Chapter 1

General introduction
As children grow up, they are confronted with different types of dangers in everyday life. For example, electrical outlets, hot drinks, and stairs are dangerous for young children. Tree climbing, crossing a road, and alcohol or drugs are new dangers as children grow older. Adults can protect children by teaching them about their personal safety and to be wary of potential dangerous situations. Nevertheless, anyone, regardless of background, age, or gender, can be confronted with a potentially traumatic experience, such as a severe car accident, a fire disaster, an assault, sexual abuse, or a robbery as described above. Most often, there are no long-term psychological consequences to the traumatic exposure. Some children, however, may experience chronic effects that disrupt their ability to function normally or that fundamentally change their way of life. This dissertation reports on children who have been exposed to one or more potentially traumatic events during their lives and focuses on identifying those children suffering from psychological trauma. This introductory chapter will provide a description of the background of the dissertation and concludes with an outline of the studies that it contains.

Defining trauma

The word ‘trauma’ is derived from the Greek word for wound. In medicine, a physical trauma refers to a serious physical wound or injury, but the word ‘trauma’ is also used in psychology to refer to a psychological wound caused by one or more very frightening or distressing events. These frightening or distressing events are referred to as traumatic events. In the Diagnostic and Statistical Manual of Mental Disorders, 4th edition, Text Revision (DSM-IV-TR; American Psychiatric Association, 2000) a traumatic event is defined by two criteria. The first refers to an objective level of severity, known as Criterion A1. As stated in the DSM-IV-TR: “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, called Criterion A2, refers to a subjective level of severity: “The person’s response to the event must involve intense fear, helplessness, or horror” (American Psychiatric Association, 2000, p. 467). The DSM-IV-TR provides a non-exhaustive list of potentially traumatic events, including war exposure, physical assault, sexual violence, being kidnapped, terrorist attack, manmade or natural disasters, severe car accidents, or being diagnosed with a life-threatening illness. In addition, according to the DSM-IV-TR, sexually traumatic events in children may include experiences without threatened or actual violence or injury. The literature distinguishes between these potentially traumatic events into two main types of trauma: type I and type II (Terr, 1991). Type I trauma refers to a single traumatic event that most often happens suddenly and unexpectedly, such as a severe car accident or a robbery. Exposure to sustained or repeated traumatic experiences, such as exposure to war or prolonged domestic violence, is referred to as type II trauma.

Although the DSM is used worldwide as a key guide for diagnosing psychiatric disorders, the issue of whether an event has to satisfy the diagnostic Criteria A1 and A2 in order to consider an event as ‘traumatic’ is still being discussed (Briere & Scott, 2006). During this research project, a revision of the DSM-IV-TR was prepared by the American Psychiatric Association. This upcoming revision (DSM-5), inspired researchers to present their recommendations, aiming for a more accurate definition of a traumatic event. Preliminary draft revisions that have been proposed by the DSM-5 Work Groups suggest retaining Criterion A1 and eliminating Criterion A2. The rationale to eliminate Criterion A2 is that it is considered to be lacking added value as research showed that Criterion A2 added little to the ability of Criterion A1 to predict posttraumatic stress (Adler, Wright, Bliese, Eckford, & Hoge, 2008; Bedard-Gilligan & Zoellner, 2008; Friedman, Resick, Bryant, & Brewin, 2011). The above recommendations, however, are mainly based on research with adults or adolescents. Solid research with children is still missing.

Prevalence of traumatic exposure

Although in adult studies, life exposure to trauma is known to be quite frequent (50-90%; Breslau et al., 1998; Darves-Bornoz et al., 2008; Stein, Walker, Hazen, & Forde, 1997; de Vries & Olff, 2009), exposure prevalence rates among children and adolescents vary considerably, depending on several factors including the sample type, informant source, the type of instrument, and the definition of a traumatic event (Breslau, 2002; Fairbank & Fairbank, 2009). For example, a longitudinal study in the general population of western North Carolina found that, based on the first 4 annual waves, one in four children had experienced at least one extreme stressor by the age of 16 (Costello, Erkanli, Fairbank, & Angold, 2002). The most commonly reported extreme stressors were death of a loved one, witnessing a traumatic event, learning about a traumatic event, and sexual abuse. Based on 8 annual waves of this longitudinal study, more than two thirds of children were exposed to one or more extreme
stressors (Copeland, Keeler, Angold, & Costello, 2007). Similar rates of exposure were found among New York City school students (Hoven et al., 2005). More than 60% of the children in this study reported exposure to at least one traumatic event before the terrorist attacks on the World Trade Center. Higher rates were found in a study among urban African students (10th grade) in Cape Town and Nairobi, where more than 80% of the respondents reported traumatic exposure at some point in their lives (Seedat, Nyamai, Njenga, Vythilingum, & Stein, 2004). In the Netherlands, lower exposure rates were found in a sample of primary school children (7-13 years) in the general population. In this study 14% of the children reported having experienced a potentially traumatic event as defined by Criterion A1 (Alisic, Van der Schoot, Van Ginkel, & Kleber, 2008). Similar results were found in a community sample of German adolescents (14-24 years), where 21% of the participants reported exposure to one or more potentially traumatic events as defined by Criterion A1 (Perkonigg, Kessler, Storz, & Wittchen, 2000). Exposure rates in the latter study were even reduced to 17% when Criterion A2 is taken into account. Although the findings of these studies vary greatly, they all reveal that traumatic exposure is a fairly common experience among children and adolescents worldwide.

At home, Peter’s father tried to comfort him and his mother. They sat down on the couch and drank a cup of tea. His mother and father were talking about what happened, but Peter was quiet and still unable to talk. He felt tired and his father took him to bed. The next few weeks, Peter tried hard not to think about what happened, but at night he had difficulty falling asleep and suffered from frightening nightmares. Peter did not want to walk to the grocery store again for a long time. In addition, Peter had problems with being away from his mother.

Psychological impact

In the direct aftermath of a traumatic event, it is not unusual to feel some kind of physical, psychological, or emotional distress. Children can experience a range of normal stress reactions, such as anxiety, sleeping problems, angry outbursts or irritability. These normal stress reactions are often short term and generally not debilitating. Over time, most children will recover from these initial stress reactions using their own coping skills and the support and care of family and friends. Children in whom stress reactions do not fade away over time and where stress reactions interfere with their normal daily functioning, may be suffering from post traumatic stress disorder (PTSD). A recently conducted meta-analysis of PTSD prevalence rates estimated that approximately one in six children (16%) exposed to traumatic events went on to develop PTSD (Alisic et al., 2014). While any child may experience PTSD
differently, according to the DSM-IV-TR (American Psychiatric Association, 2000), this disorder is characterized by three main symptom clusters; 1) symptoms of re-experiencing, such as flashbacks or frightening dreams; 2) avoidant symptoms, for example staying away from people or places related to the traumatic event; and 3) symptoms of increased arousal, e.g. irritable behavior or exaggerated startle response. Symptoms of PTSD do not always surface right after the traumatic exposure, but sometimes it may take weeks, months or even years for symptoms to appear in some children. Anyhow, PTSD can be a debilitating disorder as it may influence a child’s mental well-being and may impact different domains of development including emotional, social, cognitive, or physical. During this research project, a revision of the DSM-IV-TR was being prepared. This revision includes several changes of the diagnostic criteria for PTSD and will be discussed in the general discussion of this dissertation (Chapter 7).

Although PTSD is probably the most frequent and devastating disorder that may occur after a traumatic event, it is often associated with increased rates of other psychiatric disorders. The simultaneous presence of one or more mental disorders in addition to the primary disorder is known as psychiatric comorbidity. Psychiatric disorders that often coexist with PTSD in children include mood disorders, behavioral disorders, and other anxiety disorders (Copeland et al., 2007; Famularo, Fenton, Kinscherff, & Augustyn, 1996; Hubbard, Realmuto, Northwood, & Masten, 1995). For example, after exposure to a very frightening situation, such as prolonged hospitalization or the death of a loved one, children may develop PTSD, but they may also become more clingy and afraid of being away from home or their primary caregiver. When this fear is excessive and appears to be irrational, the child may suffer from separation anxiety disorder. Other common reactions to traumatic exposure are negative thoughts or beliefs about oneself, such as “I’m a failure” or “I’m never safe”. These trauma-induced beliefs affect how children feel and can cause symptoms of depression. Knowledge and understanding of psychiatric comorbidity is highly relevant from a diagnostic and therapeutic point of view as comorbidity may complicate the diagnostic process and influence the course, prognosis and treatment of children (Burgic-Radmanovic & Burgic, 2010).

According to previous research, the psychological impact after chronic and interpersonal traumatization, such as child maltreatment, is more complex and extends the diagnosis of PTSD (Kilpatrick et al., 2003). The exposure to repeated harm, especially when inflicted by a caregiver, negatively affects children’s internal warning system, emotional and behavioral regulation systems, and their ability to recognize cues to danger (Cook, Blaustein, Spinazzola, & Van der Kolk, 2003). Whereas children exposed to single traumatic events show a narrow range of anxiety dominated symptoms (Sar, 2011), maltreated children are at great risk of developing severe, pervasive, and multifaceted problems, including externalizing problems (Pears, Kim, & Fisher, 2008), internalizing problems (Litrownik et al., 2005; Manly, Kim, Rogosch, & Cicchetti, 2001), and attachment disturbances (Zeanah et al., 2004). Previous attempts to outline different profiles of traumatic stress symptomatology after child maltreatment and single traumatic events were often unsatisfying, as the types were not clearly defined (e.g.,
Identifying children in need of care

Although PTSD is a distressing and disturbing disorder that may cause increased use of health care, it often goes undiagnosed (American Academy of Child and Adolescent Psychiatry, 1998; Miele & O’Brien, 2010). Most children will not disclose trauma histories and trauma-related problems spontaneously unless they are explicitly asked about in a supportive and non-judgmental setting (Briere, 2006). Direct questions about traumatic exposure and trauma-related symptoms as a routine part of contact can help identify children suffering from psychological trauma (Weinstein, Staffelbach, & Biaggio, 2000). Unfortunately, not all health care providers in the Netherlands routinely screen for trauma exposure or trauma-related symptoms. In fact, there are several barriers and difficulties that health care providers are facing. First, many health care providers are not aware of the impact of traumatic exposure on child’s mental well-being and their development. Additionally, the diagnosis of PTSD is unfamiliar to many health care providers. Awareness of the impact of traumatic exposure and knowledge of PTSD is a necessary condition to identify children suffering from psychological trauma. Second, many health care providers have little experience in bringing up the subject of trauma. They might find it difficult to ask about trauma history and related stress reaction due to a lack of skills. Third, all health care settings are struggling with cost constraints. Consequently, there is a decreasing amount of time available for each individual.
child and limited opportunities to bring up subjects that do not appear to be directly related to presenting health complaints. Finally, the use of screening tools is a cost and time efficient method that leads to increased detection of trauma victims. However, there is a lack of reliable and valid screening tools to identify children suffering from psychological trauma.

Due to these obstacles, many children suffering from psychological trauma fall through the cracks in the health care system (National Child Traumatic Stress Network, 2004). If health care providers fail to look through a trauma lens and fail to conceptualize child problems as possibly related to traumatic exposure, children suffering from psychological trauma may never be identified as trauma victims (Van der Kolk, 1996). In fact, PTSD and other trauma related problems are often misdiagnosed. A misdiagnosis means a child will not receive appropriate therapy. Inadequate treatment can lead to treatment failure, drop-out, unnecessary treatment, and persistent mental health problems. The good news is that PTSD is highly treatable when diagnosed early. Evidence-based treatment e.g. Eye Movement Desensitization and Reprocessing (EMDR; Shapiro, 2001) and Trauma-Focused Cognitive Behavioral Therapy (TF-CBT; Cohen, Mannarino, & Deblinger, 2006) have shown to be remarkably effective (Cary & McMillen, 2012; De Roos et al., 2011; Diehle, Opmeer, Boer, Mannarino, & Lindauer, 2014). Therefore, early identification of children suffering from psychological trauma is crucial to prevent long-term developmental consequences and to offer them appropriate and timely treatment.

**Aim and structure of this dissertation**

To summarize the above a) traumatic exposure is a common experience among children and adolescents that may influence a child’s mental well-being and development; and b) psychological trauma in children is often overlooked even by mental health professionals. The aim of this dissertation is two-fold. First, to enhance our knowledge with regard to the definition of a traumatic event and the psychological consequences of traumatic exposure in children. Second, 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 studies described in this dissertation, except for Chapter 2, are part of a large multi-center study conducted by the Department of Child and Adolescents Psychiatry of the Academic Medical Center (AMC)/de Bascule in Amsterdam in collaboration with the Psychotrauma Center for Children and Youth in Utrecht, the Children’s and Youth Trauma Center in Haarlem, the Psychotrauma Center for Children and Youth in Leiden, and the Department of Youth Welfare in Amsterdam, Leiden, and Haarlem. The studies comprise a large, clinically referred sample of children exposed to one or more traumatic events during their lives. Chapter 2 reports on a large sample of school children, aged 8-18 years.
**General outline**

In Chapter 2 we address the definition of a traumatic event and evaluate the DSM-Criteria A1 and A2 in predicting posttraumatic stress in children. In particular, we question whether the development of posttraumatic stress was related more to the objective level of severity of an event (Criterion A1) or to the child’s subjective experiences (Criterion A2).

Chapter 3 outlines different profiles of traumatic stress symptomatology after child maltreatment and single traumatic events. We hypothesize that the criteria for PTSD more accurately reflect the effects of single trauma than the effects of child maltreatment. In addition, we assume that traumatic stress symptomatology after child maltreatment is more diverse compared to children exposed to a single trauma.

In Chapter 4 we evaluate the Children's Revised Impact of Event Scale (CRIES), which is a brief self-report measure designed to screen children for PTSD. The main purpose of this study is to examine the reliability and validity of both the 8-item version (CRIES-8) and the 13-item version (CRIES-13) and to determine the best cutoff scores.

It is generally known, that in the assessment of child’s posttraumatic stress, both child and parent reports are of great importance to guide proper diagnosis and care. Given that the CRIES is currently limited to child self-report, Chapter 5 concentrates on the development of a parental version of the CRIES-13 and investigates its psychometric properties as well as its correlation with the child version.

While Chapters 4 and 5 focus on posttraumatic stress, in Chapter 6 we emphasize the importance of psychiatric comorbidity. We describe the development of the CRIES-Plus, i.e. the CRIES-13 in combination with twelve additional items related to the most common comorbid disorders. We examine the screening accuracy of the CRIES-Plus in order to detect PTSD and psychiatric comorbidity in children and adolescents.

Finally, Chapter 7 presents a summary and general discussion of the main results found in the previous chapters. Chapter 8 provides a summary in Dutch.
References


desensitisation and reprocessing (EMDR) in disaster-exposed children. European Journal of Psychotraumatology, 2. doi:10.3402/ejpt.v2i0.5694


