Validity of PTSD in a sample of refugee children: can a separate diagnostic entity be justified?

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Abstract

The objective of this study was to examine the construct validity of PTSD in a sample of refugee children from the Middle East – more specifically, to assess whether associations between traumatic events and specific PTSD symptoms were more outspoken than (1) the associations of PTSD symptoms with non-traumatic exposures, and (2) the associations of violent exposures with symptoms other than PTSD-symptoms. Parents of 311 refugee children from the Middle East were interviewed concerning their children's traumatic experiences and mental health symptoms. The specific PTSD symptoms did not cluster in a factor analysis. The PTSD symptom complex was significantly predicted not only by violent exposures (mother tortured, OR 8.2, $p < 0.005$; father disappeared OR 3.2, $p < 0.05$) but also by indicators of family interaction and parents' occupational situation. The two identified violent exposures had significant independent associations with a series of symptoms including symptoms other than those of PTSD (r , ranging from 0.25 to 0.44, $p < 0.001$). Thus it does not seem sufficient to focus solely on PTSD symptomatology when assessing the mental health needs of refugee children. Copyright © 2006 John Wiley & Sons, Ltd.

Key words: PTSD, violence, torture, refugee, child, validity

Introduction

Despite the fact that exposure to traumatizing events seems to be a huge public health problem all over the world, there are few population studies that consider the occurrence of the so-called post-traumatic stress disorder (PTSD). Kessler et al. (1995) estimated the lifetime risk as 5% among males and 10% among females in study with a population sample of US adults aged up to 54 years. In treatment-seeking adult populations, PTSD occurrence has been observed to be much higher, even exceeding 50% (Schnurr et al., 2002). In studies of children, the PTSD point-prevalence has been estimated at from 3% to 37% in selected refugee populations, depending on the country of origin, exposure, culture, norms and coping strategies (Realmuto et al., 1992; Almqvist and Brandell-Forsberg, 1997;

Servan-Schreiber et al., 1998; Abdalla and Elklit, 2001). In a meta-analysis covering the child trauma literature until 1993, Fletcher (1996) found that more than two-thirds of children met the PTSD diagnostic criteria after exposure to acute, non-abusive stressors as well as to chronic abusive stressors. A point-prevalence of 18% to 70% has been reported in studies of children exposed to prolonged periods of war and other types of organized violence (Saigh et al., 1996; Montgomery, 1998; Allwood et al., 2002).

The PTSD concept, which appeared for the first time in the *American Diagnostic and Statistical Manual for Mental Disorders* (DSM-III) in 1980 (American Psychiatric Association, 1980), is defined as a condition caused by the exposure to (experiencing, witnessing or being confronted with) one or more events, involving

actual or threatened death or serious injury or a threat to the physical integrity of self or others (Criterion A), (American Psychiatric Association, 1994). The response of adults must have involved intense fear, helplessness or horror, whereas children may have reacted by disorganized or agitated behaviour. The condition caused by the exposure is by definition characterized by a symptom complex consisting of (Criterion B) painful re-experience, (Criterion C) persistent avoidance of stimuli associated with the traumatic exposure, and (Criterion D) persistent symptoms of increased arousal. The condition is labelled PTSD after a minimum of 1 month's duration. It may cause clinically significant distress or impairment in social, occupational or other important areas of functioning (American Psychiatric Association, 1994).

Since its inclusion in the DSM-III, the diagnosis of PTSD has become widely used in mental health screening and psychosocial interventions in war zones. However, the diagnostic construct has also been exposed to criticism (Young, 1995; Summerfield, 1999). Summerfield proposed it to be a reflection of the globalization of Western cultural trends towards the medicalization of human unhappiness and despair and thus emphasized the potential negative effects, which humanitarian interventions based on the PTSD construct may have on the survivors' own meaning systems and traditional coping strategies. In the case of traumatized children, the applicability and usefulness of the PTSD construct with its present content also have been questioned (Tierney, 2000), and attempts have been made to identify alternative criteria for PTSD particularly in connection with young children (Scheeringa et al., 2003).

Defining the PTSD construct, distinct from other clusters of traumatic exposures and symptoms, has several implications. Thus, immediate empirical implications will be the presumption of associations

- between the traumatic event and the symptom complex; and
- among symptoms.

From a logical point of view, the mere existence of such associations in itself does not, however, justify the postulation of a specific disease entity. In order that the PTSD construct can be sustained there must exist empirical associations that are stronger – both between exposure and symptoms, and within symptoms – than

those related to other exposures and other symptoms. Hypotheses of such associations can be tested empirically.

In order to sustain the presumed existence of a separate disease entity, it should furthermore be possible to identify, in a group of candidate violent exposures, at least one exposure with a strong association to the PTSD symptoms so that

- the PTSD symptoms, after correction for confounders, are more closely associated with the specific traumatic event(s) than with other variables, for example social conditions of living and the biological environment (specificity of exposure); whereas
- the traumatic exposure on its side must be expected to produce PTSD symptoms more often than it produces other symptoms (specificity of effect).

There are few published studies on the construct validity of PTSD in children. Moreover, the question has been considered in the development and validation of new diagnostic tools. Results seem to vary depending on whether or not symptoms other than those included in the PTSD diagnosis have been scrutinized. In their study on a parent-and-child scale for the assessment of posttraumatic symptoms in children, Greenwald and Rubin (1999) found that children's post-traumatic reactions could be much more wide ranging than mirrored by the PTSD symptoms of avoidance, intrusion and arousal. Accordingly, Ahman et al. (2000) inspected the psychometric properties of a screening instrument for the detection of PTSD as well as other post-traumatic symptoms in childhood and stressed the importance of including other than PTSD-related symptoms when investigating childhood trauma and posttraumatic psychopathology. Among the least traumatized children, the PTSD-related items showed stronger intercorrelation than the PTSD-unrelated items, while this was not the case in the children who most frequently had experienced serious traumatic events. In a study of 152 6- to 18-year-old tornado victims in a principal component analysis, Evan (2002) identified a six-factor model that did not mirror the DSM-IV PTSD diagnostic criteria. While symptoms of avoidance and re-experience loaded on two different factors, symptoms of arousal loaded on several factors together with other symptoms of, for example, interpersonal alienation and somatic prob-

lems. In contrast, Sack et al. (1997), in a sample of 194 Khmer adolescent refugees, using explorative factor analysis including symptoms from the PTSD diagnosis, identified a four-factor model that mirrored the PTSD symptom criteria of arousal, avoidance, intrusion and numbing. Anthony et al. (1999), applying a confirmatory factor analytic approach, in a study of 5,664 child and adolescent victims of a hurricane, found support for the construct validity of PTSD as a unified disorder that manifests in three symptom clusters: intrusion/active avoidance; numbing/passive avoidance; and arousal.

Considerable comorbidity in terms of concurrent mental disorders has been demonstrated in, for example, the National Comorbidity Survey, where 43.6% of women and 59.0% of men with PTSD had three or more other DSM-III-R diagnoses, as compared to 14.1% of women and 15.7% of men without PTSD (OR 7.9 among women and 14.5 among men) (Kessler et al., 1995). A similar contrast has been found in studies including children (Fletcher, 1996). In a study of 59 7- to 14-year-old children with a history of trauma and PTSD symptoms (Carrion et al., 2002), 24% met the full diagnostic criteria for PTSD, 23% had a mood disorder, 17% an externalizing disorder, and 48% an anxiety disorder other than PTSD. In a study of 791 6- to 16-year-old children from Bosnia (Allwood et al., 2002), 41% had clinically relevant PTSD symptoms. Only some traumatic events were significantly related to PTSD symptoms, but they were just as strongly related to other mental health problems such as anxiety and depression, externalizing disorders and somatic complaints. A high rate of comorbidity was also documented among preschool children in a study of 62 traumatized and 63 healthy 20-month-old to 6-year-old children. Children with PTSD scored higher on all comorbidity variables except for major depressive disorder and attention-deficit hyperactivity disorder (Scheeringa et al., 2003).

In order to investigate the justification for the PTSD entity from a construct validity point of view, the aim of the present analysis thus was to seek to falsify two groups of hypotheses, namely that (I) there are comparatively strong associations (a) between the traumatic events and the symptoms described and (b) within the group of symptoms; (II) more specifically, it is possible to identify one or more traumatic events with strong and unconfounded associations with PTSD symptoms, which fulfills the above criteria.

Material and methods

The study group comprised 311 refugee children from the Middle East (160 boys and 151 girls; mean age 7.5 years; range 3–15 years) each of whom arrived in Denmark, during the period from 1 February 1992 to 30 April 1993, accompanied by at least one parent and who were registered as childhood asylum seekers. Middle Eastern nationalities were treated as one population based on the belief that they shared, at least to some extent, similar cultural and religious backgrounds. Inclusion was based on parental acceptance, and 90.4% participated. Among participants, 22 children were from Lebanon, 168 from Iraq, 32 from Iran, 13 from Syria, 75 were stateless Palestinians and one was from Turkey. Eighty-eight children were of Palestinian ethnicity, and 103 were Kurds. Twenty-six children had grown up in Kuwait but were Iraqis or stateless Palestinians. The 311 children originated from 146 families, and 187 (60%) of them arrived in Denmark with both their parents.

A structured interview questionnaire was developed for use with the parents including closed questions on their children's health, living conditions before emigration, history of exile and previous exposure to war conditions, organized violence and human rights violation (witnessing or having been subjected to violent acts; loss of and separation from parents; parents' exposure to torture) (Montgomery and Foldspang, 1994; Montgomery, 1998). Individual children were classified according to a total of 34 specific and not mutually exclusive violent exposures (VEs).

Forty-seven questions on the current mental state of the child addressed concrete behaviour observable by the parents and focused on anxiety (12 symptoms), depression (13 symptoms), aggression (eight symptoms), and other emotional and behavioural reactions (nine symptoms) – in total 42 symptoms and reactions (Cronbach's alpha of the full scale: 0.85). PTSD symptoms were based on 14 specific items selected from the basic elements of PTSD (Pynoos et al., 1991; Yule, 1994) and included re-experience (dreams about traumatic events; speaking about traumatic events; suffers from nightmares; becomes scared when hearing shooting from the military drill ground close to the refugee reception centre), avoidance (does not play with other children; has lost previous interests; avoids talking about traumatic events; feels hopeless about the future), and arousal (has problems falling asleep; has problems staying asleep; is easily upset and angry; is easily aroused;

lacks concentration when watching TV and when told a story). The symptoms were rated 'rarely or never' (level 0), 'sometimes or somewhat' (level 1) or 'frequent or intense' (level 2). The symptom 'avoids talking about traumatic events' was, however, merely rated as 'absent' or 'present'. A proper clinical diagnosis cannot be made for the individual child when applying a methodology aiming at the classification of members of a group so we defined the PTSD symptom complex as at least one level-2 symptom from each of the three categories.

All interviews were conducted shortly after arrival by the same Danish nurse or by one of the authors (EM) with the aid of a professional Arab-, Farsi-, Kurdish-, Russian- or Bulgarian-speaking interpreter. Interviewing the children themselves was considered impossible or inappropriate because of the children's age (mean 7.5 years), the life situation of the families (newly arrived asylum seekers), and language problems.

The age grouping applied in the statistical analysis followed broad developmental phases: pre-school (3–5 years), school age (6–11 years) and adolescence (12–15 years) (Eth and Pynoos, 1985). The analysis applied a χ^2 test for 2×2 tables, Spearman's rank correlation coefficient r_s and multiple logistic regression (Altman, 1991). Using the χ^2 -distributed $-2 \ln$ (likelihood ratio) as significance test, the number of candidate predictors

was reduced by use of a combination of backwards and forwards selection of variables. Furthermore, two approaches to factor analysis based on original item scores (0–2) were applied:

- exploratory factor analysis (EFA) (Darlington, 1997; Armitage and Berry, 2002) (principal axis factoring including varimax rotation), first including all 42 symptoms and reactions and secondly including only the 14 PTSD-related symptoms; and
- confirmatory factor analysis (CFA) (Bollen, 1989; MacCallum and Austin, 2000) estimating model fit using the χ^2 statistic with a small value relative to degrees of freedom representing adequacy of model fit, comparative fit index (CFI) and the root mean square error of approximation (RMSEA).

A general significance level of 5% was applied.

The study was approved by the Regional Committee for Ethics in Medical Science and by the Danish National Data Inspectorate.

Results

Violent exposure

The frequency of specific violent events experienced by at least 10% of the children is given in Table 1. The

Table 1. Violent exposures reported by at least 10% of 311 Middle Eastern refugee children

Exposure	No.	%
Living in a refugee camp outside home country	287	92.3
Living under conditions of war	278	89.4
Being on the run with the parents	277	89.1
Witnessing bombing	257	82.6
Changing residence due to war	235	75.6
Taking shelter for bombing	234	75.2
Witnessing street shooting	214	68.8
Witnessing house search	188	60.5
Father detained	186	59.8
Separated from father more than one month	184	59.2
Death in the family	144	46.3
Father tortured	143	46.0
Witnessing torture, killing or intimidation of other than family members	93	29.9
Witnessing arrest of family member	77	24.8
Witnessing torture, killing or intimidation of family	68	21.9
Living in a refugee camp in home country	65	20.9
Mother detained	61	19.6
Father disappeared	43	13.8
Mother tortured	33	10.6

mean total number of types of experience was 9.9 out of 19 possible, and the number of types experienced by the individual child ranged from one type (five children) to 17 types (one child). Eighteen (5.8%) had been detained, 20 (6.4%) had been beaten or kicked by an official and three children (1.0%) had been tortured themselves.

Mental symptoms and reactions

The prevalence of specific symptoms included in the PTSD symptom complex is given in Table 3. Two-hundred (64.3%) children had at least one out of four symptoms of re-experience (mean 0.9 symptoms), 76 (24.4%) at least one out of four symptoms of avoidance (mean 0.3 symptoms) and 230 (74.0%) at least one out of six symptoms of arousal (mean 1.5 symptoms). Two-hundred-and-seventy (86.8%) had one or more of the 14 PTSD-related symptoms (mean 2.7). Forty-six out of 91 correlations between the 14 specific PTSD-related symptoms were significant (r_s 0.11–0.68, $p < 0.05$ to $p < 0.001$). Fifty-seven (18.3%) of the children had one or more frequent or intense symptoms (level 2) from each of the three main PTSD symptom categories (Table 2).

An exploratory factor analysis (EFA) including the 42 registered mental symptoms and reactions resulted in a model with 14 factors with eigenvalues above 1. Only one factor represented more than 10% of the variation of the data set, namely 'sleep disturbance' – 14.8% of the variation, including two symptoms of re-experience (suffers from nightmares, dreams about traumatic events) and two symptoms of arousal (has problems falling asleep, has problems staying asleep).

Table 2. PTSD symptom complex constellation in 311 Middle Eastern refugee children

Re-experience symptoms	Avoidance symptoms	Arousal symptoms	No.	%
Absent	Absent	Absent	41	13.2
Present	Absent	Absent	24	7.7
Absent	Present	Absent	54	17.4
Present	Present	Absent	116	37.3
Absent	Absent	Present	13	4.2
Present	Absent	Present	3	1.0
Absent	Present	Present	3	1.0
Present	Present	Present	57	18.3

The other PTSD symptoms did not cluster in any specific or consistent pattern, eight of them loading on six different factors while two symptoms did not load on any one factor in particular. An EFA including the 14 PTSD-related symptoms resulted in a model with five factors, two of them explaining more than 10% of the variation (Table 3). The symptoms did not cluster in a PTSD-specific pattern.

The 14 PTSD-related symptoms were fitted in a confirmatory factor analysis (CFA) testing the hypothesis of a one-factor (general PTSD) model, a three-factor PTSD-model (re-experience, avoidance and arousal) and a two-factor model (based on the results of the EFA). It was not possible to find a model with a satisfactory fit for the two PTSD models. The best model identified in this material involved seven symptoms and consisted of two factors: 'sleep disturbance' (suffers from nightmares, dreams about traumatic events, has problems falling asleep, has problems staying asleep) and 'arousal' (lacks concentration when watching TV and when told a story, is easily aroused) (model fit: $\chi^2 = 9.98$, $p = 0.267$; CFI = 0.998; RMSEA = 0.028).

Bivariate associations between violent exposures and mental symptoms and reactions

More than half of the correlations between VEs and symptoms were significant, 20 of which were larger than 0.25 with $p < 0.001$ (Table 4). Three of these 20 correlations were between a VE and a PTSD symptom, namely avoidance of playing with other children:

- the sixth largest coefficient, with 'mother tortured';
- the fourteenth largest coefficient, with 'mother tortured before the child's birth';
- the 17th largest coefficient, with 'mother exposed to organized violence after the child's birth'.

Identification of specific violent exposures and their associations with PTSD symptoms

After comprehensive confounder correction in multiple regressions, two VEs ('mother tortured' and 'father disappeared') were identified that independently and significantly predicted the PTSD symptom complex, in concordance with age ('child 7–11 years old'), two behavioural ('mother cuddles the child more', 'child informed about parents' detention') and three social background predictors ('father has been vocationally occupied', 'father's occupation is private enterprise', 'mother has been vocationally occupied') (Table 5).

Table 3. Prevalence* and factor loadings** of symptoms within the PTSD symptom complex in 311 Middle Eastern refugee children

PTSD symptom group; Specific symptom	No.	%	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
<i>Re-experience</i>							
Dreams about traumatic events	34	10.9	0.65				
Speaks about traumatic events	84	27.0					
Suffers from nightmares	59	19.0	0.92				
Gets scared when hearing shooting	118	37.9			0.48		
<i>Avoidance</i>							
Does not play with other children	20	6.4					
Has lost previous interests	14	4.5				0.50	
Avoids talking about traumatic events	31	10.0					
Feels hopeless about the future	21	6.8					0.67
<i>Arousal</i>							
Has problems falling asleep	62	19.9	0.53				
Has problems staying asleep	56	18.0	0.73				
Is easily upset and angry	164	52.7					
Is easily aroused	138	44.4			0.49		
Lacks concentration – when watching TV	20	6.4		0.69			
– when told a story	12	3.9		0.57			
Variance explained (%)	–	–	22.68	10.15	9.31	8.56	7.81

*Symptom frequent or intense.

**Factor loadings above 0.40 from exploratory factor analysis based on original item scores and including 14 PTSD symptoms.

Association of mental symptoms and reactions with specific violent exposure

Children with a tortured mother and/or a disappeared father suffered significantly more often than others from seven out of 12 specific symptoms of anxiety, from 12 out of 13 symptoms of depression, from four out of eight symptoms of aggression and from four out of nine other emotional symptoms or reactions. In order to compare the strength of associations of maternal torture and paternal disappearance

- with the PTSD symptom complex, and
- with other mental symptoms (anxiety, depression, aggression, other emotional reaction)

PTSD symptoms together with other symptoms were regressed on the variables 'mother tortured', 'father disappeared' and 'mother tortured and/or father disappeared'. The PTSD symptom complex was associated with 'mother tortured' (OR 5.1, $p < 0.005$) and 'mother tortured and/or father disappeared' (OR 4.1, $p < 0.005$) (Table 6). Specific symptoms of emotional unbalance

also had independent associations with PTSD exposure, the strongest correlate with 'mother tortured' being 'destroys things' (OR 9.9, $p < 0.005$); the strongest correlate with 'father disappeared' being 'disobeys parents' (OR 3.1, $p < 0.01$); and the strongest correlate with 'mother tortured and/or father disappeared' being 'fears the future' (OR 4.7, $p < 0.005$).

Finally, adding the number of and the specific VEs to the EFA with the 42 symptoms and reactions did not reveal any consistent pattern of association between exposure and symptomatology. The result of the factor analysis thus remained a consistent, non-PTSD-related symptom pattern as previously described.

Discussion

The justification for establishing a separate nosological entity is based first on content and construct validities but also on aspects such as similar causes and specific prognostic aspects. As seen, the PTSD entity by definition includes a linkage between cause, a traumatic experience and the effect, a defined set of long-lasting symptoms and mental reactions. Attempts to seek

Table 4. Spearman's rank correlation coefficients >0.25* between violent exposure and mental symptoms in 311 Middle Eastern refugee children

Violent exposure	Fears strangers r_s	Fears the future r_s	Fears unknown situations r_s	Fears sleeping without light r_s	Does not play with other children r_s	Isolates him/ herself r_s	Appears sad or miserable r_s
Mother tortured	0.342	0.320			0.293	0.271	
Mother tortured before the child's birth					0.268	0.252	
Mother tortured after the child's birth	0.436	0.284					
Mother exposed to organized violence	0.311	0.284			0.256		
after the child's birth							
Parent(s) tortured				0.280			
Mother detained		0.255					
Father disappeared			0.290				
Parent(s) died or disappeared			0.263				0.269
Death in the family after the child's birth			-0.291				
Witnessing torture, killing or intimidation	0.269						
of family members							
Beaten or kicked by an official	0.376	0.357					

* All correlation coefficients: $p < 0.001$.

Table 5. Significant violent exposure and behavioral and social background correlates of the PTSD symptom complex* in 311 Middle Eastern refugee children

Risk indicator	No.	Bivariate association		Multivariate** association	
		OR	95% CI	OR	95% CI
Child 7–11 years old	105	0.7	0.4–1.3	0.5 ^a	0.2–1.0
Mother tortured	33	6.3 ^c	3.0–13.5	8.2 ^c	3.2–20.7
Father disappeared	43	2.9 ^c	1.4–5.9	3.2 ^a	1.3–8.2
Mother cuddles the child more	143	0.6	0.3–1.0	0.4 ^a	0.2–0.8
Child informed of parent(s) detention	74	1.8	1.0–3.4	2.6 ^a	1.2–5.6
Father had an occupation	277	8.4 ^b	1.1–62.5	9.6 ^b	1.2–78.8
Father was in private enterprise	55	1.7	0.8–3.3	2.8 ^a	1.3–6.4
Mother had an occupation	84	5.0 ^c	2.7–9.1	4.6 ^c	2.3–9.5

* Defined as at least one frequent or intense symptom of re-experience, avoidance and arousal.

** From multiple logistic regression. Total set of predictors: age and gender; *background conditions*: nationality, ethnicity, parents' education (years), religion, social class, number of siblings at birth, violent death of grandparent(s), parental torture before child's birth, school participation; *violent experience*: war-related living conditions, witnessing violent acts, loss of and separation from parents, direct and parental exposure to organized violence; *present life context*: family structure at examination, change in parental behaviour towards the child, child's information about family exposures and reason for escape; *social life context*: parents' occupation and economical situation prior to escape, hindrance of school and play participation.

^ap < 0.05 ^bp < 0.01 ^cp < 0.005.

Table 6. Significant mental symptom correlates* of the PTSD exposure complex** in 311 Middle Eastern refugee children

Symptom or symptom complex	Mother tortured		Father disappeared		Mother tortured and/or father disappeared	
	OR	95% CI	OR	95% CI	OR	95% CI
PTSD symptom complex	5.1 ^c	1.9–13.4			4.1 ^c	1.9–8.8
Fears strangers	5.6 ^c	2.1–15.2				
Fears the future	3.5 ^b	1.4–8.6			4.7 ^c	2.3–9.5
Fears unknown situations			2.7 ^b	1.3–5.8		
Appears sad or miserable			2.3 ^a	1.1–4.8	2.1 ^a	1.1–4.1
Lacks appetite			2.7 ^b	1.3–5.6	3.3 ^c	1.7–6.4
Isolates him/herself	5.7 ^a	1.6–20.8				
Destroys things	9.9 ^c	2.4–40.1			3.9 ^a	1.2–12.7
Disobeys parents	2.3 ^a	1.0–5.1	3.1 ^b	1.4–6.7		

* Based on multiple logistic regression. Initial predictor set: age, gender, PTSD symptom complex, re-experience, avoidance, arousal and individual symptoms of anxiety, depression, aggression and other emotional reactions.

** Mother tortured, father disappeared, or both.

^ap < 0.05 ^bp < 0.01 ^cp < 0.005.

causes of PTSD empirically will thus be based on tautological thinking, and the discussion about a cause-effect relationship will, in the first place, have to be conducted within the concept itself, focusing on the validity of the construct. Crucial questions will then

deal with the specificity of relationship between a certain set of symptoms and their alleged causes.

The data set in this study involved more than 300 Middle Eastern refugee children, who – frequently after exposure to repeated series of violent exposures – arrived

consecutively as refugees in Denmark together with their parents. The present study group thus seems to represent a relevant selection of experience for the study of the PTSD construct, such as it expresses itself in childhood in a Middle Eastern culture.

In this data set we found that (1) even if PTSD symptoms were frequent, they did not dominate the overall clustering of symptoms or the clustering of symptoms with VEs. On the contrary, many associations existed among symptoms and between violent exposures and long-lasting symptoms and behaviours, which were just as strong as or stronger than intra-PTSD associations. Strong traumatic exposure-symptom relationships actually were rather frequent, and thus significant intra-PTSD relationships do not in themselves justify the postulation of a specific concept. On the contrary, relationships other than intra-PTSD relationships may be highly relevant from preventive, curative and rehabilitative points of view. In the presence of the PTSD concept, however, they run the risk of being assigned low priority simply because they do not form parts of the construct.

Considering (2) the existence of specific, violent exposures related to the postulated PTSD symptoms, we identified the strongest predictors of PTSD symptoms in the present data set to be experiences, which do not constitute part of criterion A (the traumatic event) of the diagnosis of PTSD (American Psychiatric Association, 1994) but do represent powerful threats to the basic security of the child – the mother being tortured and the father disappearing. All in all, the PTSD symptoms were as much associated with other violent or, in a broader sense, traumatic exposures. Moreover, the two PTSD-specific VEs were themselves strongly associated also with a series of symptoms from another universe than that represented by the PTSD concept. Thus from these points of view, the postulated specificity of the relationship between cause and effect did not seem to be justified.

The rather consistent pattern in previous research (Fletcher, 1996; Greenwald et al., 1999; Ahmad et al., 2000; Allwood et al., 2002; Carrion et al., 2002; Evans, 2002; Scheeringa et al., 2003) and in the present childhood population exposed to traumatic experience thus seems to be that of a cause-integrating symptom construct with significant, but rather unspecific relationships between cause(s) and effect(s). Children's post-traumatic reactions can be much more wide-ranging than what is included in the PTSD diagnosis.

In our opinion, this lack of specificity challenges the justification of a separate PTSD concept or a concept with the defined content as it is.

An analogy may be found in exposure to physical trauma, which may result in fracture of bones as well as rupture of internal organs. Not all fractures, however, stem from traffic accidents. Each exposure-disorder relationship has its own specific nature and must be specifically considered. Otherwise it is at risk of being overlooked because of the observer's preoccupation with pre-specified relationships. Therefore, in the daily practice of diagnosing, classifying and recording, exposure and physical sequels are coded separately. Accordingly, one consequence of maintaining an unspecific PTSD concept may be to overlook or at least suppress the observation and empathic inference of crucial psychodynamic processes in individual childhood patients.

Limitations of the study

The study has several limitations that need to be taken into account when interpreting results. The present research studied PTSD-symptoms in children and was, furthermore, restricted to a Middle Eastern culture. It cannot without further studies be generalized to other age groups or cultures. Only parents were interviewed and the children's actual experiences at the time of the traumatic events were not assessed. Interview with the children themselves was not considered an option because of their age (mean age 7.5 years), language problems and ethical considerations concerning the children's and parents' situation as recently arrived refugees often coming from violent conflict areas. Not all 17 DSM-IV symptoms of PTSD were included due to the difficulty of assessing symptoms that refer to internal reactions through interview with a parent. Thus re-experience 'when exposed to internal or external cues that symbolize or resemble an aspect of the traumatic event' (Criterion B, no. 4 and 5) and avoidance 'of activities, places or people that arouse recollections of the trauma and inability to recall important aspect of the trauma' (Criterion C, no. 2 and 3) were omitted. A clinical diagnosis therefore could not be developed as such. It was also not possible to differentiate between symptoms of avoidance and numbing in the analysis as has been suggested in studies of PTSD among adults (Taylor et al., 1998; Asmundson et al., 2000, 2004) as well as children (Sack et al., 1997; Anthony et al., 1999; Evans, 2002).

Systematic error might have been introduced due to the different errors involved in assessing symptoms, traumatic events and other variables and this could have influenced the observed associations. This error, however, would not influence PTSD associations specifically. We did not conduct multilevel analysis to correct for clustering of children within families and as a result of this random error might have been underestimated. This underestimation was not, however, differentiated.

At the time of study, the asylum-seeking families lived in Danish refugee camps. Their situation was unstable and insecure, which may have influenced the parents' assessment of their children, but not in any obvious direction. It is possible that parents of children with many violent experiences would expect the children to be influenced psychologically and would thus observe more symptoms, or parents with children with many symptoms might be more prepared to remember their history of violent exposure, thus introducing a signal bias away from the null hypothesis. On the other hand, a tendency for parents to neglect emotional symptoms in their children might also be hypothesized because it would be painful for parents to acknowledge that they had not been able to protect their children. Moreover, the parents of the most traumatized children have often had equally traumatizing experiences themselves, rendering them less capable of observing the problems of their children. This would introduce a bias toward the zero hypotheses. The families' situations as asylum seekers might also have influenced the way they answered but, again, not in any obvious direction. Some parents might have over-reported symptoms because they expected this to increase their chances of being granted asylum; others might have under-reported symptoms for the same reason because they were afraid of being rejected if they were considered a burden to the Danish community.

These limitations imply that the results of this study should primarily be regarded as hypothesis generating. Future research should involve other age spans, other cultures and other types of traumatic events, and it should include additional data-collection methods, among them proper diagnostic interviews and assessment of different dimensions of severity of traumatic events. Moreover, the present study only considers construct validity aspects. Another perspective is the possible prognostic information that the concept may yield. This should preferably be studied in a future

prospective followup design applying observational methods other than interviewing parents. At present, such a study is being carried out for the study group of this article.

Conclusion

Despite the fact that both PTSD symptoms and a series of relevant VEs have been found in this group of Middle Eastern refugee children, the analysis did not identify consistent VE-symptom patterns, which were specifically PTSD oriented. This places the specificity of the PTSD construct into question. The lack of specificity may lead to focusing on mental processes, which are inadequate for comprehensive and coherent empathic understanding. Future construct validity research should focus also on adult populations and other cultures, and a prognostic (predictive validity) perspective should be added.

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