



## The structure of acute posttraumatic stress symptoms: ‘Reexperiencing’, ‘Active avoidance’, ‘Dysphoria’, and ‘Hyperarousal’

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### ABSTRACT

Empirical data have challenged chronic posttraumatic stress disorder (PTSD) consisting of three dimensions. In the present study we aimed to determine the factor structure of acute posttraumatic symptoms in two recently traumatized samples.

In sample 1, 203 civilian trauma survivors were administered the Davidson Trauma Scale (DTS) approximately 1 week posttrauma. In sample 2, 182 civilian treatment seeking trauma survivors completed the DTS at an average of 41.4 days posttrauma.

Our confirmatory factor analyses indicated that a 4-factor intercorrelated model provided the best representation of the data in both samples. The four factors are best described as reexperiencing, active avoidance, dysphoria, and hyperarousal.

For acute posttraumatic symptoms, the empirical data suggest to split the avoidance cluster into ‘Active avoidance’ and ‘Dysphoria’—confirming findings in studies on chronic PTSD. In future revisions of the DSM, the diagnostic criteria for PTSD may need to be adapted to fit the research findings.

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## 1. Introduction

According to the Diagnostic and Statistical Manual of Mental Disorders, fourth version (American Psychiatric Association, 1994), posttraumatic stress disorder (PTSD) consists of the following three symptom clusters: reexperiencing, avoidance, and hyperarousal. Recently, several studies have challenged this three-dimensional conceptualization of PTSD which is based on expert consensus instead of empirical data. A growing body of evidence from factor analytic studies suggests that the current conceptualization of PTSD may not accurately capture the basic underlying dimensions of PTSD. In particular, there has been discussion on the avoidance cluster, which would consist of two separate mechanisms namely active avoidance and numbing (Buckley, Blanchard, & Hickling, 1998; Foa, Riggs, & Gershuny, 1995; Taylor, Kuch, Koch, Crockett, & Passey, 1998). More recent and sophisticated studies support the position that active avoidance and numbing are distinct symptom clusters (Asmundson et al., 2000; King, Leskin, King, & Weathers, 1998; Marshall, 2004; McWilliams, Cox, & Asmundson, 2005). These studies point into the direction of four dimensions: ‘Reexperiencing,’ ‘Avoidance,’ ‘Numbing,’ and ‘Hyperarousal’ either subsumed by a higher order general factor

(Asmundson et al., 2000) or consisting of four distinct but first order factors (Asmundson et al., 2000; King et al., 1998; Marshall, 2004). In a study by Simms, Watson, and Doebbeling (2002), four dimensions described as reexperiencing, avoidance, dysphoria and hyperarousal were found. The dysphoria factor was a combination of symptoms of numbing and hyperarousal.

In the present study, we aimed to determine the factor structure of acute posttraumatic stress symptoms in two different recently trauma-exposed Dutch samples assessed with the Davidson Trauma Scale (DTS; Davidson, 1996). The DTS was developed to address the need for a standardized self-rating instrument in the field of PTSD. It was specifically designed to evaluate symptoms of PTSD in individuals with a broad range of trauma and consists of 17 items corresponding to the DSM IV PTSD symptoms (American Psychiatric Association, 1994). In accordance with the previous findings, we expect to the 4-factor model (with the avoidance cluster split into two) to best fit these samples.

## 2. Methods

### 2.1. Subjects

Participants in both samples had experienced a traumatic event fulfilling the stressor A1 criterion of PTSD (American Psychiatric Association, 1994).

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Sample 1 consisted of 203 civilian trauma survivors recruited from various sources, included in a randomized controlled trial (RCT) on the effect of debriefing described in detail elsewhere (Sijbrandij, Olf, Reitsma, Carlier, & Gersons, 2006). Participants were 108 males and 95 females with a mean age of 39.9 years (S.D. = 13.1 years). Ninety (44.3%) participants experienced an assault, 57 (28.1%) a road traffic accident, 15 (7.4%) another type of accident, 12 (5.9%) a fire or explosion, 8 (3.9%) a sexual assault and 21 (10.3%) another type of trauma.

Sample 2 consisted of 182 civilian trauma survivors who applied for inclusion in a RCT on the efficacy of brief cognitive behavioural therapy (Sijbrandij et al., 2007). Participants were 76 males and 106 females with a mean age of 37.1 years (S.D. = 11.7 years). One-hundred and ten (60.4%) participants experienced an assault, 26 (14.3%) an accident, 12 (6.6%) a sexual assault, 15 (8.2%) the sudden death of a loved one, 3 (1.6%) witnessed an assault and 16 (8.8%) experienced another type of trauma.

## 2.2. Study design

In sample 1, 203 participants were administered the DTS at approximately 1 week (mean: 8.7 days, S.D. = 3.0, range: 0 to 18 days) after having experienced the traumatic event.

In sample 2, 182 participants completed the DTS and were interviewed for the presence of acute PTSD or another DSM-IV Axis I disorder at an average of 41.4 days after the traumatic event (S.D. = 15.7, range: 18 to 121 days).

## 2.3. Measures

Symptoms of posttraumatic stress disorder (PTSD) were assessed with the Dutch version of the Davidson Trauma Scale (DTS; Davidson, 1996), a self-rating scale that consists of 17-items corresponding with the DSM-IV symptoms for posttraumatic stress disorder (PTSD). For each item the subject rates both frequency (range: 0–4) and severity (range: 0–4) during the previous week. The DTS total score is computed by adding up all frequency and severity items (range 0–136). The DTS has shown high agreement with a diagnosis of PTSD assessed with the Structured Interview for PTSD (SI-PTSD; Davidson, Malik, & Travers, 1997; Davidson, 1996). In the current study, the Dutch DTS was also found to show high agreement with the Structured Interview for PTSD (SI-PTSD; Davidson et al., 1997), which was

administered during the same assessment point. Pearson correlations between the DTS total scale with the SI-PTSD total scale were  $r = 0.87$  ( $p < 0.000$ ) for sample 1 and  $r = 0.65$  ( $p < 0.000$ ) for sample 2).

## 2.4. Analysis

The factor structure of the Dutch version of the DTS was evaluated in a series of confirmatory factor models by using SAS Proc Calis. Confirmatory factor analysis (CFA) allows testing the hypothesis that a relationship between the observed variables and their underlying latent construct(s) exists. With CFA, a set of a priori defined models can be compared, with the opportunity to evaluate more complex higher order models. In the analysis, we used the sum of the frequency and severity scores for each DTS-item. Based on the earlier results from confirmatory factor analysis on symptoms of PTSD, we chose to evaluate seven models: a hierarchical 3-factor model and a 3-factor intercorrelated model conform the DSM IV conceptualization of PTSD, a hierarchical 2-factor model (Buckley et al., 1998; Taylor et al., 1998), a hierarchical 4-factor model (Asmundson et al., 2000), two 4-factor intercorrelated models (King et al., 1998; Simms et al., 2002), and a 4-factor intercorrelated model without symptom 8 (McWilliams et al., 2005). This latter item referring to amnesia was removed to develop a better fitting model. Their fourth factor appeared to reflect difficulties with thinking about the traumatic event (symptom referring to remembering the traumatic event with the amnesia symptom (item 8) having an opposite loading on this factor indicating that while this item was intended to assess a symptom of PTSD (i.e., amnesia for the traumatic event), the pattern of factor loadings suggests that this symptom is an adaptive response (i.e., being able to forget the traumatic event).

The parameters were estimated by using maximum likelihood. With Normal Theory Reweighted Least Squares Chi-square, Goodness of Fit Index (GFI), Bentler-Bonett Non-Normed Fit Index (NNFI), Comparative Fit Index (CFI), Akaike's Information Criterion (AIC) and the Root-Mean-Squared Residual Error of Approximation (RMSEA) we evaluated whether the estimated model was an acceptable representation of the observed data. A GFI, NNFI and CFI greater than 0.90 and a RMSEA lower than 0.08 were considered to indicate an adequate model fit, with the best fitting model to optimally reflect the underlying factor structure of the DTS. Smaller values of AIC represent a better fit.

**Table 1**

Factor loadings of the 4-factor intercorrelated model (Simms et al., 2002) in sample 1 ( $N = 203$ ) and in sample 2 ( $N = 182$ )<sup>a</sup>.

Abbreviated items	Sample 1 ( $N = 203$ )				Sample 2 ( $N = 182$ )			
	Intrusion	Active avoidance	Dysphoria	Hyperarousal	Intrusion	Active avoidance	Dysphoria	Hyperarousal
1. Painful images, memories or thoughts	0.81				0.72			
2. Distressing dreams	0.59				0.57			
3. Event was recurring	0.70				0.60			
4. Upset by reminder	0.74				0.63			
5. Physically upset by reminders	0.77				0.75			
6. Avoiding thoughts or feelings		0.71				0.64		
7. Avoiding situations		0.80				0.77		
8. Unable to recall important parts			0.39				0.28	
9. Difficulty enjoying			0.76				0.76	
10. Cut off from other people			0.65				0.77	
11. Unable to feel sad or loving			0.58				0.68	
12. Unable to imagine having long life span			0.50				0.63	
13. Trouble falling or staying asleep			0.59				0.33	
14. Irritable			0.64				0.61	
15. Difficulty concentrating			0.80				0.61	
16. Feeling on edge				0.87				0.76
17. Easily startled				0.76				0.79

<sup>a</sup> Standardized parameters estimates

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