Acute Stress Disorder as a Predictor of Post-Traumatic Stress Disorder in Physical Assault Victims

Ask Elklit and Ole Brink

*J Interpers Violence* 2004 19: 709
DOI: 10.1177/0886260504263872

The online version of this article can be found at:
http://jiv.sagepub.com/content/19/6/709

Published by:
http://www.sagepublications.com

On behalf of:
American Professional Society on the Abuse of Children

Additional services and information for *Journal of Interpersonal Violence* can be found at:

Email Alerts: http://jiv.sagepub.com/cgi/alerts

Subscriptions: http://jiv.sagepub.com/subscriptions

Reprints: http://www.sagepub.com/journalsReprints.nav

Permissions: http://www.sagepub.com/journalsPermissions.nav

Citations: http://jiv.sagepub.com/content/19/6/709.refs.html
Acute Stress Disorder as a Predictor of Post-Traumatic Stress Disorder in Physical Assault Victims

ASK ELKLIT
University of Aarhus

OLE BRINK
Aarhus University Hospital

The authors' objective was to examine the ability of acute stress disorder (ASD) and other trauma-related factors in a group of physical assault victims in predicting post-traumatic stress disorder (PTSD) 6 months later. Subjects included 214 victims of violence who completed a questionnaire 1 to 2 weeks after the assault, with 128 participating in the follow-up. Measures included the Harvard Trauma Questionnaire, the Trauma Symptom Checklist, and the Crisis Support Scale. Twenty-two percent met the full PTSD diagnosis and 22% a subclinical PTSD diagnosis. Previous lifetime shock due to a traumatic event happening to someone close, threats during the assault, and dissociation explained 56% of PTSD variance. Inability to express feelings, hypervigilance, impairment, and hopelessness explained another 15% of PTSD variance. The dissociative, the reexperiencing, the avoidant, and the arousal criteria of the ASD diagnosis correctly classified 79% of the subsequent PTSD cases.

Keywords: physical assault; acute stress disorder; post-traumatic stress disorder; social support; symptom development

Physical assault (PA) is the intentional harm to the body caused by another person. Every year, an estimated 6% of the adult population in Denmark become victims of PA, and approximately 30% of them will be injured (Elklit, 1993). In the United States, a national representative study (Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995) found that 11% of men and 7% of women had been physically assaulted at some point in their lives.

Victims of violence generally are difficult populations to study in a representative way because of problems such as alcohol, criminality, previous trauma, social marginality, socioeconomic factors, and psychological difficulties (Kilpatrick, Resnick, & Acierno, 1997). In a Danish study of 1,316 PA victims from three socioeconomic areas (Breiting et al., 1989), skilled and
unskilled workers were greatly overrepresented. Forty-four percent of the males and 32% of the females were intoxicated at arrival at the emergency wards. Because of the social problems relating to PA, it is very important for health authorities to consolidate their knowledge of the psychological consequences of violence for this group.

Besides possible physical harm, several studies have shown that PA victims are at risk for developing a number of psychological sequelae. Helzer, Robins, and McEvoy (1987) found a 3% prevalence of post-traumatic stress disorder (PTSD) among those who had been physically assaulted in the preceding 18 months. In contrast, other studies have documented higher PTSD prevalences. Birmes et al. (2001) found that 34% of Israeli PA victims suffered from PTSD after 3 months. Brewin, Andrews, Rose, and Kirk (1999) found a prevalence of 20% PTSD in British PA victims 6 months after an assault; Elklit (1993) found a rate of 17% PTSD in Danish PA victims after 1 year; and Breslau, Davis, Andreski, and Peterson (1991), in a study of young U.S. adults, found lifetime prevalence rates of 23% PTSD in PA victims.

Kessler et al. (1995), in a U.S. national probability study of adults, found a 12-time increased likelihood that PA would be associated with PTSD in women compared to men when selected as the only or most upsetting lifetime trauma. Elklit (2002), in a Danish national probability study of eighth graders, found that females had a 25% increased risk for PTSD following PA compared to males. Several studies (e.g., Kilpatrick et al., 1989; Norris & Feldman-Summers, 1981) have found that degree of physical injury after PA had an impact on degree and duration of psychological symptoms, whereas others (e.g., Acierno, Resnick, Kilpatrick, Saunders, & Best, 1999) have not. Several studies (e.g., Maguire & Corbett, 1987; Ruch & Leon, 1983) have demonstrated that low socioeconomic background is associated with a more adverse PA outcome, although others (e.g., Kramer & Green, 1991; Weaver & Clum, 1995) found no such relationship. In several national epidemiological studies (e.g., Elklit, 2002; Kessler et al., 1995), previous trauma in general and childhood neglect and abuse have been significant factors in explaining the development of PTSD.

The ASD diagnosis in the Diagnostic and Statistical Manual of Mental Disorders (4th edition) (DSM-IV; American Psychiatric Association, 1994) is a relatively new construct, and there is little empirical evidence yet to support the specific assumptions of the diagnosis in DSM-IV. The stressor criterion of ASD is identical with the bipartite stressor criterion of PTSD and includes (A1) “the 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.” The second part (A2) stipulates that “the person’s response involved intense fear, helplessness, or hor-
ror.” ASD contains a dissociative criterion composed of five symptoms—detachment, restriction of awareness, depersonalization, derealization, and amnesia—and at least three symptoms must be present to warrant the diagnosis. ASD also resembles the PTSD diagnosis in having the same three “core” criteria—reexperiencing, avoidance, and arousal—but only one symptom from each of the core clusters is required. Functional impairment is also a common criterion to the ASD and PTSD diagnoses, formulated as “significant distress or impairment in social relations, work, or other important areas of functioning.”

Many variables influence the severity of the traumatization process. Of special interest from a psychological point of view is the fact that the appraisal of the traumatic situation is very important for the aftermath course. Kilpatrick et al. (1989), and Resnick, Kilpatrick, Best, and Kramer (1992) found that threat to life, the subjective perception of threat, and the perpetrator’s intent to harm were important predictors for PTSD. There also is some evidence that dissociative symptoms can be predictive of PTSD for PA victims (Birmes et al., 2001; Brewin et al., 1999; Dancu, Riggs, Hearst-Ikeda, Shoyer, & Foa, 1996), although recent criticism had suggested that dissociation should be removed as a core diagnostic feature of ASD (Marshall, Spitzer, & Liebowitz, 1999).

The occurrence of ASD presumably is a forerunner of the development of PTSD in typhoon victims (Staab, Grieber, Fullerton, & Ursano, 1996), in children who were taken hostage (Vila, Porche, & Mouren-Simeoni, 1998), in traffic victims (Harvey & Bryant, 1998, 1999; Koren, Arnon, & Klein, 1999), in traffic victims with mild brain injury (Harvey & Bryant, 2000), and in victims of PA (Brewin et al., 1999). In other studies of plane crash survivors (Birmes, Arrieu, Payan, Warner, & Schmitt, 1999) and of traffic accident victims (Barton, Blanchard, & Hickling, 1996), the expected relationship was not found.

A number of studies have demonstrated that social support is beneficial when a person meets adversity in life (e.g., Cobb, 1976). Despite this, others (e.g., Buunk & Hoorens, 1992) have collected evidence that social support under some circumstances can be a burden for victims and therefore avoided. Ambiguous support, the feeling of “debts,” and unfavorable comparisons can result in victim withdrawal. Elklit (1993), in a study of PA victims, found that perceived ambivalent family reactions toward the victim were very common.

Because the number who requires medical attention rather than mental health services after PA is substantially larger (Resnick et al., 1992), the best strategy for making contact with the most maltreated PA victims may be using the emergency wards, which in Denmark serve the whole population and have gate-keeping functions (i.e., anyone with an acute need will seek...
treatment at an emergency ward). This environment also allows objective measures of physical injury, full demographic data, and data on the circumstances of the assault for the total population of treated PA victims. The purpose of this study is to assess the ability of an ASD diagnosis and other trauma-related factors to predict later PTSD in PA victims who seek treatment at an emergency ward.

METHOD

Participants and Procedure

The initial evaluation took place within 2 weeks of an emergency ward visit, in which participants were admitted for medical care after injuries suffered from PA. The participants were 18 years or older, and they had given a written consent after receiving a detailed explanation of the purpose and design of the study. The original sample consisted of 214 people. The sample used for the initial assessment is described in full elsewhere (Elklit & Brink, in press).

In the current study, PA victims were contacted again 6 months after the assault by mail, and 128 persons returned the questionnaires (60% response rate). This group included 98 men and 30 women who ranged in age from 18 to 62 years ($M = 29.7$, $SD = 11.8$). The Injury Severity Score (ISS; Association for the Advancement of Automotive Medicine, 1990) for the sample was 1.47 ($SD = 1.27$), roughly corresponding to everyone having soft tissue lesions (bruises and wounds) and about half having broken a bone. The most common types of violence were blows with the fists (55%) and kicking (10%). The use of weapons in PA is not common in Denmark; 2% were stabbed by knives, use of glass and bottles caused injuries in 8%, and 4% were subject to strangling attempts. The remaining were exposed to combinations of the above, mainly blows and kicking. More than two thirds of the injuries were localized in the head and the face.

Sixty-nine percent finished treatment at the emergency wards. In addition to that, less than one third experienced psychological violence (humiliation and harassment) and threats to their lives, and 37 (17%) witnessed someone being injured and an equal number had been mugged. Seventy-five (35%) were assaulted while friends or family were present, and 24 (11%) saw someone close being injured during the assault. One hundred twelve (52%) of the victims felt helpless during the assault. Feeling helpless is part of the $A_2$ stressor criteria of the ASD diagnosis following DSM-IV. Another $A_2$ stressor
criterion is anxiety during the assault; the average here was 4.2 on a Likert-
type scale ($SD = 2.0$; $range = 1-6$; $n = 212$). Thirty-two (15%) thought that
they were going to die.

Those who participated in the 6-month follow-up did not differ from
nonparticipants in gender, age, job status, nationality, ISS, objective situa-
tional assault factors, subjective experiences during the assault, and life
events. The two groups differed in reporting previous accidents, whereas the
follow-up group had more lifetime traumas ($\chi^2 = 3.88; df = 1; p < 0.5$), higher
ASD level ($\chi^2 = 13.07; df = 6; p < .05$), and more often a full ASD diagnosis
($\chi^2 = 2.98; df = 1; p < .08$).

**Measures**

In the first part of the questionnaire the victims were asked eight questions
about the circumstances of the assault, five questions about their immediate
reactions during and after the assault, and one question about life events
within the past year.

Traumatic experiences were investigated by using 12 categories applied in
the U.S. National Comorbidity Survey (Kessler et al., 1995), omitting ques-
tions about combat (Denmark has not fought a war in more than a century)
and natural disasters (which have not occurred in Denmark). Most questions
were answered by yes or no; there were three open-ended questions and two
single items, “anxiety during the assault” and “current feeling of security,”
each rated on Likert-type scales ranging from 1 to 7.

The Harvard Trauma Questionnaire–Part IV (HTQ; Mollica et al., 1992)
was used to estimate the occurrence of ASD at the time of the event. The HTQ
consists of 30 items, of which 16 correspond to the PTSD and ASD sympt-
oms in the *DSM-IV*. The items are scored on a 4-point, Likert-type scale. It
measures the intensity of the three core symptom groups (intrusion, avoid-
ance, and arousal) of PTSD. The subscales are scored separately. Only scale
items $\geq 3$ were counted toward a PTSD diagnosis. A subclinical PTSD diag-
nosis was warranted if either the avoidance or arousal criteria were missed by
one symptom. The original Mollica et al. (1992) study found good reliability
and validity for the scale. HTQ has a good internal consistency, test-retest
reliability, and concurrent validity (Mollica et al., 1992). The alpha values for
three scales in the present study were .84 (intrusion), .82 (avoidance), and .85
(arousal); alpha for the total scale was .95.

The Trauma Symptom Checklist (TSC; Briere & Runtz, 1989) measures
the occurrence of psychological symptoms associated with trauma. The origi-
nal checklist contained 33 items, and Elklit (1990) added 2 more items. The
answers are scored on a 4-point, Likert-type scale. The checklist covers the following dimensions: Cronbach’s alpha is shown in parentheses: depression (.89), anxiety (.82), dissociation (.84), sleep problems (.87), suspicion of sexual abuse (.77), somatization (.84), interpersonal sensitivity (.74), and hostility (.68). Alpha for the total scale was .95. TSC has good psychometric qualities and is a valid instrument measuring the effects of traumatization (Briere & Runtz, 1989).

The Crisis Support Scale (CSS) was used for rating the experience of perceived social support after a traumatic event through seven items (Joseph, Andrews, Williams, & Yule, 1992). The items include (a) perceived availability for someone listening, (b) contact with people in a similar situation, (c) the ability to express oneself, (d) received sympathy and support, (e) practical support, (f) the experience of being let down, and (g) general satisfaction with social support. The items are rated on a 7-point, Likert-type scale ranging from never to always. The CSS has been used in several trauma and disaster studies, and it has a good internal consistency as well as a good discriminatory power. Elklit, Pedersen, and Jind (2001) analyzed 4,213 CSS questionnaires from 11 studies; the results confirmed the psychometrical reliability and validity of the CSS. Alpha for the total CSS score was .74.

ASD was assessed by a number of items from the HTQ, which corresponds to the DSM-IV symptom groups of intrusion, avoidance, and arousal, and from the TSC-35 and the CSS, which contributed to the dissociative and impairment items of the ASD diagnosis (see appendix). All symptoms were rated on a 4-point, Likert-type scale from 0 (not at all) to 3 (very often). Only scale items ≥ 2 were counted toward an ASD diagnosis, with the exception of dissociative items, which were counted ≥ 1 (cf. Brewin et al., 1999).

In the follow-up study, the respondents were asked about physical complications, blame toward others, changes in place of living, and changes in the social network by four yes/no questions. In addition, the HTQ, TSC, and CSS were given once more.

RESULTS

Life and Symptom Changes

Forty-four (35%) had physical scars or pain after the assault. Fifteen victims (12%) had changed living place since the PA. Twenty-eight (22%) reported changes in their social network. Twelve persons (10%) reported two to five life events after the assault, and 22 (18%) reported six to eight events.
The feeling of security had increased from 3.98 to 4.41 on a 7-point, Likert-type scale ($t = -2.56; df = 122; p < .01$). Twenty-six (21%) blamed others for the PA afterwards, whereas 17 (13%) blamed themselves for the PA (HTQ item 19).

Three TSC subscales had significant decreasing scores in the 6 months; depression ($t = 2.05; df = 116; p < .05$), dissociation ($t = 2.73; df = 120; p < .01$), and somatization ($t = 2.06; df = 122, p < .05$). The drop in the TSC total score approached significance ($t = 1.94; df = 103; p < .06$). Three CSS items were similarly reduced: “sympathy from others” ($t = 4.33; df = 125; p < .0005$), “practical help” ($t = 3.74; df = 121; p < .0005$), and “overall satisfaction with social support” ($t = 3.66; df = 122; p < .0005$). The CSS total score declined significantly ($t = 4.41; df = 112; p < .0005$).

Physical scars or pains resulting from assault was positively associated with later PTSD ($\chi^2 = 8.17; df = 1; p < .0005$), as was living with someone else ($\chi^2 = 4.33; df = 1; p < .05$). Gender, job status, nationality, relationship with perpetrator, objective injury score at the emergency ward, blaming others, changes in place of living or social network, and recent life events were unrelated to later PTSD.

**ASD and PTSD**

At the initial assessment, 47 victims (24%) met the criteria for an ASD diagnosis, and 41 (21%) had a subclinical ASD diagnosis (missing the full diagnosis by one criterion). There was no difference in the prevalence of ASD in relation to gender, age, nationality, job status, marriage status, relationship with perpetrator, or degree of injury. The percentage of respondents meeting the criteria in each of the various symptom clusters ranged from 53% to 72%.

Twenty-six respondents (22%) met the PTSD criteria at 6 months. Furthermore, another group of 26 participants had a subclinical PTSD diagnosis, missing the full diagnosis by one criterion. Forty-two (89%) of the initial ASD cases had PTSD at 6 months, and 5 (11%) received a subclinical PTSD diagnosis. Twenty-one (51%) of the subclinical ASD cases had PTSD at 6 months, and 19 (46%) received a subclinical PTSD diagnosis.

**ASD Criteria Predicting PTSD**

Table 1 shows the extent to which the symptom clusters, alone and combined, and the full ASD diagnosis were associated with PTSD after 6 months. All individual symptom clusters were significantly associated with later PTSD.
PTSD (all \( r_s = .40 \) to \( .67 \), all \( p_s < .0005 \)). The sensitivity and the negative predictive power of the symptom clusters were generally high, whereas the specificity and the positive predictive power was moderate to low. The dissociative and the avoidance clusters resulted in more correct classification than the other clusters. The combination of the dissociative, the reexperiencing, the avoidance, and the arousal criteria yielded more accurate PTSD classification than any of the individual criteria and the full ASD diagnosis. The addition of the stressor and the impairment criteria did not improve the overall correct classification. Subclinical ASD had higher sensitivity but lower specificity and correct overall classification than full ASD. The same picture emerges for four ASD criteria fulfilled. Only 4 people with four ASD criteria and 1 person with three ASD criteria reached the PTSD diagnosis.

A logistic regression analysis with PTSD as a dependent variable (not shown) showed a significant improvement of the model by adding criterion B to criteria C, D, and E (\( \chi^2 = 4.08, df = 1, p < .05 \)). Adding criteria A, B, and F to criteria C, D, and E did not improve the model significantly (\( \chi^2 = 4.89, df = 3, p = .18 \)). When all six criteria simultaneously were entered in the model, none of them was a significant enough predictor to account for PTSD variance at 6 months, although dissociation and avoidance approached significance (both \( p_s < .08 \)). The full diagnosis of ASD resulted in a better classification than any individual symptom cluster. The inclusion of the dissociative criterion improved overall classification in contrast to the stressor and im-

### TABLE 1: Predicting PTSD at 6 Months by Acute Stress Disorder (ASD) Criteria

<table>
<thead>
<tr>
<th>Correct PTSD Classification</th>
<th>Positive Predictive Power</th>
<th>Negative Predictive Power</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Stressor</td>
<td>0.58</td>
<td>0.54</td>
<td>0.26</td>
<td>0.82</td>
</tr>
<tr>
<td>B. Dissociation</td>
<td>1.00</td>
<td>0.54</td>
<td>0.37</td>
<td>1.00</td>
</tr>
<tr>
<td>C. Reexperiencing</td>
<td>0.92</td>
<td>0.33</td>
<td>0.28</td>
<td>0.94</td>
</tr>
<tr>
<td>D. Avoidance</td>
<td>0.85</td>
<td>0.64</td>
<td>0.39</td>
<td>0.94</td>
</tr>
<tr>
<td>E. Arousal</td>
<td>1.00</td>
<td>0.38</td>
<td>0.30</td>
<td>1.00</td>
</tr>
<tr>
<td>F. Impairment</td>
<td>0.88</td>
<td>0.45</td>
<td>0.31</td>
<td>0.93</td>
</tr>
<tr>
<td>C + D + E</td>
<td>0.80</td>
<td>0.73</td>
<td>0.44</td>
<td>0.93</td>
</tr>
<tr>
<td>B + C + D + E</td>
<td>0.80</td>
<td>0.79</td>
<td>0.52</td>
<td>0.93</td>
</tr>
<tr>
<td>Diagnosis of Acute Stress Disorder</td>
<td>0.44</td>
<td>0.88</td>
<td>0.50</td>
<td>0.85</td>
</tr>
<tr>
<td>Any 5 ASD criteria</td>
<td>0.80</td>
<td>0.67</td>
<td>0.41</td>
<td>0.92</td>
</tr>
<tr>
<td>Any 4 ASD criteria</td>
<td>0.96</td>
<td>0.55</td>
<td>0.38</td>
<td>0.98</td>
</tr>
</tbody>
</table>

NOTE: PTSD = post-traumatic stress disorder.
pairment criteria. None of the criteria predictors accounted for significant unique variance in PTSD at 6 months.

Dissociative Symptoms and Prediction of PTSD

All dissociative items were significantly associated with later PTSD (all \( \chi^2 > 10.09 \), all \( df = 1 \), all \( p < .001 \)). When all dissociative items were simultaneously entered in a logistic regression, the only significant predictor of PTSD variance was restricted awareness (Wald = 4.21, \( df = 1 \), \( p < .05 \)).

Prediction of PTSD Level by Variables

Because of the considerable extent of subclinical PTSD cases, and to use the more extensive information available, we decided to do a hierarchical regression analysis based on level of PTSD instead of a logistic regression analysis (see Table 2). The independent variables were entered in five steps reflecting the time aspect of the traumatization process. Trauma-related shock due to a traumatic event that happened to someone close was entered first as the only pretrauma variable, followed in the next step by threats spoken out during the assault, and the ASD dissociation symptom cluster. These three factors explained more than half of the PTSD variance at 6 months. The four following steps consisted of the inability to express feelings and thoughts, hypervigilance, functional impairment, and a feeling of hopelessness. These four additional steps contributed with another 15% of the overall PTSD variance.

### Table 2: Hierarchical Multiple Regression Analysis to Predict Degree of Traumatization at 6 Months (n = 128)

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Step 1</th>
<th>Step 2</th>
<th>Step 3</th>
<th>Step 4</th>
<th>Step 5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>( \beta )</td>
<td>( p )</td>
<td>( \beta )</td>
<td>( p )</td>
<td>( \beta )</td>
</tr>
<tr>
<td>Trauma-related shock</td>
<td>.44</td>
<td>.0005</td>
<td>.30</td>
<td>.02</td>
<td>.36</td>
</tr>
<tr>
<td>Threats</td>
<td>.31</td>
<td>.02</td>
<td>.28</td>
<td>.02</td>
<td>.33</td>
</tr>
<tr>
<td>Dissociation</td>
<td>.40</td>
<td>.002</td>
<td>.26</td>
<td>.05</td>
<td>.04</td>
</tr>
<tr>
<td>Ability to express</td>
<td>−.29</td>
<td>.02</td>
<td>−.29</td>
<td>.06</td>
<td>−.23</td>
</tr>
<tr>
<td>Hypervigilance</td>
<td>.53</td>
<td>.01</td>
<td>.62</td>
<td>.002</td>
<td></td>
</tr>
<tr>
<td>Impairment</td>
<td>.35</td>
<td>.05</td>
<td>−.23</td>
<td>.17</td>
<td></td>
</tr>
<tr>
<td>Hopelessness</td>
<td>−.29</td>
<td>.05</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

NOTE: Step 1: \( F = 28.6; R^2 = .19; p < .005 \). Step 2: \( F = 17.8; R^2 = .56; p < .0005; R^2_{adj} = .37 \). Step 3: \( F = 15.6; R^2 = .61; p < .0005; R^2_{adj} = .05 \). Step 4: \( F = 14.6; R^2 = .68; p < .0005; R^2_{adj} = .07 \). Step 5: \( F = 13.7; R^2 = .71; p < .0005; R^2_{adj} = .05 \).
This study provides evidence that a combination of ASD clusters predicted PTSD in PA victims. The prevalence of ASD was approximately the same as PTSD at 6 months, and the symptom level is comparable with most other studies in the field. The inclusion of subclinical PTSD revealed that an equal number of PA victims also suffered from PTSD, even though they did not get the full diagnosis. The overall symptom level declined significantly, but the reduction was rather modest (from 18.3 to 15.9). This finding is consistent with other studies of PA victims (e.g., Riggs, Rothbaum, & Foa, 1995). Similarly, the perceived overall social support decreased, indicating fewer resources to reestablish “a shattered self.”

A number of life changes occurred in the aftermath of the PA, but only physical scars and pain along with living with someone else was associated with later PTSD. The extent of physical scars and lasting pain corresponds to the results from a similar study by Brink (1999) from the same intake area, who found that 22% had cosmetic scars and 15% had lasting pain 2 years after the PA. The degree of injuries did not predict the development of PTSD in the present sample. The lack of sensitivity of the objective injury measures in catching the persistent pain and physical sequelae of PA victims has been noted by Brink. Previous studies present ambiguous findings about the impact of injury on the psychological aftereffects (Elklit, 1993; Resick, 1987).

It is remarkable that a number of demographic and traumatic stressor variables did not contribute to predict later PTSD. The absence of gender differences might be an indication of the extent of the psychological and social problems that exist in this group of emergency ward PA victims. The respondents in this study had experienced a great deal of violent assault, which in general indicates that this is a high-risk group. Childhood sexual and physical abuse, along with previous trauma-related shock stemming from a traumatic event that happened to someone close, were strongly associated with the development of ASD in the original study (Elklit & Brink, in press).

The slow recovery process may also reflect the extent of presumed social problems. An equally stable ASD-PTSD pattern in PA victims was also observed by Brewin et al. (1999) and by Harvey and Bryant (1998, 1999) in traffic victims. In line with the present study, the latter finding shows that 78% of ASD participants and 60% of subclinical ASD participants met criterion for PTSD at 6 months.

Threats during the assault were related to PTSD at 6 months. This result corresponds to findings from previous research (Kilpatrick et al., 1989; Resnick et al., 1992). Although childhood sexual and physical abuse were associated with ASD in the initial study, they were not predictors of PTSD.
Three ASD symptom clusters—dissociation, hypervigilance, and functional impairment—predicted later PTSD levels, together with inability to express oneself, which is equivalent to numbing. Together, these variables explained a considerable amount of PTSD level variance. Dissociation, in particular, improved ASD classification, whereas the A2 stressor and the impairment criteria did not contribute to better classification. Restricted awareness stood out as the only dissociative symptom that could by itself predict later PTSD.

Numbing symptoms also were found to be good predictors of PTSD in previous studies of typhoon victims (Staab et al., 1996), traffic victims (Harvey & Bryant, 1998), assault victims (Brewin et al. 1999; Feeny, Zoellner, Fitzgibbons, & Foa, 2000; Foa, Riggs, & Gershuny, 1995), those with combat stress (Solomon, Mikulincer, & Benbenishty, 1989), and firefighters (McFarlane, 1986). In several studies, dissociation has been associated strongly with later PTSD (Birmes et al., 2001; Gore-Felton, Gill, Koopman, & Spiegel, 1999; Koopman, Classen, & Spiegel, 1994; Shalev et al., 1996; Ursano et al., 1999). Although dissociative and other peritraumatic responses are predictive for short-term outcome, their impact may vanish on long-term adjustment (Holen, 1990). Concordant with this, Freedman, Brandes, Peri, and Shalev (1999) documented that peritraumatic dissociation was better at predicting 4-month PTSD than 1-year PTSD. The Brewin et al. (1999) study found that dissociation did contribute to the prediction of PTSD in PA victims, but the improvement in prediction was quite small, and similar improvements could be easily achieved otherwise.

Avoidance did not contribute to PTSD development, although it approached significance. Avoidance was seen originally as a modulating defense (Horowitz, 1976), which allowed the victim a break before new waves of intrusive recollections of the trauma flooded consciousness. Avoidance (more broadly defined in the PTSD diagnosis because it includes emotional numbing) in several studies was found to be a predictor of chronic PTSD (Schwarz & Kowalski, 1992; Solomon, Mikulincer, & Flum, 1988). On the other hand, in two prospective Australian studies using path analysis (Creamer, Burgess, & Pattison, 1992; McFarlane, 1992), avoidance did not predict long-term outcome of PTSD but was found to have a secondary reactive role in relation to the early intrusive symptom development. Still, little is known about the role of this new, reduced two-item avoidance cluster in ASD, as avoidance has been studied almost exclusively as a PTSD ingredient, which means the numbing factor is included.

A major goal of this study was to explore the diagnostic efficiency of early predictors for PTSD at 6 months. The sensitivity and specificity figures for the ASD instrument were relatively high when the stressor and the impairment criteria were excluded (see B-E in Table 1). This could perhaps speak in
favor of reducing the relative importance of these (e.g., A + F) symptom clusters in research as well as in clinical practice. Compared with the “old” symptom clusters of reexperiencing, avoidance, and hypervigilance, dissociation improved specificity and overall classification.

In the regression analysis, however, the introduction of hypervigilance had the effect of markedly reducing the impact of dissociation and, to a smaller degree, the inability to express oneself. Also, the introduction of hopelessness diminished the effect of functional impairment. A tentative conclusion might be that the old core symptom clusters of the PTSD diagnoses—even with the reduced quantity demanded by the ASD diagnosis—are quite robust in predicting the degree of traumatization at 6 months. In the PA victims, the full ASD diagnosis functioned very well as a predictor of later PTSD and subclinical PTSD. Also, the subclinical ASD diagnosis had substantial predictive power of later PTSD and subclinical PTSD. In the same breath, it should be mentioned that firm conclusions regarding diagnostic accuracy should not be drawn prematurely. Several prospective studies indicate that early detection of PTSD-prone subjects based on psychological measures is possible (Birmes et al., 2001; Koren et al., 1999; Staab et al., 1996).

Salient predictors of PTSD in retrospective studies may have very little predictive value in determining the development of PTSD when assessed from a prospective position (Yehuda, McFarlane, & Shalev, 1998). A partial explanation from this contention could be a number of changes in various mediating and moderating factors—risks of repeating the trauma or meeting reminders of the event, processing of the trauma, social support, institutional responses, coping, attributions, and changes in life conditions. The interrelations of these possible factors are likely to be responsible for both the recovery and the deterioration processes that may fluctuate. All the same, only a few of the mentioned factors are usually studied simultaneously in prospective studies. This perspective also may offer an explanation of the less perfect match between ASD and PTSD that is observed by several authors (Marshall et al., 1999; Staab et al., 1996). Although overall classification from ASD to PTSD diagnosis approaches or exceeds .80 (Brewin et al., 1999), there will naturally be a limit to any single assessment tool. The “all things equal” motto does not reflect the turmoil of the PA victims’ lives and their changeable resources and life conditions in addition to their physical, psychological, and social plight.

There are several limitations to this study. The ASD instrument has not established reliability and validity. The diagnoses were based on self-report measures and not clinical interviews. However, several studies have found high concordance between self-report and interview measures of PTSD (Foa, Riggs, Dancu, & Rothbaum, 1993; Norris, Perilla, & Murphy, 2001;...
Solomon et al., 1993). The avoidance cluster of ASD consists of only two items, which may impede its predictive power. The response rate is modest, which warrants caution in generalizing to all PA victims who visit an emergency ward and PA victims who are not injured. The original group of nonrespondents was injured worse than the respondents, and half of the respondents had been assaulted earlier. The non-follow-up group had a higher ASD level than the follow-up group. The number of nonconsent and no-response victims may be indicative of several social problems in the greater part of these emergency ward visitors. Notwithstanding these limitations, one strength of the study is the emergency ward sampling—a primary gate for medical help for practically every Danish citizen who is injured and needs acute assistance. Due to the procedure, it was possible to investigate the relation among objective measures of injury severity, a number of assault circumstances (all of which are assessed within hours after the assault), and the development of psychological sequelae.

In summary, the results of the study support that injured PA victims are at a considerable risk for developing subclinical and full PTSD. The four symptom clusters of the ASD diagnosis appear to be an efficient tool to identify those who are at risk shortly after the assault. As the recovery progress is modest, social, security, and therapeutic interventions seem warranted.
# APPENDIX

## Items and Criteria Used to Diagnose Acute Stress Disorder

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Item</th>
<th>Rating Scale</th>
<th>Rating Required For Diagnosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Stressor criterion</td>
<td>During the assault</td>
<td>Items 1 and 2</td>
<td>Items 1 and 2</td>
</tr>
<tr>
<td></td>
<td>1. Did you think you were going to die?</td>
<td>0 = no, 1 = yes</td>
<td>Any 1</td>
</tr>
<tr>
<td></td>
<td>2. Did you feel completely helpless?</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. How afraid were you during the assault?</td>
<td>Item 3, 7-point scale</td>
<td>Item 3, ≥ 6</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(1 = not at all, 7 = very much)</td>
<td></td>
</tr>
<tr>
<td>B. Dissociation</td>
<td>HTQ 4, 5, 13, 17; TSC 6</td>
<td>0 = never, 1 = once in a while/seldom, 2 = somewhat/often, 3 = most of the time/very often</td>
<td>Any 1</td>
</tr>
<tr>
<td>B1. Detachment</td>
<td>HTQ 4, 5, 13, 17; TSC 6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B2. Restricted awareness</td>
<td>TSC 11</td>
<td>ditto</td>
<td>Any 1</td>
</tr>
<tr>
<td>B3. Derealization</td>
<td>HTQ 28; TSC 19, 30</td>
<td>ditto</td>
<td>Any 1</td>
</tr>
<tr>
<td>B4. Depersonalization</td>
<td>HTQ 29; TSC 32</td>
<td>ditto</td>
<td>Any 1</td>
</tr>
<tr>
<td>B5. Amnesia</td>
<td>HTQ 12, TSC 31</td>
<td>ditto</td>
<td>Any 1</td>
</tr>
<tr>
<td>C. Reexperiencing</td>
<td>HTQ 1, 2, 3, 16, TSC 10</td>
<td>ditto</td>
<td>Any 2</td>
</tr>
<tr>
<td>D. Avoidance</td>
<td>HTQ 11, 15</td>
<td>ditto</td>
<td>Any 2</td>
</tr>
<tr>
<td>E. Arousal</td>
<td>HTQ 6, 7, 8, 9, 10</td>
<td>ditto</td>
<td>Any 2</td>
</tr>
<tr>
<td>F. Impairment</td>
<td>TSC 16; HTQ 14, 26, 27, 30; TSC, HTQ</td>
<td>ditto</td>
<td>Any 2</td>
</tr>
<tr>
<td>F1. Social</td>
<td>TSC 16; HTQ 14, 26, 27, 30; TSC, HTQ</td>
<td>CSS 3, 6</td>
<td>Any 2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CSS 7 point scale</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>CSS 3 ≥ 2</td>
<td>(1 = not at all, 7 = very much)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CSS 6 ≥ 6</td>
<td></td>
</tr>
<tr>
<td>F2. Work</td>
<td>HTQ 18</td>
<td>ditto</td>
<td>Any 2</td>
</tr>
<tr>
<td>F3. Sexual</td>
<td>TSC 8, 23, 24</td>
<td>ditto</td>
<td>Any 2</td>
</tr>
</tbody>
</table>

**NOTE:** HTQ = Harvard Trauma Questionnaire–Part 4; TSC = Trauma Symptom Checklist; CSS = Crisis Support Scale.
REFERENCES


Ask Elklit, M. Psych., is a professor in clinical psychology at the Institute of Psychology at the University of Aarhus and head of the Institute’s 2-year program in crisis psychology. He has served the Danish Red Cross, Doctors Without Borders, and the National Association for Polio-, Traffic- and Accident Victims (PTU). He is currently the supervisor of two Danish rehabilitation centers for torture victims and a Danish Psychologists’ Association board member of the specialist program in psychotraumatology for licensed psychologists. He is a licensed specialist in psychotherapy and psychotraumatology. He has a private practice focusing on personality disorders and severely traumatized clients.

Ole Brink, M.D., Ph.D., is a staff specialist in orthopedic surgery and traumatology at Aarhus University Hospital. He and one of the founders behind the first Rape Victim Center in Denmark authored several articles concerning domestic violence, street violence, violence-related injuries, and risk factors to violence.