicle accidents ( $n = 32$ ), burns ( $n = 20$ ), industrial accidents ( $n = 25$ ), and nonsexual assault ( $n = 25$ ). The prevalence of ASD was 13%; 16% met criteria for a subclinical diagnosis, most of whom met all criteria except for dissociation. The prevalence of ASD was comparable across trauma groups.

HARVEY, A.G., & BRYANT, R.A. (in press). **Memory for acute stress disorder symptoms: A two-year prospective study.** *Journal of Nervous and Mental Disease.*

Compared the symptoms reported by 92 MVA victims within one month posttrauma with the recall of these symptoms at 2-years posttrauma. High levels of posttraumatic stress severity and high subjective ratings of injury severity at 2-years posttrauma were associated with recalling the presence of acute symptoms 2-years posttrauma that were not reported at the initial assessment.

KOOPMAN, C., CLASSEN, C., CARDEÑA, E., & SPIEGEL, D. (1995). **When disaster strikes, acute stress disorder may follow.** *Journal of Traumatic Stress, 8,* 29-46.

Reviewed 15 studies that investigated the dissociative and anxiety symptoms of survivors within the first month of a traumatic event. The authors propose that ASD constitutes a psychological adaptation by limiting painful thoughts and feelings associated with the event and helping the person to function.

KOOPMAN, C., GORE-FELTON, C., & SPIEGEL, D. (1997). **Acute stress disorder symptoms among female sexual abuse survivors seeking treatment.** *Journal of Child Sexual Abuse, 6,* 65-85.

Examined relationships between ASD symptoms and sexual abuse history, distress, and social support in 32 adult female sexual abuse survivors. ASD symptoms were related to seeing the self as the causal locus of the abuse, forgetting the abuse for a period of time, number of abusers, distress of a recent life event, other forms of distress, and poor social support.

KOREN, D., ARNON, I., & KLEIN, E. (1999). **Acute stress response and posttraumatic stress disorder in traffic accident victims: A one-year prospective, follow-up study.** *American Journal of Psychiatry, 156,* 367-373.

Assessed 74 injured traffic accident victims and a comparison group of 19 patients who were hospitalized for elective orthopedic surgery. The prevalence of PTSD at 1 year was 32% in accident victims, at 0% in comparison patients. Premorbid and comorbid psychopathology, along with initial PTSD severity, predicted the development of PTSD.

SMITH, K., & BRYANT, R.A. (in press). **The generality of cognitive bias in acute stress disorder.** *Behaviour Research and Therapy.*

Investigated cognitive bias in acutely traumatised civilians with either ASD ( $n = 26$ ) or no ASD ( $n = 24$ ). ASD participants exaggerated both the probability of negative external harm, somatic and social events occurring, and the adverse cost of those events more than non-ASD participants.

SPIEGEL, D., KOOPMAN, C., & CLASSEN, C. (1994). **Acute stress disorder and dissociation.** *Australian Journal of Clinical and Experimental Hypnosis, 22,* 11-23.

Reviews information about ASD. Related changes in the dissociative disorders section of the DSM-IV are described, including the name change from multiple personality disorder to dissociative identity disorder. Treatment recommendations for post-traumatic dissociative symptoms are included.

WARDA, G., & BRYANT, R.A. (1998). **Cognitive bias in acute stress disorder.** *Behaviour Research and Therapy, 36,* 1177-1183.

Investigated cognitive bias in survivors of motor vehicle accidents with ASD ( $n = 17$ ) or no ASD ( $n = 17$ ). ASD exaggerated both the probability of negative events occurring, and the adverse cost of those events, more than non-ASD survivors.

## PILOTS UPDATE

As the PILOTS database increases in size, searches of the database may retrieve unwieldy result sets. For example, there are now 171 records indexed under the descriptor *Acute Stress Disorder*, the topic of this issue's lead article. Other recently-surveyed topics are equally well represented in the literature. There are over 500 publications on various aspects of pharmacotherapy; 121 on exposure therapy (for which the PILOTS descriptor is *implosive therapy*); and 186 on eye movement desensitization and reprocessing. By the time this column appears, these numbers will be even larger.

Fortunately, there are some simple ways of cutting your search results down to size. In most cases, you will be concerned with a particular aspect of your topic. If you can identify the appropriate descriptor, you can require the presence of both terms, which will reduce the size of your search result set. A search specifying the descriptor *Acute Stress Disorder* AND the descriptor *Epidemiology* will retrieve a mere 17 records. The combination of *Acute Stress Disorder* AND *Motor Traffic Accidents* will yield 22 citations.

Here's how to use this technique on the Web version of the PILOTS database. When you log on, you will see two empty boxes, with the label *Author* above one and the label *Title* above the other. Click your mouse over one of these labels, and a menu will appear, from which you may select the field in which to search. Select *Descriptors* in both menus, and type in each empty box a descriptor from the PILOTS Thesaurus. (Leave the label between them set at *and*.) Click the *Submit Search* button. The program will search PILOTS for those publications indexed under *both* of the descriptors you have selected, and will present you with a list of these. You can use the system's pull-down menus to sort the search results, or to change the length of the display.

To do a more complex search, involving more than two criteria, click the *Advanced Search* button. This will give you a large blank box in which you may type explicit search commands. (The search system provides on-screen help in doing this, as does the PILOTS Database User's Guide on

our website.) Recent enhancements to the Advanced Search feature allow you to combine sets and use other powerful techniques to zero in on the information you need.

Our approach to indexing provides some clues that might help you reduce the size of your result sets. When we index a publication in which a particular treatment is featured, we not only assign the descriptor for that treatment, but also assign descriptors that suggest the focus of the article. There are 366 publications to which we've assigned the descriptor *Group Psychotherapy*. Of these, 28 are also indexed under *Psychotherapeutic Processes*, indicating that the emphasis of the article is on the actual techniques of performing the therapy. We use this descriptor when an article provides a session-by-session description of the therapeutic interchange, or when the mechanics of administering the therapy are discussed. So if you are looking for an article on what goes on in a group therapy session, try using the combination of *Group Psychotherapy* AND *Psychotherapeutic Processes* in your search command. If you are more concerned with finding evidence of the value of group therapy, use the descriptor *Treatment Effectiveness*.

You can also reduce the size of your result sets by ruling out certain classes of publication. If you are seeking substantial research studies or clinical papers, you can use the descriptors *Letter* and *Case Report* to eliminate such documents from consideration. (To do this, change the *and* label to *and not*.) Other descriptors, such as *Literature Review* or *Popular Work*, also identify a class of publication that might not serve your purpose.

If all else fails, take advantage of the fact that PILOTS records appear in reverse chronological order (unless you tell the program to sort them by some other criterion). If you want to see the most recent literature on your subject, simply read through your search results until you come across papers with which you are already familiar.

And if you want to see a list of classic papers on a particular aspect of traumatic stress, look through the back issues of the *PTSD Research Quarterly*—they're all online at our website—to see if we've done a survey on that topic.

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