Time does not heal all wounds: Identifying children suffering from psychological trauma
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Chapter 7

Summary and general discussion
Introduction

Traumatic events, such as a car accident, a fire disaster, or sexual abuse, are fairly common experiences among children, that may have long lasting effects and influence a child’s emotional, social, cognitive, or physical development. This dissertation focused on children who have been exposed to one or more potentially traumatic events during their lives. The studies presented in this dissertation aimed at two main goals. The first aim was to enhance our knowledge with regard to the definition of a traumatic event and the psychological consequences of traumatic exposure in children. The second aim was to improve the identification of children suffering from psychological trauma by addressing the lack of reliable and valid measures to screen for child’s posttraumatic stress. The current chapter provides a summary and discussion of the main findings of the previous chapters and will set out future directions for research and clinical practice.

Summary of the main findings

The definition of a traumatic event

Despite the various updates of the definition of a traumatic event in the Diagnostic and Statistical Manual of Mental Disorders (DSM), controversy remains about what may be considered as traumatic. According to the fourth edition (DSM-IV-TR) a traumatic event is defined by two criteria: “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” (Criterion A1) and “the person’s response to the event must involve intense fear, helplessness, or horror” (Criterion A2; American Psychiatric Association, 2000, p. 467). In Chapter 2, we addressed the definition of a traumatic event by examining whether the subsequent development of posttraumatic stress disorder (PTSD) in children was related more to Criterion A1 or to Criterion A2. In our general population sample of 588 school children between 8 and 18 years, one in every five (19.5%) reported exposure to a traumatic event as defined by DSM-IV-TR Criteria A1 and A2. Our findings showed that children who met Criterion A2 were nine times more likely to report PTSD as compared to those where Criterion A2 was not met. Children who met Criterion A1 were only twice more likely to report PTSD compared to those not meeting Criterion A1. In addition, the low sensitivity of Criterion A1 suggests that children may regularly develop severe posttraumatic stress in the absence of a Criterion A1 event. The remarkably high negative predictive value of Criterion A2 indicates that if a child does not have a subjective reaction during an event it is unlikely that he or she will develop PTSD. In contrast to most adult studies (Adler, Wright, Bliese, Eckford, & Hoge, 2008; Bedard-Gilligan & Zoellner, 2008; Friedman, Resick, Bryant, & Brewin, 2011), the findings of this study emphasize the significant contribution of the subjective component (Criterion A2) to the prediction of posttraumatic stress in children and raise fundamental questions about the value of the current Criterion A1.
Psychological consequences of traumatic exposure

Chapter 3 outlined different profiles of traumatic stress symptomatology in children exposed to a single traumatic event and children who have been removed from their home after prolonged child maltreatment. We hypothesized that the criteria for PTSD more accurately reflect the effects of single trauma than the effects of child maltreatment and we assumed that traumatic stress symptomatology after child maltreatment is more diverse compared to children exposed to a single trauma. Measurements were administered to children exposed to single trauma (N = 83) and children exposed to child maltreatment (N = 173) in order to assess a) symptoms of PTSD; b) trauma-related symptoms, i.e. psychological difficulties that have been found to be related to trauma, for example dissociation, anxiety, and depression; and c) trauma-unrelated symptoms, i.e. general difficulties in childhood that are unrelated to the traumatic experiences. Our results showed that children exposed to single traumatic events reported significantly more symptoms of PTSD and trauma-related symptoms, whereas children exposed to prolonged child maltreatment reported significantly more severe trauma unrelated symptoms. These results support our assumption that exposure to single trauma and child maltreatment leads to different traumatic stress profiles and that the effects of child maltreatment tend to extend symptoms of PTSD.

Measures to screen for child’s posttraumatic stress

Early identification of children suffering from psychological trauma is crucial in order to prevent chronic psychological problems and to offer appropriate and timely treatment. To identify those children, reliable and valid screening tools are required. One of the most widely used screening tools in the assessment of posttraumatic stress in children is the Children’s Revised Impact of Event Scale (CRIES), which is a brief self-report measure. Although this measure appears to be an effective tool in screening for PTSD in children, previous research regarding the diagnostic validity of the CRIES is still insufficient, has been restricted to specific populations, and sample sizes have often been small. Furthermore, no study so far has investigated the reliability or validity in the Netherlands. Therefore, Chapter 4 focused on the Dutch version of the CRIES. There are two versions available. The 8-item version (CRIES-8) consists of four questions to assess intrusion and four questions to assess avoidance. The 13-item version (CRIES-13) includes all of the items of the CRIES-8 and five more questions to assess hyperarousal. The main purpose of this study was to examine the reliability and validity of both versions and to determine the best cutoff scores in a clinical sample of 395 trauma-exposed children, aged 7-18 years. This study extends previous research in several ways. First, we included a large sample of children. Second, the children in our sample were exposed to a much wider variety of traumatic events, and third, we included both children with single as well as children with prolonged exposure to traumatic events. Results showed that both the CRIES-8 and CRIES-13 appear to be reliable and valid measures to screen for PTSD in children. A cutoff score of 17 on the CRIES-8 and a cutoff score of 30 on the CRIES-13 emerged as the best balance between sensitivity and specificity, and correctly classified...
78-81% of all children. These findings are in line with those of others (Giannopoulou et al., 2006; Perrin, Meiser-Stedman, & Smith 2005; Smith, Perrin, Dyregrov, & Yule, 2003; Zhang, Zhang, Wu, Zhu, & Dyregrov, 2011). However, in contrast to Perrin et al. (2005), the CRIES-13 outperformed the CRIES-8, in that the overall efficiency of the CRIES-13 was slightly superior (.81 and .78, respectively). Given that the assessment of five extra items requires little additional time while providing clinically relevant information regarding arousal symptoms (Dow, Kenardy, Le Brocque, & Long, 2012), the CRIES-13 is suggested as first choice.

It is generally known that in the assessment of a child’s posttraumatic stress both child and parent reports are of great importance to guide proper diagnosis and care. Since the CRIES was limited to child self-report, Chapter 5 is about the development of a parental version of this screening tool. This parental version was based on the original child version of the CRIES-13. The questions of the parent version were formulated as similarly as possible to the corresponding questions of the child version. The study in this chapter investigated the psychometric properties of the parental version of the CRIES-13 in a subsample (N = 59) of our large clinical sample (see Chapter 4). Additionally, the correlations between the parent and child version of the CRIES-13 were examined as prior research has indicated poor symptom and diagnostic agreement between parents and children (Jensen et al., 1999). Findings of our study demonstrated good internal consistency with acceptable values for the three subscales, i.e. intrusion, avoidance, and hyperarousal. A strong correlation was found with another measure of PTSD (i.e. Trauma Symptom Checklist for Young Children; Briere, 2005) confirming the convergent validity. Lower correlations were found with a measure assessing a different construct (i.e. Strengths and Difficulties Questionnaire; Goodman, 1997), confirming the divergent validity. A cutoff score equal to or greater than 31 emerged as the best balance between sensitivity and specificity, and correctly classified 84% of all children as having a diagnosis of PTSD or not. As expected, results showed low to moderate concordance between the parent and child version of the CRIES-13. This latter finding is in line with previous studies concerning parent-child agreement on PTSD and endorse the use of both child and parent reports to guide proper diagnosis and care (Meiser-Stedman, Smith, Glucksman, Yule, & Dalgleish, 2007; Shemesh et al., 2005). All in all, this study was the first to examine the psychometric properties of a parental version of the CRIES-13 and provided support for the reliability and validity of this parental measure as a screening tool for child’s posttraumatic stress.

As PTSD often co-occurs with other psychiatric disorders, Chapter 6 presented the development and validation of the CRIES-Plus in order to screen for PTSD and psychiatric comorbidity. The CRIES-Plus consists of the CRIES-13 in combination with 12 additional items related to the most common comorbid disorders including mood-, behavioral-, and other anxiety disorders. The additional items were created by a team of five experts with extensive experience in the trauma field. Consensus was reached through collaborative discussions. In our study we examined the screening accuracy of the CRIES-Plus in order to detect PTSD and psychiatric comorbidity in a large clinical sample of 395 children (see
Chapter 4). Our study showed that approximately 68% of children with PTSD had at least one comorbid disorder. These results confirmed the high rate of psychiatric comorbidity found in earlier studies of self-reported psychiatric disorders in children with PTSD (Copeland, Keeler, Angold, & Costello, 2007; Famularo, Fenton, Kinscherff, & Augustyn, 1996; Suliman et al., 2009). Findings also showed that combinations of several additional items were strongly related to mood disorders, behavioral disorders, and other anxiety disorders. More specifically, six out of twelve additional items were significantly associated with mood disorders, three out of twelve items were associated with behavioral disorders, and five items were associated with other anxiety disorders. Moreover, the additional items associated with mood disorders and other anxiety disorders demonstrated good discriminatory ability, with a cutoff score of ≥ 14 and ≥ 10, respectively. The additional items that were associated with behavioral disorders had poor to fair discriminatory ability, with no clear cutoff point. Presumably, children are not reliable reporters of behavioral problems, confirming the general assumption that children might be better informants of internalizing problems, whereas parents are better reporters for externalizing disorders (Jensen et al., 1999). As expected, none of the additional items significantly improved the prediction of PTSD when added to the total scale of the CRIES-13. This may be due to the already excellent screening accuracy of the CRIES-13 itself (see Chapter 4) and because PTSD was not the essence in formulating the additional items. Altogether, the ultimate CRIES-Plus consists of 13 items to screen for PTSD (CRIES-13) and eight additional items to screen for psychiatric comorbidity, i.e. mood disorders and other anxiety disorders. These findings support the use of the CRIES-Plus to screen for PTSD and comorbid disorders, which may help clinicians in assigning appropriate follow-up diagnostic and clinical care.

**General discussion**

During this PhD project, a revision of the DSM-IV-TR was prepared by the American Psychiatric Association and finally published in May 2013. This revision (DSM-5) includes several changes to the classification and conceptualization of PTSD. The results of the studies presented in this dissertation will be discussed in light of the DSM-5 revision.

**Criteria A1 and A2**

One of the major changes in the DSM-5 concerns the definition of a traumatic event defined by Criteria A1 and A2. The objective Criterion A1 has been retained and explicated with greater clarity in order to draw a clearer line when assessing what constitutes a traumatic event (American Psychiatric Association, 2013). For example, actual or threatened sexual violence is now specifically mentioned in the definition of a traumatic event. The main reason for retaining Criterion A1 is that in most cases PTSD does not develop unless a person experiences an event that is extremely stressful (Friedman et al., 2011). The subjective Criterion A2, requiring fear, helplessness, or horror during or right after the traumatic
exposure, has been eliminated in DSM-5. The rationale for eliminating Criterion A2 is that it is considered to be lacking added value. Research showed that the presence of Criterion A2 added little to the ability of Criterion A1 to predict PTSD. Only the absence of a subjective emotional response (Criterion A2) screened well for the absence of PTSD (Adler et al., 2008; Bedard-Gilligan & Zoellner, 2008; Breslau & Kessler, 2001; Friedman et al., 2011, Karam et al., 2010; Kilpatrick, Resnick, & Acierno, 2009). The above modifications, however, are mainly based on research in adults or adolescents. In contrast to most adult studies, the findings of our study in Chapter 2 suggest that the objective Criterion A1 may be insufficient to explain the development of PTSD in children. In fact, an event must be subjectively experienced as traumatic in order for a child to be likely to develop PTSD. Moreover, our results showed that children might regularly develop severe posttraumatic stress in the absence of Criterion A1. This latter finding was also found in other studies addressing this issue (Boals & Schuettler, 2009; Bodkin, Pope, Detke, & Hudson, 2007; Copeland, Keeler, Angold, & Costello, 2010; Gold, Marx, Soler-Baillo, & Sloan, 2005; Van Hooff, McFarlane, Baur, Abraham, & Barnes, 2009). In DSM-5, Criterion A1 still functions as a threshold or gatekeeper to a diagnosis of PTSD. After all, in the absence of this requirement it is theoretically impossible to diagnose someone with PTSD. By continuing the use of Criterion A1 as a gatekeeper to the diagnosis of PTSD, there might be children who are clearly symptomatic and impaired but who do not fulfill Criterion A1 for the actual diagnosis of PTSD. This may exclude them from receiving proper trauma-focused treatment. We believe, however, that for those children who experienced an event that does not fully meet Criterion A1 but who do meet the symptom criteria for PTSD, it would be important to treat them as if they were diagnosed with PTSD. This type of non-A1 specific events may still cause trauma-related symptoms that significantly disturb social, occupational, or other important areas of functioning. Children might benefit equally well from trauma-focused treatment, regardless of whether the experienced event meets Criterion A1 or not. Furthermore, in line with adult literature, our study showed that the absence of Criterion A2 predicted the absence of PTSD. In other words, without a subjective emotional response during an event it is unlikely that a child will develop PTSD. Although Criterion A2 is no longer a requirement for the diagnosis of PTSD in DSM-5, these results suggest that Criterion A2 may still be useful in a mass screening to filter out those children who are not at risk of developing PTSD.

**Diagnostic criteria for PTSD**

Another major change to the diagnostic criteria for PTSD comprises the symptom clusters. DSM-IV Criterion C (avoidance and numbing) has been divided into two criteria, i.e. Criterion C (avoidance) and Criterion D (negative alterations in cognitions or mood). Instead of three diagnostic symptom clusters, the DSM-5 now lists four distinct clusters i.e. intrusion (Criterion B), avoidance (Criterion C), negative alterations in cognitions or mood (Criterion D), and alterations in arousal and reactivity (Criterion E). In addition, two new symptoms have been added to Criterion D, namely persistent negative emotional state and persistent and
Summary and general discussion

distorted blame of self or others. Another new symptom has been added to Criterion E, i.e. reckless or destructive behavior. Moreover, the DSM-5 introduces two new PTSD subtypes. The first is called PTSD Dissociative Subtype. It applies to those who fully meet the criteria for PTSD and also show prominent dissociative symptoms (e.g. being detached from one’s mind or body, or experiences in which the world seems unreal, dreamlike or distorted). The second new subtype concerns a developmental subtype of PTSD for preschool children ages six and younger. An alternative set of criteria for PTSD in preschool children was initially proposed by Scheeringa et al. (1995, 2003) as limited cognitive and expressive language skills in young children make inferring their thoughts and feelings quite difficult. Additionally, research by Scheeringa et al. (2011, 2012) showed that when a developmentally-sensitive set of criteria was used about three to eight times more children qualified for PTSD compared to the DSM-IV criteria. The preschool subtype for PTSD is the first developmental subtype of an existing disorder in the DSM-5. In our view, this represents an important step toward a classification of mental disorders that is more developmentally sensitive. However, retaining to the DSM-5 criteria for PTSD seems to underestimate the effects of early chronic and interpersonal traumatization, such as child maltreatment. Results from Chapter 3 suggest that the criteria for PTSD more accurately reflect the effects of single trauma than the effects of child maltreatment. The PTSD criteria tend to be too narrow to capture the full sequelae of child maltreatment. Therefore, the likelihood of children meeting PTSD symptoms in response to adverse events seems to decrease when traumatization becomes more complex. Whereas traumatic stress symptomatology in children exposed to a single traumatic event confines itself to clinical PTSD, the clinical profile of children exposed to child maltreatment is more complex and extends the PTSD diagnosis. Conclusions drawn from our study are in line with other investigations of the sequelae of child maltreatment (Cloitre, Miranda, Stovall-McClough, Han, 2005; Litrownik et al., 2005; Manly, Kim, Rogosch, & Cicchetti, 2001; Pears, Kim, & Fisher, 2008; Zeanah et al., 2004). Moreover, The National Child Traumatic Stress Network (NCTSN) suggests seven primary domains of impairment observed in children exposed to child maltreatment that extend the current PTSD criteria (i.e. attachment, biology, self-perception, dissociation, affect regulation, behavioral management, and cognition). These are subsumed under the heading Complex Trauma (Cook, Blaustein, Spinazzola, & van der Kolk, 2003) or as proposed by others are subsumed under the heading Complex PTSD (CPTSD; Herman, 1992). This is consistent with research with adults, where it was found that chronic trauma was more strongly predictive of Complex PTSD than PTSD and, conversely, single trauma was more strongly predictive of PTSD (Cloitre, Garvert, Brewin, Bryant, & Maercker, 2013). Although this data supports the proposed distinction between PTSD and Complex PTSD in the International Classification of Diseases - 11th version (ICD-11), the diagnostic construct of Complex Trauma or Complex PTSD has not been adopted in DSM-5. According to Resick et al. (2012) the proposal of this concept has been valuable, by introducing a developmental perspective to psychological trauma, but the available evidence does not yet support this diagnostic construct. More research is needed to better
account for the heterogeneity of PTSD and related problems (Resick et al., 2012)

**The need for screening child and parent**

This dissertation has shown that efficient screening tools, both parent and self-report, are available in order to identify children suffering from psychological trauma. It is generally known that self-report measures are important in the assessment of internalizing problems in children. Children are often quite aware of their internal state and feelings and because of the subjective nature of the symptoms children may be better informants of internalizing problems than their parents (Jensen et al., 1999; Kassam-Adams, Garcia-Espana, Miller, & Winston, 2006). Furthermore, previous research has shown that parents tend to underestimate their child’s posttraumatic response (Earls, Smith, Reich, & Jung, 1988; Yule & Williams, 1990). Some parents may be biased by their own psychological problems, or they may underestimate the chronic nature of posttraumatic stress symptoms and believe that their child will quickly adjust to a traumatic event (McFarlane, 1987; Yule & Williams, 1990). Despite the importance of self-report measures, gathering accurate information from children is sometimes quite complicated. Some children are unable or unwilling to report about their problems. Others, especially young children, lack cognitive abilities to reliably and validly report about their own symptoms (Jensen et al., 1999). In these situations, parental report can provide valuable information or enhance child self-report (Ghesquiere et al., 2008). In addition, parental reports can offer insights into the parent’s perceptions of their child’s emotional problems. Therapies for childhood PTSD are most effective when parents understand their child’s reactions and are closely involved in the treatment of their child (Stover, Hahn, Im, & Berkowitz, 2010).

Most effective treatments such as Trauma Focused-Cognitive Behavioral Therapy (TF-CBT; Cohen, Mannarino, & Deblinger, 2006; Diehle, Opmeer, Boer, Mannarino, & Lindauer 2014) include parent education and parent-child communication as essential elements in order to diminish posttraumatic stress symptoms in children. Although our results from Chapter 5 showed low to moderate concordance between the parent and child version of the CRIES-13, both informants may provide unique and useful information (Bird, Gould, & Staghezza, 1992; Jensen et al., 1999; Nauta et al., 2004). A greater amount of information regarding the child may lead to a more complete diagnostic picture (Grills & Ollendick, 2003).

**Implications and recommendations for clinical practice**

The findings presented in this dissertation have important implications for clinical practice. First of all, childhood trauma is a fairly common experience that may have severe and long lasting effects on a child’s mental well-being and development. Additionally, our results showed that children might regularly develop severe posttraumatic stress symptoms in the absence of a traumatic event as defined by the DSM-IV-TR (Chapter 2). It was also found that exposure to single trauma and child maltreatment may lead to different traumatic stress profiles, since the effects of child maltreatment tend to extend symptoms of PTSD (Chapter
Considering these findings, it is highly relevant that mental health providers are aware of the impact of traumatic exposure and pay attention to the diversity in trauma-related psychopathology. After all, awareness is a necessary condition to identify children suffering from psychological trauma.

Second, this research project has yielded easy-to-use screening tools that may be implemented by health providers in order to identify children suffering from psychological trauma. These screening tools have been designed for use by institutions that come into contact with traumatized children, such as youth welfare, child protective services, foster care, residential care, pediatrician’s offices, hospital emergency departments, and schools. Screening is a time- and cost efficient method that leads to increased detection of children in need of care. We would like to emphasize, however, that screening tools should not replace a full assessment or clinician’s judgment. Nevertheless, they can provide a preliminary indication of whether a child is suffering from psychological trauma.

In order to improve the standard level of care, we encourage healthcare providers to take steps to detect trauma-related symptoms and to refer children for further evaluation by specialized trauma experts. Institutions may implement small changes, at no or low costs, to increase awareness of the impact of trauma and to conceptualize child problems as possibly related to traumatic exposure. But above all, basic screening for trauma as routine part of contact can quickly identify many traumatized children.

Directions for future research

Although the studies in this dissertation have provided new insights with regard to the definition of a traumatic event and the psychological consequences of traumatic exposure in children, they have also raised new questions. Several recommendations for future research are presented below.

First of all, in Chapter 2 we examined whether the development of PTSD was related more to Criterion A1 or to Criterion A2. Data concerning these criteria were based on retrospective reports. Retrospective recollection of adverse experiences and the child’s subjective response during or shortly after the event might be influenced by several factors including the presence of posttraumatic stress symptoms at the time of recollection (Friedman et al., 2011). For this reason, prospective studies are required to demonstrate whether the conclusions are justified.

Second, future directions for research should include further psychometric evaluation of the screening tools in order to identify children suffering from psychological trauma. The studies presented in this dissertation focused on trauma-exposed children aged 7-18 years, which hampers generalization to younger children. Especially now, with the introduction of the new DSM-5 preschool subtype of PTSD for children ages six and younger, further research
is needed on the development and validation of parental screening tools for young children under the age of seven. Furthermore, the studies in this dissertation (except for Chapter 2) comprise a clinically referred sample of children with a reasonably high base-rate of PTSD. Given the fact that the positive predictive value (PPV) and the negative predictive value (NPV) are base-rate sensitive (Perrin et al., 2005), results may not be applicable to other samples with a lower base rate of PTSD. More research is required to determine whether similar results hold true in other populations. Moreover, Chapter 5 investigated the parental version of the CRIES-13. This study was limited by a relatively small sample size, which should lead to caution in interpreting the results. Psychometric properties of the parental version of the CRIES-13 need to be further examined in a larger sample of children.

Finally, further research needs to be conducted in order to better understand the implications of the changes to the DSM-5, including whether the changes do, in fact, lead to improvements in diagnostic accuracy. Based on initial analyses of the DSM-5 criteria, the prevalence rates of PTSD in adult populations are not expected to be greatly affected (Miller, 2013; Elhai, 2012; Kilpatrick, 2013). More research is needed to determine whether similar results hold true in child populations. In addition researchers must be aware of how the changes in the disorder will affect assessment. Measures to screen or assess PTSD are currently undergoing revision. Research will need to be continued in order to investigate the revised assessment measures.

**Final conclusion**

Traumatic exposure is a common experience among children and may have severe and long lasting effects on child’s mental well-being and development. This dissertation reported on children who have been exposed to one or more potentially traumatic events during their lives and focused on identifying those children suffering from psychological trauma. The results presented in this thesis expand current knowledge with regard to the definition of a traumatic event and the different traumatic stress profiles between single trauma and child maltreatment. It was found that children may regularly develop severe posttraumatic stress symptoms in the absence of a traumatic event as defined by the DSM-IV-TR and that the effects of child maltreatment tend to extend PTSD. Furthermore, this dissertation has yielded easy-to-use screening tools that can be implemented by health providers in order to identify children suffering from psychological trauma. These screening tools may help clinicians in assigning appropriate follow-up diagnostic and clinical care. Although it is recognized that there are a myriad of challenges and issues in the field of childhood trauma that are still in need of thorough investigation, it is hoped that this dissertation will raise increased awareness of the psychological impact of childhood trauma and will lead to enhanced screening as routine part of contact. In the end, this will help to improve the identification of children suffering from psychological trauma.
References


Chapter 7

