

**Parental emotional reactions and their role in therapy for  
traumatized children and adolescents**

A Norwegian treatment study with traumatized children and  
adolescents

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## Summary

*Background.* A large number of children and adolescents experience traumatic events every year (Copeland, Keeler, Angold, & Costello, 2007; Finkelhor & Jones, 2012; McLaughlin et al., 2013), and left untreated, such events can negatively affect their psychological and social well-being (Costello, Erkanli, Fairbank, & Angold, 2002; Fairbank & Fairbank, 2009). Gaining more knowledge about how to best treat children who have been exposed to trauma and about what role parents may play in this therapy is therefore essential. Many studies have emphasized the importance of parental functioning and support in the aftermath of traumatic events (Trickey, Siddaway, Meiser-Stedman, Serpell, & Field, 2012). However, parents frequently have their own reactions when their child has been exposed to trauma (Elliot & Carnes, 2001; Lewin & Bergin, 2001; Morris & Delahanty, 2012), and such reactions may in turn influence their child's adjustment (Meiser-Stedman, Yule, Dalgleish, Smith, & Glucksman, 2006; Zatzick et al., 2006).

The overall aim of this dissertation was to gain a better understanding of parents' emotional reactions to their child's trauma and what role their reactions play in children's treatment outcomes. The data were derived from an effectiveness study investigating the effect of Trauma-Focused Cognitive Behavioral Therapy (TF-CBT) compared with the therapy usually given (TAU) in ordinary community child mental health clinics, which was also the focus of one of the papers of the current dissertation. The next goal of this dissertation was to evaluate an assessment scale that measures parents' emotional reactions to their child's traumatic event, the Parent Emotional Reaction Questionnaire (PERQ), and to examine whether the degree of parents' different emotional reactions covaried with the type of trauma that the child had experienced. Moreover, the aim was to examine the extent to which parents benefitted from the therapy provided to their child and to investigate whether changes in parental reactions and depression had a mediating role in the treatment difference

between TF-CBT and TAU on children's posttraumatic stress (PTS) symptoms and depression.

*Methods:* The total sample in the source study comprised 156 children and adolescents and 135 of their caregivers, all of whom were participating in a randomized controlled study comparing TF-CBT and TAU. All participants were recruited from their general practitioner or Child Protective Services, and they were given therapy in the community mental health clinics to which they belonged. Parents' emotional reactions and depressive symptoms were assessed by self-report questionnaires, whereas children's symptoms were assessed by using both a clinical diagnostic interview and self-report questionnaires. The analytical methods that were applied in this dissertation were exploratory factor analysis, correlation analyses, paired sample t-tests, multivariate analysis of variance (MANOVA), mixed-effects analyses, and mediation analyses.

*Results:* The results from the exploratory factor analysis showed that parents' emotional reactions, as measured by the PERQ, could be divided into three subcategories: parental distress, parental shame, and parental guilt (Paper 1). Parents of children who were exposed to all types of traumatic events reported relatively high degrees of distress, whereas parents' feelings of shame and guilt were highest among parents of children who were exposed to or witnesses of domestic violence (Paper 2). When investigating the effect of TF-CBT compared with TAU, we found significant differences between the two therapy conditions in terms of PTS symptoms and their influence on daily functioning, depressive symptoms, and child mental health problems (Paper 3). Although parents' emotional reactions and depression also decreased from the pretreatment to posttreatment period, no significant effect of therapy group was found in this regard. Furthermore, the change in parental variables did significantly mediate the therapy effect of TF-CBT above that of TAU on child depressive symptoms, but no mediating effect on child PTS symptoms was found (Paper 4).

*Conclusions:* Parents reported experiencing different types of emotional reactions to their child's traumatic events, and these reactions seemed to depend on the type of trauma experienced by the child. Furthermore, parental emotional reactions and depressive symptoms were reduced during the therapy process in both treatment groups, and this reduction was found to mediate the effect of the treatment on child depressive symptoms. Lastly, TF-CBT was effective in treating child trauma related problems in Norwegian community mental health clinics. However, more studies are needed to identify the mechanisms underlying this effectiveness.

### **List of Papers**

- I. Holt, T., Cohen, J. A., & Mannarino, A. Factor Structure and Discriminant Validity of the Parent Emotional Reaction Questionnaire (PERQ). (submitted)
- II. Holt, T., Cohen, J. A., Mannarino, A., & Jensen, T. K. (in press). Parental Emotional Response to Children's Traumas. *Journal of Aggression, Maltreatment & Trauma*.
- III. Jensen, T. K., Holt, T., Ormhaug, S. M., Egeland, K., Granly, L., Hoaas, L. C., Hukkelberg, S. S., Indregard, T., Stormyren, S. D., Wentzel-Larsen, T. (2014). A Randomized Effectiveness Study Comparing Trauma-Focused Cognitive Behavioral Therapy with Therapy as Usual for Youth. *Journal of Clinical Child & Adolescent Psychology*, 43(3), 356-69. doi: 10.1080/15374416.2013.822307
- IV. Holt, T., Jensen, T. K., & Wentzel-Larsen, T. (2014). The change and the mediating role of parental emotional reactions and depression in the treatment of traumatized youth: results from a randomized controlled study. *Child and Adolescent Psychiatry and Mental Health*, 8(11), 1-13. doi: 10.1186/1753-2000-8-



## **1 Introduction**

Understandably, caregivers are often overwhelmed by emotions, stress, and worries when their child experiences traumatizing events. Parents may particularly face difficulties if their child develops mental health problems that lead to behavioral and emotional changes that they are not accustomed to deal with. Their normal parenting skills may not be sufficient to manage these changes, and they may feel helpless. Parents' own emotional reactions and worries may also affect their parenting, perhaps even more so if parents have been exposed to trauma themselves, either alone or together with the child. In this case, they may develop their own posttrauma reactions, which can affect how they relate to their child. The current dissertation concerns parental emotional reactions in the aftermath of traumatizing events and the effect of such reactions on child outcomes in child trauma therapy.

### **1.1 The Norwegian TF-CBT study**

The data in the current dissertation were derived from an effectiveness study in which Trauma-Focused Cognitive Behavioral Therapy (TF-CBT) was compared with the therapy usually given (TAU) in eight child and adolescent mental health clinics located in different areas of Norway. The main objective of the source study was to investigate the short- and long-term effects of TF-CBT. The study was designed as an effectiveness study, meaning that the therapy was provided in ordinary child and adolescent community mental health clinics by therapists with the caseloads and challenges that are often seen in such clinics. Different therapists, including 26 TF-CBT therapists and 45 TAU therapists, delivered the two therapy conditions.

The sample consisted of children and adolescents between 10 and 18 years old who had developed significant posttraumatic stress (PTS) symptoms after experiencing one or more traumatic events. A randomized controlled design was used in which eligible children were randomly allocated to receive either TF-CBT or TAU.

TF-CBT is a component based therapy model that was developed by Judith Cohen, Anthony Mannarino, and Esther Deblinger (2006) to help traumatized children and adolescents. The therapy model builds on principles from cognitive, behavioral, interpersonal, and family therapy as well as trauma-specific interventions. It is a short-term intervention, consisting of 12-15 sessions, and comprises components that together make up the acronym PRACTICE. The first four components are skill-building components: Psychoeducation, Relaxation, Affective modulation skills, and learning Cognitive coping skills. The next components form the processing part of the treatment model: exposure through the Trauma narrative, In vivo mastery of trauma reminders, and Cognitive processing and restructuring. The last component relates to consolidation, during which the therapist helps the child or adolescent to Enhance safety and works on future development (J. A. Cohen, Mannarino, & Deblinger, 2006).

TF-CBT has been shown to effectively treat trauma-related symptoms in children and adolescents who have been exposed to different types of traumatic events across several randomized controlled trials (J. A. Cohen, Deblinger, Mannarino, & Steer, 2004; J. A. Cohen, Mannarino, & Iyengar, 2011; J. A. Cohen, Mannarino, & Staron, 2006; Jaycox et al., 2010). Follow-up studies have further shown that the positive treatment gains are maintained (J. A. Cohen, Mannarino, & Knudsen, 2005; Deblinger, Mannarino, Cohen, & Steer, 2006). However, no studies have documented the effect of TF-CBT in ordinary community child and adolescent mental health clinics—or outside the United States. This paved the way for the primary aim of the source study, and for the research questions presented in Paper 3 of the current dissertation; investigating the effectiveness of TF-CBT compared with TAU in eight ordinary child and adolescent mental health clinics in Norway. It was also part of the source study's original research questions to investigate the role of parents' emotional reactions, preparing the ground for this dissertation's particular focus on parents.

## 1.2 Child Trauma Reactions

According to the 4th edition of The Diagnostic and Statistical Manual of Mental Disorders (DSM–IV, American Psychiatric Association, 1994) a traumatic event is:

Exposure to an extreme traumatic stressor involving direct personal experience of an event that involves actual or threatened death or serious injury, or other threat to one's physical integrity; or witnessing an event that involves death, injury, or a threat to the physical integrity of another person; or learning about unexpected or violent death, serious harm, or threat of death or injury experienced by a family member or other close associate (DSM-IV- Criterion A1, American Psychiatric Association, 1994).

The new diagnostic criteria in DSM-5 enhance this definition by drawing an even clearer line regarding what constitutes a traumatic event. Sexual assault, for instance, is specifically included in the definition (American Psychiatric Association, 2013). When the nature of the traumatic events is marked by multiple, chronic, adverse, prolonged, and interpersonal experiences, such events may be referred to as complex traumas (Cloitre et al, 2009; Van der Kolk, 2005). Children's traumatic experiences related to intrafamilial sexual and physical abuse are included in this category (Cook et al., 2005; Van der Kolk, 2005). The child's fear and helplessness may be particularly overwhelming in such cases because the foundation for developing and enhancing normal developmental functions is lacking (Green, Stanley, Smith, & Goldwyn, 2000; Osofsky, 1995; Van der Kolk, 2005). Traumas caused by caregivers also have the unfortunate consequences of undermining parents as protectors and sources of support, and the child is likely to be confused when the parent is simultaneously a source of safety and attachment and a source of danger (Hesse & Main, 2006; Lieberman & Van Horn, 2005).

Nearly two-thirds of adolescents in the United States have reported having experienced at least one traumatic incident by the age of 17 (McLaughlin et al., 2013). A high prevalence of

potentially traumatic events has also been found in Norwegian contexts (Mossige & Stefansen, 2007; Schou, Dyb, & Graff-Iversen 2007). For instance, a Norwegian study involving 7,033 18 to 19 year olds found that 20% of the girls and 14% of the boys had experienced at least one violent episode of physical abuse by a parent, and 10% of the youth reported witnessing at least one violent episode between parents.

The most commonly studied psychological distress reactions after exposure to traumatic events are PTS reactions. In the DSM-IV<sup>1</sup> such reactions include symptoms of re-experiencing, avoidance, and hyperarousal (4th ed.; DSM-IV; American Psychiatric Association, 1994), all of which have been reported by children who have been exposed to different types of traumatic events (Connolly, McClowry, Hayman, Mahony, & Artman, 2004; Goenjian et al., 2001; Kilpatrick et al., 2003; Stallard, Velleman, & Baldwin, 2001). Anxiety reactions, depressive reactions (Ackerman, Newton, McPherson, Jones, & Dykman, 1998), and behavioral problems (Gilbert et al., 2009) are also frequently reported posttrauma. In addition, the traumatic experiences may influence the child or adolescent's functioning on multiple domains such as emotionally, cognitively and behaviorally (Cicchetti & Toth, 2005; Ford, 2009; Gunnar & Quevedo, 2007; Van der Kolk, 2005). Emotionally, children may develop difficulties with anger modulation. Cognitively, difficulties with attention, concentration, and learning are common. Behaviorally, problems with aggression and, later, substance abuse may develop. Interpersonally, problems with trust and intimacy are common, and physically, somatization and delayed sensorimotor development may occur (Corso, Edwards, Fang, & Mercy, 2008). The traumatic experiences may also affect the child's self-concept and may contribute to an alteration of the child or adolescent's fundamental beliefs and systems of meaning (Van der Kolk, 1998). In addition, studies have found changes in

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<sup>1</sup> In this study, the DSM-IV criteria of posttraumatic stress disorder (PTSD) are used, as these criteria were the current DSM criteria when the study was conducted.

neurobiological processes such as changes in brain structures and hormone balances after exposure to trauma (Amstadter et al., 2011; Schore, 2009).

Posttrauma reactions may also have different expressions in various developmental phases. For instance, preschool children make less use of verbalization in communicating and expressing their problems. In addition, their way of thinking is more concrete, and symptoms such as aggressive outbursts, somatization, separation anxiety, and loss of previously acquired developmental skills are frequent (Norris et al., 2002; Scheeringa, Zeanah, Drell, & Larrieu, 1995). Among school-age children, on the other hand, symptoms such as insomnia, school avoidance, and academic difficulties are often prominent. In the period of adolescence, developmental tasks such as identity and autonomy building may complicate the adolescent's posttrauma coping, and higher rates of depressive symptoms and suicidal thoughts have been reported among children of this age group than among children of younger age groups (Yule, 2001). Furthermore, difficulty falling asleep, self-destructive behavior, and oppositional acting-out behavior are often observed in adolescents after traumatizing events (Kerig, Fedorowicz, Brown, & Warren, 2000).

### **1.3 Parenting after Trauma – Theoretical Models and Perspectives**

Numerous studies have shown how important parents are for a child's recovery after the child has experienced traumatic events. Parental reactions are often associated with those of the child (Alisic, Jongmans, van Wesel & Kleber, 2011; Chemtob et al., 2010; Scheeringa & Zeanah, 2001; Wickrama & Kaspar, 2007), and parental support and functioning seem to be an important buffer that helps to minimize the child's symptoms and reactions (E. Cohen, 2009; Laor, Wolmer, & Cohen, 2001; Lynskey & Fergusson, 1997; Thabet, Ibraheem, Shivram, Winter, & Vostains, 2009; Trickey et al., 2012). However, only a few studies have focused on identifying and delineating the process through which the association between parental reactions, parenting, and child posttrauma adjustment occur (Appleyard & Osofsky,

2003). For instance, because of anxiety problems in parents following traumas, parents' may be unable to listen to their child's problems, perhaps because the parents want to protect themselves from further anxiety (Appleyard & Osofsky, 2003; Groves & Zuckerman, 1997). Moreover, mothers with PTSD tend to be impulsive in their actions toward their child's distress (Chemtob & Carlson, 2004). Studies focusing on general stress have shown that stress negatively influences caregivers' capacity to parent (Deater-Deckard, 1998; Pianta & Egeland, 1990). Stress has also been associated with less positive affective relationships between parents and children (Belsky, Woodworth, & Crnic, 1996). Some studies have also focused more specifically on *parenting strategies* after a child has experienced trauma. For example, one study found that guilt-provoking parental styles may increase the risk of PTS symptoms in children (Deblinger, Steer, & Lippmann, 1999), and another study found that parents described as warm, positive, and supportive toward their child are more likely to have children with better posttrauma adjustment than parents described as negative and nonsupportive (Punamäki, Qouta, & El Sarraj, 1997; Valentino, Berkowitz, & Stover, 2010). Moreover, when parents are resistant toward their child posttrauma, the risk that their child expresses depressive symptoms increases (Deblinger et al., 1999). However, there is still little empirical knowledge about parenting strategies and how different parenting styles affect children after trauma (Alisic, Boeije, Jongmans, & Kleber, 2011; Appleyard & Osofsky, 2003). As such, the model of Scheeringa and Zeanah is a valuable contribution to the field.

**1.3.1 The model of Scheeringa and Zeanah.** Scheeringa and Zeanah's (2001) model of parenting styles may help us to better understand parental strategies after children's trauma. This model takes into account three styles of parenting behavior that may reinforce negative reactions in children after potentially traumatic events (Scheeringa & Zeanah, 2001). The first style describes withdrawn parents. Because of their own stress and burdens, these parents cannot support or be available to the child. Instead, they withdraw from talking about or being

reminded of their child's trauma because doing so will evoke even more stress. The second style refers to the parents who become overprotective owing to their fear that their child will experience a new trauma. Indirectly, they are not allowing the child to develop the autonomy that is necessary to deal with everyday life. Instead, the child is caught in the protectiveness of his or her parents, which may reinforce the child's difficulties. The third style reflects the behavioral pattern of fearfulness in parents who cannot stop asking questions about and discussing the trauma with the child, which also may result in increased stress for the child. One can also imagine other negative parental strategies posttrauma. For instance, some parents may become excessively compliant because they feel sorry for their child and may attempt to comfort and compensate for what the child has gone through. Other parents may use guilt-inducing strategies to manage their child's behavioral problems.

Alisic, Boeije, et al. (2011) have proposed an extension of Scheeringa and Zeanah's model. This extended model also provides us with an extended framework for understanding parenting and its possible effects on children after trauma and brings us a step closer to understanding posttrauma parenting. In this model Alisic, Boeije, et al. shift the focus from parents' unhelpful parenting strategies to parents' helpful strategies by interviewing the parents of children who had been exposed to a single traumatic event. The main theme concerning helpful parenting that emerged from these interviews was responsiveness. Responsive parenting means being attentive to and then acting upon the child's needs (Alisic, Boeije, et al., 2011). However, the ability to be responsive has been shown to depend on parents' well-being and levels of distress (Hafstad, Haavind, & Jensen, 2011). This finding again highlights the need to consider parents' emotional reactions as determining mechanisms in parenting. The model as presented by Scheeringa and Zeanah (2001) does not provide explanations for how the different parental styles are determined or specify the factors influencing parents' well-being. Parenting after trauma will likely be better understood if it is

viewed in relation to contextual mechanisms. An illustration of Alisic, Boeije and colleagues' (2011) extension of Scheeringa and Zeanah's original model (2001) is shown below (Figure 1).

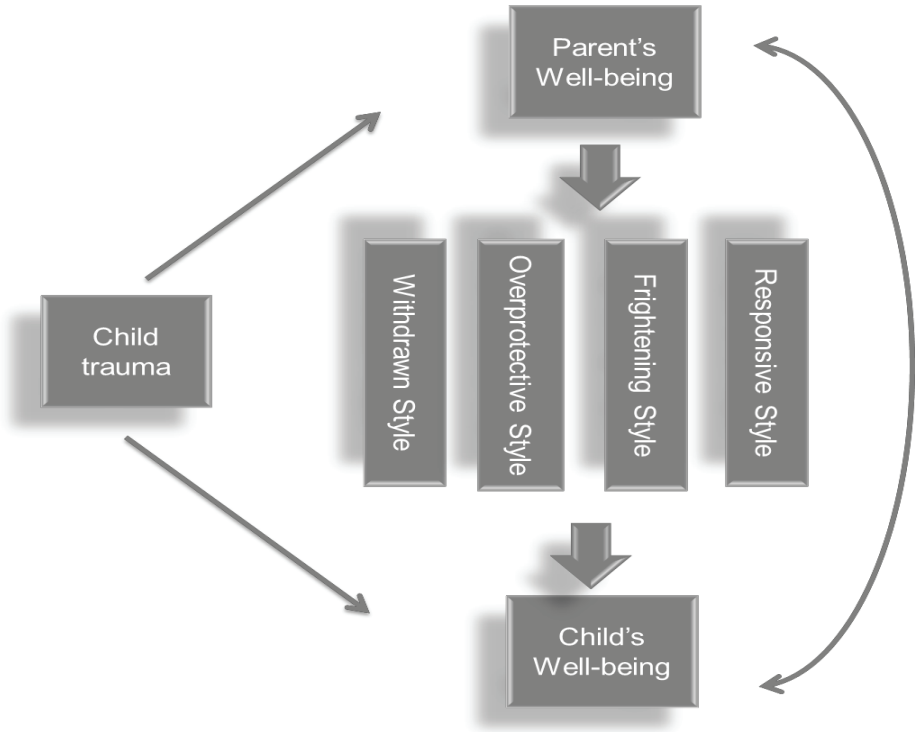


Figure 1. Alisic, Boeije and colleagues et al.'s (2011) Extension of Scheeringa and Zeanah's Model (2001)

**1.3.2 Attachment and emotion regulation.** Attachment is another important concept for understanding parents' emotional reactions and the parent-child relationship after



traumatic events. When a child is attached to someone, “he is strongly disposed to seek proximity to and contact with a specific figure and to do so in certain situations, notably when he is frightened, sick or ill” (Bowlby, 1969, p. 371). A distinction exists between attachment and attachment behavior. Whereas attachment is characterized by a bond or continuing relationship between two or more persons, the attachment behavior is the behavior through which such a bond is formed and sustained (Ainsworth, Blehar, Waters, & Wall, 1978). Bowlby (1969) described the child’s need for attachment as a fundamental and basic evolutionary need. He further explained that a control system regulates the attachment behavior in that persons of attachment are kept within limits of distance and availability. This system ensures that the caregiver feels and experiences an intuitive desire to comfort and protect the child (Bowlby, 1969). Pynoos (1999, p. 1543) used the term “protective shield” to describe the protection that parents and others provide for a child. By highlighting the parental role as being protective and the child’s role as being protected, both Bowlby (1969) and Pynoos (1999) have described a fundamental aspect of the relationship between parents and their children. Within this framework, it is reasonable to assume that when trauma occurs, feelings of failure may be evoked within the parents, while feelings of betrayal may be evoked within the child. The child’s trust in his or her parents’ protection and the child’s desire to seek parental support and comfort may be weakened, evoking further helplessness in the parents (Busch & Lieberman, 2007). The PTS reactions in both the child and the parents may also unbalance their relationship (Busch & Lieberman, 20007). For instance, parents may be unable to reassure the child with safety when they are afraid themselves, and children may withdraw or become aggressive toward their parents owing to their own trauma-related problems. In this way, the traumatic experiences of the child may influence the attachment bond between the child and his or her parents.

Ainsworth et al. (1978) emphasized that caregivers need to create a “safe base” in order to develop a secure attachment relationship with their child. The safe base is created by caregivers’ ability to be sensitive to their child (Ainsworth et al., 1978). Being sensitive entails being available, reliable, and predictable for the child (Ainsworth et al, 1978) and having the opportunity to provide security-inducing and responsive care (Broberg, 2000). One way of being a sensitive and responsive parent is to help one’s child regulate his or her emotions. Emotion regulation refers to:

The process of initiating, avoiding, inhibiting, maintaining, or modulating the occurrence, form, intensity, or duration of internal feeling states, emotion-related physiological, attentional processes, motivational states, and/or the behavioral concomitants of emotion in the service of accomplishing affect-related biological or social adaptation or achieving individual goals (Eisenberg & Spinrad, 2004, p. 338).

Salmon and Bryant (2002) noted that inadequate emotion regulation is an important developmental factor that influences the development and maintenance of PTS reactions in children and adolescents. Parents may help regulate their child’s emotions by being attentive to the distress experienced by their child, comforting their child, providing cues that help their child to understand his or her feelings, naming and acknowledging their child’s emotions, and helping their child to create narratives about his or her experiences and feelings (Eisenberg, Cumberland, & Spinrad, 1998). Children often model emotions and learn about the process of regulating their emotions by observing their parents. The process of looking to others for information about how to respond, think, or feel about an event or a person in an uncertain situation is labeled social referencing (Eisenberg et al., 1998). After traumatic events, this process allows the child to access internal pictures of parental emotions, determine the affective meaning of such emotions, and regulate his or her emotions and behaviors accordingly (Barrett & Campos, 1987). Children may carry these pictures with them into

adolescence and adulthood. Therefore, although the regulation of emotions changes from a mainly external process into a mainly internal process as the child grows older, his or her early experiences continue to affect him or her later in life.

How parents manage to help their child to regulate his or her emotions and whether they manage to react sensitively to their child's needs may influence the attachment bond that develops between the child and his or her caregiver. When faced with sensitive parenting, the child may have a greater chance to develop a secure attachment style, which, in turn, may prevent further posttrauma difficulties (Broberg, 2001; Bunce & Rickards, 2004). According to Bowlby (1969), a child's early experiences of attachment work as an inner model that influences that child's expectations in the future. When the child's need for a healthy attachment is met early on and a secure attachment bond between the child and the caregiver has developed, the child is more likely to rely on and to trust other individuals' availability, which facilitates the child's ability to seek future assistance and support when they experience frightening events (Bowlby, 1969; Busch & Lieberman, 2007). In this way, the child bears the secure attachment with him or her as a buffer against developing difficulties posttrauma. An insecure attachment, on the other hand, will increase the risk of the child being vulnerable in the face of overwhelming experiences (Busch & Lieberman, 2007). In addition, a healthy attachment bond with caregivers provides the child with a sense of emotional security (O'Connor & Scott, 2007). Previous studies have also shown that healthy attachment between parents and children is related to many aspects of adaptive behavior in adolescence (Marvin & Britner, 2008; Rice, 1990). In this way, attachment theory not only is important for understanding children's development and posttrauma coping in the early years of life but may also provide us with a background for understanding trauma reactions and how parents can help their children in the aftermath of traumatic events for all ages.

## 1.4 Parental Emotional Reactions

The entire family is often affected when the child or adolescent experiences a traumatizing event, and caregivers may have their own reactions and challenges regarding the child's trauma. Indeed, empirical studies have shown that parents report and experience all types of distress and psychological symptoms themselves as a result of their child's exposure to trauma (Davies, 1995; Elliot & Carnes, 2001; Newberger, Gary, Wateriaux, & Newberger, 1999) and that these reactions often persist over a long period of time (Davies, 1995; Kelley, 1990).

Nevertheless, how the parents react may depend on the traumatic event that their child has experienced and their relationship to—or involvement in—the event. One may assume that five different parental positions are possible. The first position concerns parents who are unaware of the trauma and who do not learn about the event until after it happened. Such a position may occur when a child has experienced trauma that he or she wants to hide from his or her parents, such as sexual abuse either outside or inside the family context. The second position concerns parents who have experienced a trauma together with their child, such as a car accident or natural disaster. The third position takes place when the parent is aware of the trauma, for instance, when the child has been exposed to violence by someone in the family. In such circumstances, the parents also know the perpetrator but are not exposed to the trauma themselves. The fourth position concerns parents who are subject to trauma that is witnessed by their child, which is often the case with domestic violence. The fifth position arises when the parents themselves are the perpetrator and cause of their child's trauma. Only nonoffending parents were included in the samples that were used in the two first papers of this dissertation, so although parents in the fifth position are important, this scenario is not discussed further.

The different degrees of parental involvement in the trauma may instigate different emotional reactions. Parents will most likely be worried about their child in all cases. They may be afraid that their child will experience future trauma, and they may themselves experience sadness when they think about what their child has gone through. Guilt, frustration, and helplessness may also be prevalent feelings, independent of the parent's involvement in and awareness of the traumatic event. This assumption rests both on attachment theory (Bowlby, 1969) and Pynoos' perspective regarding caregivers' role (Pynoos et al., 1999), which proposes that caregivers' primary role is to protect their children (Bowlby, 1969; Pynoos et al., 1999); thus, when parents are unable to fulfill their primary role, it is conceivable that they may end up with feelings of failure, helplessness, and guilt. Moreover, according to stress theory, psychological stress is particularly likely to develop when a person perceives an imbalance or mismatch between the threat represented by a stressor and the personal resources for coping with it (Lazarus & Folkman, 1984). In other words, parents are more likely to experience stress when they perceive the trauma of the child to exceed their capacity to adapt. It is reasonable to assume that parents may experience this mismatch independent of the type of trauma that their child has experienced. Among other factors considered to be predominant contributors to stress is a lack of control, indicating that when individuals believe that they cannot predict, modify, or end an unpleasant event, they are more likely to experience the event as being stressful (Geer & Maisel, 1972). Parents of a child who has been exposed to any type of traumatic event will likely perceive a lack of control, particularly if they feel that they were unable to predict or end the traumatic event.

When caregivers are initially unaware of what has happened to their child (cf. position 1), being confronted with knowledge of the trauma after the traumatic event can evoke a shock. The suddenness with which the event overtakes a person may influence how stressful it is, because its suddenness may make mobilizing adequate coping mechanisms difficult for

parents (Gray, 1987). Later, parents may experience anger, directed, for example, toward the perpetrator for hurting their child or the “authorities” for not punishing the perpetrator. Some studies have documented that parents can develop PTS symptoms when they become aware that their child has been exposed to sexual abuse (Famularo, Fenton, Kinscherff, Ayoub, & Barrum, 1994). In addition, parents have reported elevated levels of depressive and anxiety symptoms (Lewin & Bergin, 2001) as well as symptoms of psychological distress (Deblinger, Hathaway, Lippmann, & Steer, 1993; Newberger et al., 1999) when they are faced with the knowledge that their child has experienced traumatic events.

When parents have experienced a trauma together with their child (cf. position 2), empirical studies have shown that parents may develop PTS symptoms related to their own exposure. For example, PTS symptoms have been found in parents who experienced Hurricane Katrina (Scheeringa & Zeanah, 2008) and in Norwegian parents who experienced the tsunami in Southeast Asia together with their children (Dyb, Jensen, & Nygaard, 2011).

In cases where the parents are aware of the trauma and the identity of the perpetrator, because the trauma happened in an intrafamilial context (cf. position 3), the parents may likely have been able to protect the child in some situations, for instance, by removing the child from the violent or traumatic situation. Thus, feelings of guilt may be particularly strong in these cases. In addition, parents will likely experience shame related to fear that other persons, either inside or outside the family, may be judgmental about what happened to the child. Furthermore, when caregivers themselves are exposed to intrafamilial trauma (cf. position 4), they may develop problems related to their own trauma exposure (L. R. Cohen, Hien, & Batchelder, 2008; Dutton, 2000), with the child’s continuing reactions serving to remind them of their own experiences. Such parents may also struggle with uncertainty and ambivalence related to their own and their child’s close relationship to the perpetrator.

Although some studies have focused on parents' stress and mental health symptoms after their child has experienced traumatic events, these more diverse emotional reactions in parents have received little research attention. Only a few studies have focused on the broad spectrum of emotional reactions in the parents (Deblinger et al., 1993). Validated instruments that can capture these types of reactions are needed to facilitate new research within this area, but to date, only one instrument, the Parent Emotional Reaction Questionnaire (PERQ), has been developed for this purpose. However, the psychometric properties of the questionnaire are poorly understood, and no studies have investigated the underlying factor structure or the discriminant validity of the instrument. Such investigations are necessary to be able to better understand the emotions experienced by parents of children who have been exposed to trauma.

Furthermore, research in the field has not yet been able to identify the different emotional reactions as evolving in the context of and in relation to what type of trauma a child experiences. We need to better understand these relationships in order to comprehend the barriers and problems that caregivers may face when they are assisting their child after a traumatic experience. As such, the PERQ may provide clinicians with a helpful tool to identify emotional reactions in parents. Accordingly, the focus of the first two papers of the current dissertation (Paper 1 and Paper 2) was to investigate and better understand the emotional reactions in parents after their child has been exposed to traumatizing events. More specifically, the first paper was concerned with parents' own emotional reactions and with improving an instrument that capture these emotions, and the second paper examined how these emotions were related to the different types of trauma that a child has experienced.

## **1.5 Treating Traumatized Children and Adolescents – the Importance of Parents**

The findings and assumptions suggesting that parental reactions and practices affect children provides the background for assuming that parental participation and involvement in TF-CBT benefits the child. Therefore, TF-CBT is a therapy method that not only treats the child individually but also actively involves parents through participation in individual and conjoint sessions with the child (J. A. Cohen, Mannarino, & Deblinger, 2006). All components (see 1.1.) in TF-CBT involve working with both the youth and their parents. The parental work focuses on improving parenting skills so that parents are better equipped to handle their child's difficulties and can more easily adjust their parenting to their child's needs. The psychoeducation focuses on teaching parents to view their child's problems as being trauma related so that parents can handle their child's problems accordingly. However, although reasonable, common-sense explanations exist for why parental involvement in TF-CBT is helpful for the child, documentation supporting this relation is limited. Deblinger, Lippman, and Steer (1996) investigated the effect of the parent-child participation in TF-CBT against two other conditions: 1) mother alone in therapy and 2) child alone in therapy. The sample consisted of children and youth who had been exposed to sexual abuse. They found that parental participation alone was helpful for reducing children's depression and behavioral problems. Other studies have also shown that treatment of externalizing behavior is enhanced by parental participation (Webster-Stratton & Hammond, 1997). In addition, a study of a parent-based intervention, Alternatives for Families: A Cognitive-Behavioral Therapy (AF-CBT), showed that children's externalizing problems were reduced by parental intervention in at-risk families (Kolko, Iselin, & Gullyc, 2011).

However, Deblinger and colleagues (1996) did not find any effect for parental participation on reducing child PTS symptoms. Similarly, King and colleagues (2000) did not



find that including parents in treatment improved the efficacy of TF-CBT on child PTS symptoms. Other empirical findings also indicate that parental therapy alone is not sufficient in treating PTS symptoms in children (Runyon, Deblinger, & Steer, 2010). Considering the conceptual, theoretical, and empirical basis of the close interplay between parents and children after traumatic events (Pynoos, 1999; Scheeringa & Zeanah, 2001; Trickey et al., 2012), one might have expected that parental participation had a greater effect on child PTS symptoms. However, there are few studies that have investigated the effect of parental involvement in child trauma therapies. Future research on the significance of the caregiver involvement is therefore required.

Even fewer studies have investigated how the alleviation of parents' own emotional reactions and depression in trauma treatment may be a mechanism of change that differentiates TF-CBT from other therapies. Paper 4 in the current dissertation sought to address this question by investigating whether parental alleviation of emotional reactions and depression plays a mediating role in the treatment effect of TF-CBT compared with TAU on child PTS and depressive symptoms. We expected that the alleviation of parental emotional reactions and depression would be related to child outcomes and that the reduction of the reactions in therapy would mediate possible differences in treatment outcome between TF-CBT and TAU with respect to both child PTS symptoms and child depressive symptoms.

In addition to the assumption that parental participation in TF-CBT is beneficial for the child, there are at least two reasons why TF-CBT may also be helpful for parents themselves. First, the therapist can validate and target the parent's own worries and trauma-related emotional reactions. Psychoeducation can educate parents about how trauma affects their child but also about normal and expected parental reactions to children's trauma. Such education may alter their evaluations of their child's difficulties in addition to their own

worries, which, in turn, may reduce their stress and emotional activation. Second, caregivers may learn different parenting skills, such as praising their child and setting clear boundaries, which may allow them to regain a feeling of mastery and help them to be more responsive to their child's needs. Therefore, learning parental skills may help parents to reduce their own stress and emotional activation in addition to helping their child to cope better. Previous empirical studies have shown that the alleviation of parental stress and emotional reactions actually occurs when children receive TF-CBT (J. A. Cohen et al., 2004; Nixon, Sterk, & Pearce, 2012). Cohen and colleagues (2004) found a larger decrease in both parental depression and parental emotional reactions in TF-CBT than in child-centered therapy (CCI), a child/parent centered treatment model that emphasizes building a trustful relationship between the child and the family.

However, there are few studies that have studied the effect of child therapy on parental outcomes. In Paper 4 of the current dissertation, we investigated whether parental emotional reactions and depression were reduced when their child was provided with therapy. Furthermore, we examined whether this reduction was greater among parents in the TF-CBT condition compared with the parents in the TAU condition.

## **2 Aims of the Study**

The overarching goal of this dissertation was to understand more of parents' own emotional reactions to their child's traumatic experiences and the role that these reactions play in child trauma treatment.

- 1) In the first paper, the aim was to examine the factor structure and the discriminant validity of the PERQ, an instrument measuring parents' emotional reactions to child trauma.
- 2) The second paper sought to investigate whether the different emotional reactions of shame, guilt, and distress covaried and differed in response to the type of trauma that the child had experienced.
- 3) In the third paper, the goal was to examine the effect of TF-CBT compared with TAU when implemented in ordinary community child and adolescent mental health clinics.
- 4) The last paper aimed to investigate whether parents' emotional reactions and depression decreased when their child received therapy and whether this effect was larger in the TF-CBT group than in the TAU group. This paper also aimed to investigate whether changes in parental emotional reactions and depression played a mediating role in the treatment effect of TF-CBT compared with TAU on child outcomes.

### **3 Materials and Methods**

#### **3.1 Procedure**

The data were collected between April 2008 and January 2011. The participants (the children/adolescents and their parents) were assessed pretreatment (T1), after 6 sessions (T2) and posttreatment after 15 sessions (T3). A total of 454 children and youth were screened for

eligibility in the study. Of those, 254 did not meet the inclusion criteria, and 44 declined to participate, leaving a total sample in the source study of 156 children and adolescents. In addition, 135 caregivers participated by filling out questionnaires at one or more of the study's measurement points: 130 (96.2%) of the parents participated at T1, 90 (66.6%) at T2, and 94 (69.6%) at T3. To ensure continuity, the same parent answered the questions at every measurement point. The two flow charts below describe the children/adolescents (Figure 2) and the parents (Figure 3) who were included in the source study.

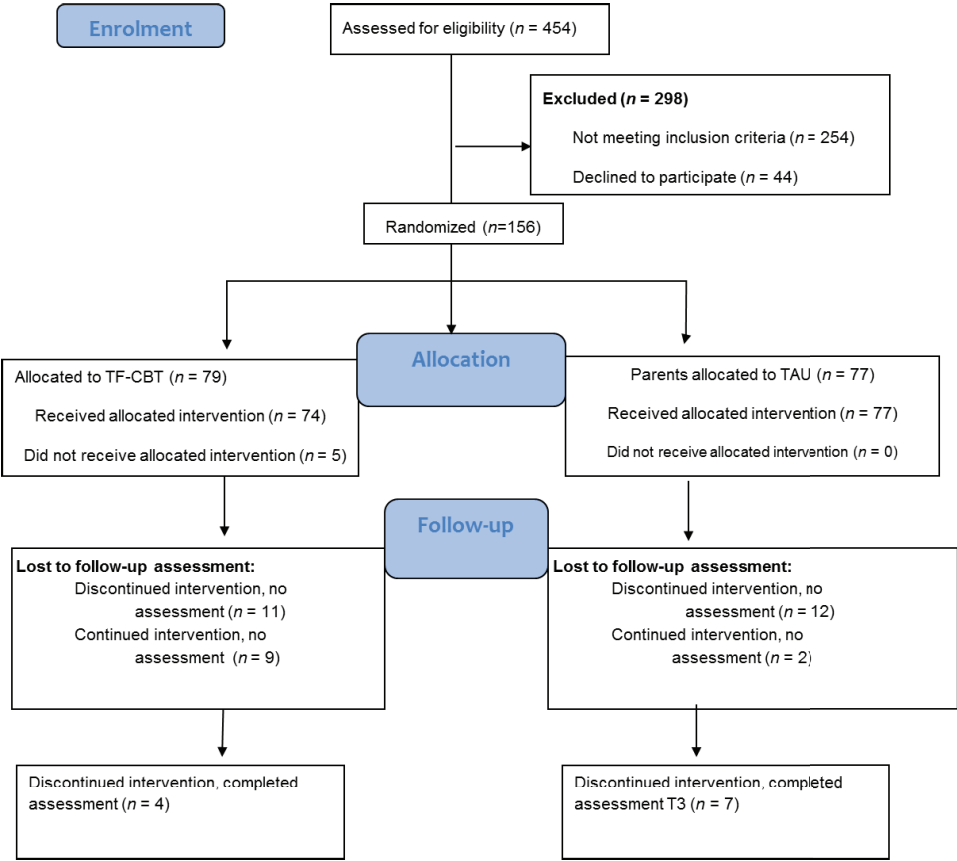


Figure 2. Flow Chart of Children/Adolescents Included in the Study

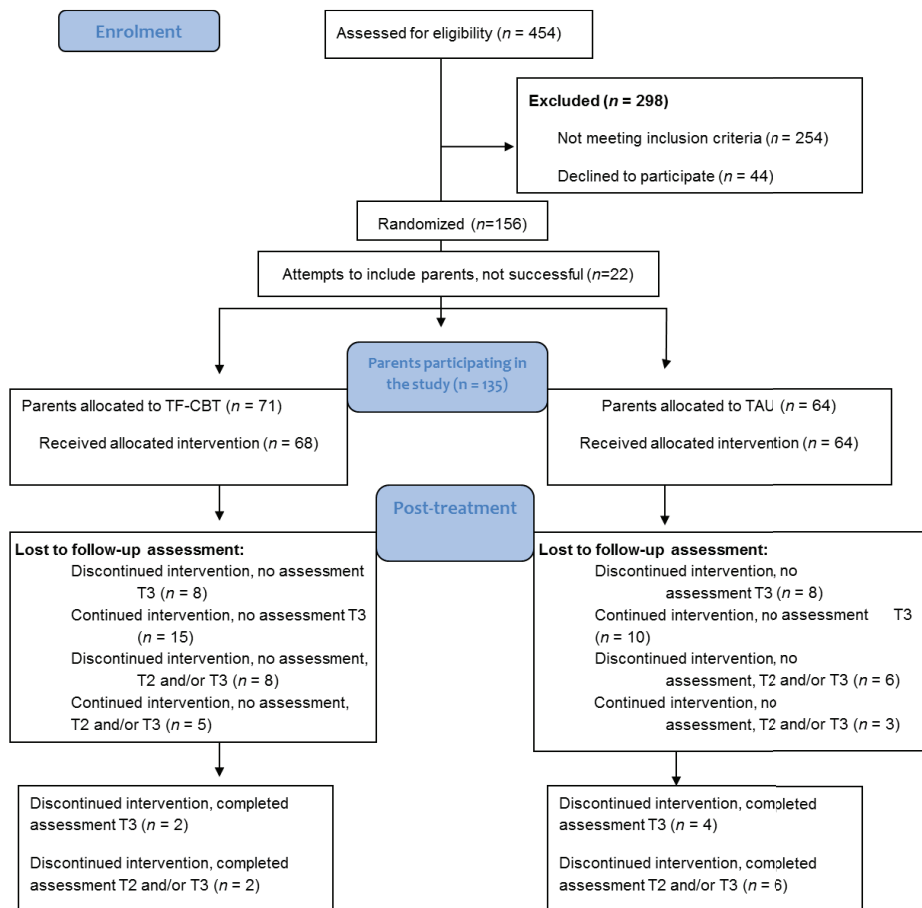


Figure 3. Flow Chart of Parents Included in the Study

All participants were referred to the community clinics according to regular practice (i.e., by their general practitioners or Child Protective Services). The study's inclusion criteria were experiencing at least one potentially traumatic event at least 4 weeks before the screening, suffering from significant PTS reactions, and being between 10 and 18 years old. The exclusion criteria were acute psychosis, active suicidal behavior, intellectual disability, or nonproficiency in the Norwegian language.

A trained psychologist (blind or naïve to the treatment condition) conducted the screening by assessing the child's trauma history and associated PTS and depressive symptoms. A short interview based on questions from the Traumatic Events Screening Inventory for Children (TESI-C) (Ribbe, 1996) was developed to assess the participants' trauma experiences. This interview consists of 12 questions investigating the child's exposure to different traumatic events. The psychologist coded responses as 'yes' only if the child reported feeling scared, helpless, in despair, or confused during or immediately after the event. Most of the children reported more than one traumatic experience and were therefore asked to identify the traumatic event that they considered to be the worst. The youth had to report PTS symptoms above the cutoff score of 15 on the Child Post-Traumatic Symptom Scale (CPSS; Foa, Johnson, Feeny, & Treadwell, 2001) to participate in the study.

The parents were assessed for depressive symptoms and emotional reactions in response to the trauma that their child had identified as the worst. The parents completed the questionnaires primarily on a computer. If the parents did not participate in the particular sessions where the assessments were being scheduled, the questionnaire was sent home with the child or mailed to the caregiver, or the assessment was conducted over the telephone.

The study was approved by the Regional Committee for Medical and Health Research Ethics (REC). Information about the study was provided to the participants in both verbal and written form. All the invited children/adolescents and their parents were given an informational letter that was approved by the Norwegian ethical committee (REC). This letter informed the participants about the study procedure, confidentiality, and the opportunity to withdraw from the study without any consequences for their therapy. On the basis of this information, both children and parents provided written, active consent to participate in the study.

The table below (Table 1) describes the main focus, participants, and analytical methods for the four papers.

Table 1

*Short overview of the main focus and the different subsamples in each paper*

|           | Main Focus  | Participants   | Analytical method   |
|-----------|---|--|---|
| Paper I   | Factor structure of the PERQ  | 120 parents of<br>120 traumatized<br>children and<br>adolescents | Exploratory factor<br>analyses<br>Correlation analyses<br>Paired sample t-tests |
| Paper II  | The interaction between the type<br>of trauma and the type of<br>parental emotional reactions   | 120 parents of<br>120 traumatized<br>children and<br>adolescents | Multivariate analysis<br>of variance<br>(MANOVA)                                |
| Paper III | The effectiveness of TF-CBT<br>(and TAU) in ordinary child and<br>adolescent community mental<br>health clinics                             | 156 children and<br>adolescents                                  | Mixed-effects analyses  |
| Paper IV  | 1) The effect of therapy on<br>parents' stress and depression<br>and 2) the mediating role of<br>parents' alleviation on child<br>outcomes. | 135 parents of<br>135 children and<br>adolescents                | Mixed-effects analyses<br>and mediation analyses<br>with bootstrap              |

### 3.2 Sample

Although the sample in all papers was drawn from the same study, the number of participants varied. In the two first papers, all the foster parents and the few offending parents were excluded from the analyses. Furthermore, in the second paper, only parents answering the PERQ on the first assessment point were included.

**3.2.1 Participant characteristics.** Most of the caregivers were mothers ( $n = 98$ , 72.6%), whereas 22 (16.3%) were fathers, and the remaining 15 (11.1%) were foster parents or other close relatives serving as caregivers. The majority of the caregivers were Norwegian ( $n = 111$ , 82.2%), and approximately half ( $n = 68$ , 54.4%) reported being employed full time. Most of the children/adolescents were girls ( $n = 124$ , 79.5%). The children/adolescents were multitraumatized, having been exposed to 3.6 ( $SD = 1.8$ , range 1-10) different types of traumatic events, on average. When identifying their worst trauma, most of the children/adolescents ( $n = 48$ , 30.8%) reported being exposed to domestic violence.

**3.2.2 Treatment conditions. TF-CBT condition (therapists and parents' participation).** Among the TF-CBT therapists, 21 (80.8%) were psychologists, two (7.7%) were psychiatrists, two (7.7%) were educational therapists, and one (3.8%) was a social worker. On average, they had 10.2 years of experience ( $SD = 6.4$  years, range 3-28 years). They were trained in the treatment protocol by the treatment developers and other approved TF-CBT trainers. They treated, on average, 3.0 ( $SD = 1.4$ , range 1-6) parent-child dyads.

The caregivers were involved in therapy in 91.8% of all the TF-CBT cases. In the few cases in which parents were not involved in the therapy, the children were over 16 years old, and the parents were either perpetrators, had substance abuse problems, and/or were struggling with their own mental health problems.

**TAU condition (therapists and parents' participation).** The TAU therapists provided the treatment that they believed would be most effective and suitable for the particular case. In total, 45 therapists volunteered to participate in TAU, treating, on average, 1.7 ( $SD = 1.3$ , range 1-9)



cases (either individual youth or parent-child dyads). The majority described their theoretical orientation as psychodynamic ( $n = 17, 45.9\%$ ), but many also described themselves as cognitive-behavioral ( $n = 11, 29.7\%$ ) or family/systemic ( $n = 9, 24.3\%$ ) therapists. Of the TAU therapists, 23 (51.1%) were psychologists, 12 (26.7%) were social workers, eight (17.8%) were educational therapists, and two (4.4%) were psychiatrists.

In the TAU condition, no guidelines determined whether and how to include the parents in the therapy, and the decision regarding parental involvement was therefore decided by the individual therapist on the basis of what they considered to be most suitable in each individual case. Parents participated in 67.3% of cases in the TAU condition.

### **3.3 Measures**

Several instruments were used in this dissertation to measure both the children's symptoms and the parents' reactions.

**3.3.1 Parent measures (Paper 1, 2, 4). *Parent Emotional Reaction Questionnaire (PERQ) (Paper 1, 2, 4).*** The parents' emotional reactions to their child's traumatic experiences were measured with the PERQ (Mannarino & Cohen, 1996). The PERQ is a self-report questionnaire in which the parent reports different emotional reactions on a 5-point Likert scale ranging from never to always (e.g., 1 = never, 5 = always), depending on how often they have experienced the reaction during the last two weeks. The original instrument consisted of 15 items. However, the last item on the scale, "I feel guilty that I did not know about the trauma sooner," was excluded from the analyses because it was left unanswered in most of the cases, as the parents in the current sample had frequently learned about the trauma immediately after it occurred. The internal consistency for the scale has previously been calculated to be  $\alpha = .87$ , and the test-retest reliability has previously been calculated to be  $r = .90$  (Mannarino & Cohen, 1996). In the current sample, the internal consistency of the total

scale was  $\alpha = .88$ . More details about the internal consistency for the various subscales of the PERQ are investigated further in the first paper of the dissertation.

***Center for Epidemiologic Studies Depression Scale (CES-D) (Paper 1, 4).*** The CES-D is a self-report instrument that is designed to measure depressive symptoms in the general adult population (Radloff, 1977). The instrument consists of 20 questions, and parents are instructed to report how often they have experienced the symptoms during the last week on a 4-point Likert scale ranging from 0 to 3 (e.g., 0 = rarely or none of the time, 3 = most or all of the time). The scale has been found to have adequate concurrent validity and split-half and coefficient alpha reliability for both general populations and clinical samples (Radloff, 1977). The current study yielded an internal consistency score of  $\alpha = .91$ .

***Parental Support Questionnaire (PSQ) (Paper 1).*** The PSQ is a self-reported evaluation of the support that caregivers give to their child after a traumatic experience (PSQsupport) and their attitudes toward their child's responsibility for the trauma (PSQblame) (Mannarino & Cohen, 1996). Parents rate their responses to each item on a 5-point Likert scale ranging from 1 to 5 (e.g., 1 = never, 5 = always) to report how often they have provided support to their child during the last two weeks. Of the 19 items in the original instrument, 2 of the items were not included in the Norwegian version of the scale, as they were too oriented toward sexual abuse. In the current study, the internal reliability was  $\alpha = .84$  for the PSQsupport scale and  $\alpha = .67$  for the PSQblame scale.

**3.3.2 Child measures (Paper 2, 3, 4). *Clinician-Administered PTSD Scale for Children and Adolescents (CAPS-CA) (Paper 2, 3, 4).*** The CAPS-CA is a structured diagnostic clinical interview for children and adolescents that investigates the frequency and intensity of the 17 DSM-IV-defined PTSD symptoms (Nader et al., 1996; Nader et al., 2004). Items are scored on 5-point frequency scales (e.g., from 0 = none of the time to 4 = most of the time) and 5-point intensity rating scales (e.g., from 0 = not a problem to 4 = a big

problem, I have to stop what I am doing) for the past month. Scores for the items are based on both the youth's answers and the clinician's judgment. The total scale showed satisfactory internal consistency within the current sample ( $\alpha = .90$ ). Inter-rater agreement was also satisfactory ( $\kappa = .60$ ).

***Mood and Feelings Questionnaire (MFQ) (Paper 3, 4).*** The MFQ is a 34-question self-report questionnaire that is designed to assess depressive symptoms in children and adolescents between eight and 18 years old (Angold, Costello, Messer, & Pickles, 1995). The scale measures the range of DSM-IV diagnostic criteria for depressive disorders and includes additional items reflecting common affective, cognitive, and somatic features of childhood depression. The child rates the problem frequency during the last two weeks by using a three-point scale from 0-2 (e.g., 0 = not true, 2 = true). In this sample, the instrument showed satisfactory internal consistency ( $\alpha = .91$ ).

***Child PTSD Symptom Scale (CPSS) (Paper 3).*** The CPSS is a self-report questionnaire measuring PTS symptoms in children and adolescents between 10 and 18 years old (Foa, Johnson, Feeny, & Treadwell, 2001). The child rates the symptom frequency during the last 2 weeks on a 4-point scale ranging from 0 to 3 (e.g., 0 = not at all, 3 = 5 or more times a week/almost always). In the current sample, the internal consistency of the total scale was  $\alpha = .91$ . The CPSS contains an additional scale that measures the influence of PTS symptoms on daily functioning (fCPSS). On the items in this scale, the child or adolescent answers positively or negatively about whether the symptoms affect his or her daily functioning in different areas of his or her life.

***Screen for Child Anxiety-Related Disorders (SCARED) (Paper 3).*** SCARED is a self-report questionnaire consisting of 41 questions that measure anxiety symptoms in children and youth between 8 and 18 years old (Birmaher et al., 1999). The scale is based on the youth's symptoms during the past three months and covers five specific anxiety disorders:

panic disorder or significant somatic symptoms, generalized anxiety disorder, separation anxiety disorder, social anxiety disorder, and school avoidance. However, only the total scale was used in the current study. The child or adolescent rates the problem frequency on a 3-point scale ranging from 0 to 2 (e.g., 0 = not true or hardly ever true, 2 = very true or often true). In the current sample, the instrument showed satisfactory internal consistency for the total scale ( $\alpha = .93$ ).

***Strengths and Difficulties Questionnaire (SDQ) (Paper 3).*** The child version of the SDQ is a 25-item self-report scale measuring general mental health problems in children and adolescents aged  $\geq 10$  (Goodman, 2001). The SDQ covers five areas of clinical interest: hyperactivity (e.g., “restless, overactive”), emotional symptoms (e.g., “has many worries”), conduct problems (e.g., “often has temper tantrums”), peer relation problems (e.g., “picked on or bullied by other children”), and prosocial behavior (e.g., “kind to younger children”). The child rates each item with not true, somewhat true, and certainly true based on their experiences during the previous 6 months (0 to 2 for negatively worded items and 2 to 0 for positively worded items). The general difficulties total score is based on the four problem-oriented subscores. In the current sample, the total problem scale showed satisfactory internal consistency of  $\alpha = .73$ .

### **3.4 Statistical Analyses**

**3.4.1 Factor analysis (Paper 1).** To evaluate the factor structure of the PERQ, we used an exploratory factor analysis (EFA) consisting of principal axis factoring with oblimin rotation. This rotation method was chosen because it allows for the subscales to be correlated. We used the exploratory approach because no a priori theory indicated how the parental emotional reactions would cluster, and we were interested in how many factors we would need to explain the relationships among the set of indicators. Furthermore, the items within the PERQ had not been factor analyzed before, and as such, the most suitable analytical

approach was exploratory. The EFA was conducted on the data collected at T1 (pretreatment).

Factor analysis refers to “a family of analytic techniques designed to identify factors, or dimensions, that underlie the relations among a set of observed variables” (Pedhazur & Schmelkin, 1991, p. 66). The observed variables (or the indicators) are presumed to reflect one or more constructs. The factor loading is provided by estimating the relationship between each indicator and factor. High factor loadings mean that the impact of the factor in the indicator is also high. The square of the factor loadings explains the proportion of variance of a given indicator accounted for by the factor (Pedhazur & Schmelkin, 1991). The major differences between EFA and confirmatory factor analysis (CFA) are that in EFA, all indicators have loadings on all the factors, whereas in CFA, the researcher may specify which indicator loads on which factor. In EFA, the errors in the indicators are also assumed to be noncorrelated, whereas these errors are treated as part of the model being tested in CFA (Pedhazur & Scmelkin, 1991).

### **3.4.2 Multivariate analysis of variance (Paper 2)**

In Paper 2, a one-way between-groups multivariate analysis of variance (MANOVA) was conducted. The MANOVA is an extension of the analysis of variance (ANOVA) and is applied in situations where there are several dependent variables (DVs) (Tabachnick & Fidell, 2007). ANOVA is a term for a set of analytical procedures based on a comparison of two estimates of variance: one estimate derived from the difference among scores within each group, and one estimate derived from differences in group means (Tabachnick & Fidell, 2007). The researcher then investigates whether the mean differences among groups are likely to have occurred by chance. While ANOVA tests this difference based on only one DV, MANOVA tests the mean difference among groups on a combination of means. The DV that creates group differences in MANOVA is based on the total set of DVs in the model. An

advantage of MANOVA over a set of single ANOVAs is the protection against Type 1 error due to multiple tests of correlated DVs (Tabachnick & Fidell, 2007).

MANOVA was considered suitable because we had three DVs in Paper 2, PERQdistress, PERQguilt, and PERQshame. We wanted to explore the overall relationship between the different trauma groups and levels of emotional reactions. In this situation, scores on all the three measures of the PERQ for each subject served as DVs. To more closely understand the association between the levels of parents' emotional reactions and the five trauma groups, post-hoc comparisons with Bonferroni-adjusted alpha level were conducted.

**3.4.3 Mixed-effects analyses (Paper 3 and 4).** Mixed-effects models were estimated to investigate changes in the children's symptoms and the parental emotional reactions and depression across time. A correlation or dependency arising among the subsets of cases within a dataset is referred to as clustering. Such a correlation may arise when we have repeated measures on single individuals over time. For instance, we could expect the symptoms from any one child across repeated measures to be more correlated with one another than the symptoms across the individuals. This pattern is called serial dependency (J. Cohen, Cohen, West, & Aiken, 2003). Mixed-effects models take into account the nested nature of the data and have the advantage of estimating a measure of random variation both between and within participants (Pineiro & Bates, 2000). In the literature, similar models have also been named "hierarchical linear models," "random coefficient models," and "variance component models (Hox, 2010).

Mixed-effects models handle missing data under the missing at random (MAR) assumption (Fairclough, 2010), an approach that allows for data on the same subject to be used even if a subject is missing data for one time point. In Paper 4, the mixed-effects models analyzed two parental DVs, namely, parental emotional reactions and parental depressive symptoms, in separate analyses, and in Paper 3, the DVs were the different child outcomes. In

both papers, the independent variables (IVs) were therapy condition and time, including a condition by time interaction. The magnitude of change within and between groups was measured by using Cohen's  $d$  ( $d$ ), which reflects a difference between standardized means. Cohen (1988) suggests that an effect size (ES)  $d$  of approximately 0.2 indicates a small ES, approximately 0.5 indicates a medium ES, and approximately 0.8 indicates a large ES.

In Paper 4, we also estimated the intraclass correlation (ICC) within the dataset owing to the possibility of clustering on the therapist level and the site level in the dataset. The possibility of nesting emerged because more than one parent-child dyad had the same therapist and because more than one parent-child dyad was treated at the same clinic. The ICC is an indication of the amount of variance at the second level, and it can also be interpreted as the expected correlation between two randomly chosen individuals within the same group (Hox, 2010). The literature has suggested that we should consider using mixed-effects models if the ICC is 0.25 or above (Guo, 2005; Heinrich & Lynn, 2001) because such an ICC indicates that much of the variation in the outcome variable is due to nesting groups. Because the ICC was  $<.05$ , we choose not to include the therapist level and site level in Paper 4 of the dissertation. The results regarding the ICC are also described in Paper 4.

#### **3.4.4 Mediation analyses with bootstrapping (Paper 4).**

Multiple mediation models with a bootstrapping resampling method, as devised by Preacher and Hayes (2008), were applied in the final paper. In mediation models, as it was originally stated, the IV is hypothesized to influence the mediator variable (M), which, in turn, influences the DV (Baron & Kenny, 1986; MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002). The term "mediation" is used to detect possible mechanisms or processes that underlie an observed relationship between an IV and a DV. In mediation analyses, a third variable, called the M or the exploratory variable, is included to explain how and why an effect occurs. As such, the M(s) plays a role in clarifying the relationship between the IV and

the DV. However, one must always take into account that mediation could result from other variables that have not been included in the model, which nevertheless may correlate with the M(s).

Two different models were included in the mediation analyses. The first model included the a-path that indicates the relationship between the IV and the M. The second setup included the b-path and the c'-path. The b-path shows the relationship between the M and the DV, and the c'-path shows the relationship between the IV and DV while controlling for the M (MacKinnon et al., 2002; Preacher & Hayes, 2008). The mediation models in this dissertation were applied to investigate the indirect effect of parental emotional reactions and depression on child outcomes and to examine the b-path of the model, namely, the relationship between changes in parental emotional reactions and depression and overall child outcomes.

In addition, the bootstrap resampling method was applied by using 10,000 resamples of the data (Preacher & Hayes, 2008). Bootstrapping is a statistical method for estimating the sampling distribution of an estimator (Carpenter & Bithell, 2000; Efron & Tibshirani, 1993) without making specific distributional assumptions. Briefly, the sample is repeatedly resampled with replacement giving many (in the present case 10,000) resamples of the same size as the original sample. On the basis of each resample, a parameter estimate is calculated. By applying bootstrapping, the distribution of the resamples' estimates is used to provide confidence intervals (CIs) for the parameter in question (Efron & Tibshirani, 1993). In this dissertation, we used this method to calculate the CI for the indirect effect of parental emotional reactions and depression on child outcomes because we wanted to derive robust estimates of the standard errors and CIs of the population parameter.

**3.4.5 Statistical software.** Different software programs were applied to conduct the data analyses in this dissertation. SPSS version 17 (IBM SPSS Statistics, 2011) was used to



calculate descriptive statistics for the sample and the different variables used (in all papers). This software was also used to conduct the EFA and the paired sample t-tests in Paper 1, as well as the one-way between-groups MANOVA in Paper 2. Furthermore, mixed-effects analyses used the R (The R Foundation for Statistical Computing, Vienna, Austria) package nlme, whereas mediation analyses were conducted using Mplus software (Muthén & Muthén, 1998-2010). In Mplus, the treatment of missing data is applied by full information maximum likelihood (FIML) under the MAR assumption (Muthén & Muthén, 1998- 2010).

## **4 Summary of the Results**

### **4.1 Paper I: Factor Structure and Discriminant Validity of the Parent Emotional Reaction Questionnaire (PERQ)**

The first paper examined the factor structure and divergent validity of an instrument measuring parental emotional reactions related to their child's trauma (the PERQ). The results from the EFA showed a three-factor structure for the PERQ. The factors were considered to be distinct and meaningful conceptions of parental emotional reactions to child trauma. These factors were conceptualized as PERQdistress, PERQshame, and PERQguilt. The psychometric properties of all three subscales were satisfactory.

Next, correlation analyses (based on the sum scores of the subscales) showed that the three PERQ subscales had satisfactory discriminant validity, as the subscales did not correlate too strongly with the sum scores of parental depressive scores and parental-reported support. Furthermore, all three subscales were sensitive to change, as their sum scores changed significantly from the pretreatment to posttreatment period. These findings strengthen the justification for conceptualizing the PERQ as three separate subscales.

#### **4.2 Paper II: Parental Emotional Response to Children's Traumas**

In the second paper, the parental emotional reactions of distress, guilt, and shame (the three subscales of the PERQ) were investigated in relation to the type of traumatic event that was experienced by the child. The different types of trauma were trauma with no perpetrator (such as an accidents and a sudden death of a close family member), extrafamilial violence, extrafamilial sexual abuse, intrafamilial violence, and intrafamilial sexual abuse. The results showed that parents of all the children, independent of the type of trauma that their child had experienced, reported a relatively high degree of distress. Overall, guilt was also an emotion that was highly prominent within the current sample.

The results also showed that a significant relationship exists between the type of trauma and parents' overall emotional reactions. Whereas parental distress was equally distributed among the different trauma groups, parental reports of shame were highest among parents of children who had been exposed to domestic violence. Moreover, children's exposure to intrafamilial violence and extrafamilial sexual abuse was associated with high levels of guilt in the parents. These results suggest that parents have strong emotional reactions related to their child's trauma and that the type of emotional reaction varies according to type of trauma that their child has experienced.

#### **4.3 Paper III: A Randomized Effectiveness Study Comparing Trauma-Focused Cognitive Behavioral Therapy with Therapy as Usual for Youth**

The third paper investigated the effectiveness of TF-CBT by comparing it with TAU in a sample of 156 traumatized youth in Norwegian community child and adolescent mental health clinics. The results showed that the children and adolescents in both treatment groups showed significant improvement from the pretreatment to posttreatment period on all symptom measures. However, the youth receiving TF-CBT reported significantly lower levels of PTS symptoms, depressive symptoms, and general mental health problems than the

children and adolescents in the TAU group at the end of the therapy. Youth assigned to TF-CBT also showed significantly greater improvement in functional impairment. Nevertheless, no significant difference in anxiety symptoms was found between the two groups at the end of the therapy.

In addition to showing that TF-CBT is an effective method for treating children and adolescents after trauma exposure, the results indicated that the therapy may be successfully implemented in ordinary community mental health clinics and in a country outside the United States.

**4.4 Paper IV: The change and the mediating role of parental emotional reactions and depression in the treatment of traumatized youth: - Results from a randomized controlled study.** The fourth paper examined whether parents also benefitted from the therapy provided to their child by investigating whether parents' emotional reactions and depression decreased during the therapeutic process and whether this effect was larger for children receiving TF-CBT than for children receiving TAU. The paper also investigated whether the decrease in parental emotional reactions and depression played a mediating role in the superior treatment effect of TF-CBT compared with TAU on child PTS symptoms and depression. The results showed that parents' emotional reactions and depressive symptoms significantly decreased from pretreatment to posttreatment in both therapy groups. However, this decrease was not significantly different between the two therapy conditions. Furthermore, the reduction in parental emotional reactions and depression played a significant mediating role in the effect of the treatment on child depression; however, no mediation was found with respect to child PTS symptoms.

## 5 Discussion

It is fairly easy to understand that parents may be overwhelmed by their emotional reactions when their child experiences traumatic events. The current dissertation aimed to extend our understanding of these reactions and the role that they play in child trauma treatment. The results showed that caregivers experienced various emotional reactions and that these reactions varied in relation to the type of event that their child experienced. Moreover, the levels of these emotions decreased when their child received therapy, and this decrease mediated child treatment outcome on child depressive symptoms.

### 5.1 Discussion of Main Findings

**5.1.1 Parental shame, guilt, and distress.** The distress subscale of the PERQ comprises items related to sadness, concentration problems, crying, feeling upset, rumination, and somatic symptoms, such as headache and sleep problems, all of which are directly linked to the child's trauma (e.g., "I have felt sad about my child's traumatic experience"). The high level of distress among parents of children who have been exposed to all the different types of trauma is consistent with attachment theory (c. f. Ainsworth et al., 1978; c.f. Bowlby, 1969), Pynoos' perspective regarding caregivers' role (cf. Pynoos, 1999), and traditional stress theory (Lazarus & Folkman, 1984), which are described in the introduction. According to attachment theory, the parents' role is to protect their children, and when trauma occurs, parents may feel that they have failed in their primary role as caregivers. The experience of failure may be present in parents independent of the type of trauma that their child has experienced. Not surprisingly, such feelings may lead to negative thoughts, rumination, sleep problems, stress, and a feeling of insufficiency in parents because the traumatic event may have shattered their self-image of being a capable protector. In addition, parents' distress reactions may be understood in light of traditional stress theory, which views psychological stress as most likely to develop when people perceive that they are unable to stop or prevent an event; thus, a feeling of losing control or being unable to cope may arise (Geer & Maisel,

1972; Lazarus, 1993; Lazarus & Folkman, 1984; Seligman, 1967; Selye, 1978). The sense of lacking control may be prominent in parents regardless of the type of traumatic event to which the child was exposed.

Shame and guilt, as opposed to distress, are viewed as being secondary or self-reflective emotions (Lewis, 1993), as these emotions appear after the emergence of primary emotions and require a developed self-consciousness (Lewis, Sullivan, Stanger, & WeissSource, 1989). In contrast to the primary emotions, such as sadness and anger, secondary emotions have a stronger social dimension (Gilbert, 2000). Shame is often described as fear of what others think or self-devaluation (Gilbert, 2000). All the questions on the PERQshame subscale concerned a sense of fear of others' judgment (e.g., "I am afraid of what other people will think about my child's traumatic experience"). Guilt, compared with shame, is more focused on harm or hurt done to others (Gilbert, 2000), and most of the items on the PERQguilt subscale pointed to the parent's regret or feelings of responsibility for doing something negative to their child (e.g., "I have felt responsible for my child experiencing trauma").

The levels of parental shame and guilt reactions differed in relation to the type of trauma that the child experienced. A possible explanation for such differences may be the position of the parents in relation to their child's trauma. Higher levels of shame were found among parents of children living in a violent family environment. In such situations, even though the caregiver was not the perpetrator, he or she often was aware of the child's trauma and knew the perpetrator (cf. the third position described in the introduction). When they are in an informed position, parents may fear others' judgment of their behavior, and they may be judgmental of their own behavior. Furthermore, many of these parents were also victims of the abuse (cf. the fourth position described in the introduction). In cases where parents are exposed to own traumas, they may negatively evaluate their entire self. Negative self-

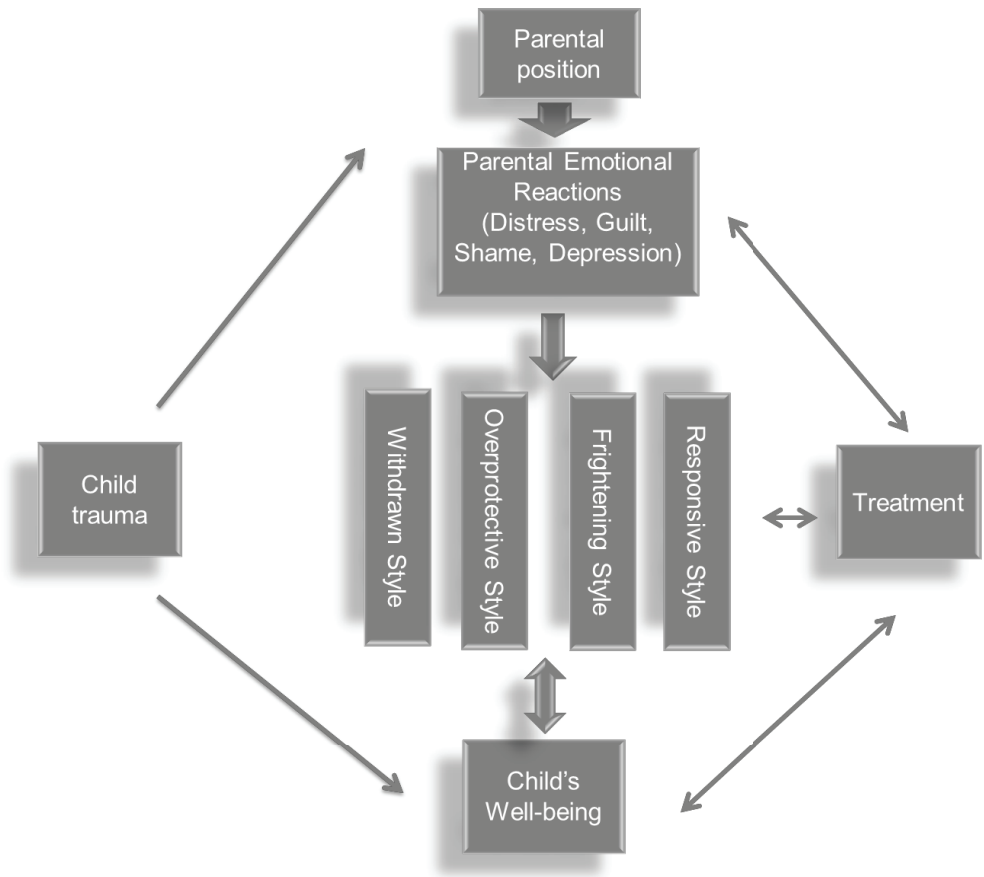
evaluations have been shown to be related to shame (Tangney, 1991). Thus, higher levels of shame in parents may be expected when the child has been exposed to or has witnessed intrafamilial violence and when the parents have been exposed to trauma themselves, as observed for most of the intrafamilial violence cases in the current study. In addition, higher levels of guilt were found in parents of children experiencing intrafamilial violence. This result is also logical because the parents were informed about the trauma and may have felt that they could or indeed should have protected the child. In many ways, the different levels of parental emotional reactions may therefore be understood in light of the parental position.

The findings concerning parental reactions and the context in which they occur is considered crucial for at least two reasons. First, these findings show the spectrum of normal emotional responses for parents of children who have been exposed to trauma. Previous studies have mainly focused on mental health symptoms in parents, such as PTS symptoms, anxiety symptoms, and depressive symptoms (Alisic, Jongmans, et al., 2011; Chemtob et al., 2010; Dyb et al., 2011; Wickrama & Kaspar, 2007), not reactions that are linked to their child's trauma. These studies are implicitly based on the assumption that parental reactions are negative for both the parent and the affected child. The current dissertation may help to shift the focus from symptoms of parental psychopathology and mental health difficulties to the normal range of parental emotional responses. In this way, our findings may provide a more nuanced picture of parents' reactions when their child has been exposed to a traumatic event. In many ways, parents' emotional responses may be considered appropriate because they show that the parents are emotionally affected by the difficulties of their child and because they reflect the protectiveness of parents who worry about their child. Having strong emotional reactions may therefore be considered part of parents' natural—and thus not pathological—reactions because they indicate parents' attachment to and care for their child. This view of parental emotional reactions are also consistent with studies showing that parents

may become more loving and protective and more focused on bonding with their child after the child has experienced traumatic events (Mowder, Guttman, Rubinson, & Sossin, 2006; Young, Dixon-Woods, Findlay, & Hency, 2002). For example, mothers of children who have been diagnosed with cancer tend to spend more time with their sick child because they feel that the sickness has increased the child's need for being protected (Young et al., 2002). In such circumstances, the trauma evokes empathy within the parent, and the parent uses this empathy to be more supportive of and protective toward his or her child. However, although emotional reactions may lead parents to become more sensitive and attentive to their child's needs, such emotional states may also contribute to impaired functioning and psychological discomfort. Excessive emotional reactions may provide the caregiver with reduced opportunity to handle, care for, and support their child (Cummings, Davies, & Campbell, 2000; Deater-Deckard, 1998; Elliot & Carnes, 2001). Davis and Siegel (2000) also noted that the associations between parents' and children's emotions after a traumatic events may be quite complex. They use the term "contagion effect" to describe how parents may transmit their anxiety and distress to the child. However, although they explain how parental reactions may work as a mediator in the stress experienced by the child, they also describe how underreacting to or minimizing a threat may cause the child to lose his or her trustful relationship with his or her parents, particularly if the consequences of the trauma are serious. It is reasonable to assume that the "contagion effect" may work in the opposite direction as well; that is, the level of symptoms expressed by the child may play a role in how worried the parents become. In addition, parents may have to adjust their normal parenting skills to their child's symptoms when their child experiences elevated symptom levels. Nevertheless, Davis and Siegel viewed the parents who react in a calm and controlled manner toward their child to be those who contribute the most to a reduction of distress and anxiety within the child (Davis & Siegel, 2000).

The second reason that the focus on parental reactions is crucial is the notion that these reactions may be essential and provide a context for understanding the interactions between parents and their children after trauma. As such, the current findings may elucidate the interplay between children and their parents after traumatic events. The model presented by Scheeringa and Zeanah (2001) (see 1.3.) can be extended by taking into account parents' emotional reactions and the context in which parental styles operate. Parents' emotional reactions may function as explanatory mechanisms underlying the different styles presented in the model because they may contribute to the determination of whether a parent becomes withdrawn, frightened, or overprotective. For example, imagine a situation in which the caregiver has a withdrawn style (cf. one of Scheeringa's styles). This style may be related to shame. This is a reasonable assumption because shame is an emotion that leads to denial, withdrawal, and hiding (Gilbert, 2000; Tangney, Stuewig, & Mashek, 2007). Furthermore, feelings of shame may develop because the trauma occurred in an intrafamilial setting and because the parents were aware of it and were exposed to trauma themselves. By considering parental emotional reactions (in this example, shame) and parental involvement (in this example, being aware of and exposed to trauma), we can extend the frameworks of both Scheeringa and Zeanah (2001) and Alisic, Boeije, et al. (2011) to include the context in which parenting styles occur and thus understand the parents' situations. Considering the different emotional reactions and the context in which the emotional reactions arise may also be essential to help parents in child trauma therapy. As such, not only the withdrawn parental style but also the possible underlying parental shame reactions and the context of these emotional experiences should be addressed in therapy. The next step for related research is to empirically test the link between parents' emotional reactions and their parenting. An illustration of how the model could be extended is provided below.





**5.1.2 Parental improvement.** The results in Papers 3 and 4 showed that both the child and the parents benefitted from the therapy provided to the child. Moreover, the results showed that parental emotional reactions and depression were reduced in both treatment conditions. The ESs were indeed larger in the TF-CBT group than in the TAU group, but the difference between the conditions was not statistically significant. As such, the findings did

not replicate an earlier study showing that the level of parental stress and emotional reactions decreased to a greater extent when the child participated in TF-CBT than when the child participated in child centered therapies (CCT) (J. A. Cohen et al., 2004). Cohen and colleagues' study did have a larger sample size, however. Yet, the ESs calculated for the between-groups effects were much higher in that study than in the current study, particularly for the between group effect of the PERQ. The mean age was also considerably lower in Cohen et al.'s study (10.76 years) than in the current study (14.8 years). This age difference may also explain the different results in the two studies.

One likely explanation for the improvement in *both* groups is that the parents were *relieved* that their child received professional help. The child's difficulties may have caused the parents to be deeply worried for an extended period of time. Having someone else who may help the child may have thus served as support for the parents. The parents may have felt less alone, as well as relieved and encouraged that someone else cared about their worries and was trying to help their child, which, in turn, could have led to less stressful emotional reactions. Additionally, *hope* that their child would cope better in the future may have contributed to reduced emotional reactions. Both *hope* and *relief* may be considered "common factors" within the field of psychotherapy (Imel & Wampold, 2008), a term that refers to the components that may play a role in all therapies, independent of the provided therapeutic technique.

One may also assume, however, that the changes in parental emotional reactions and depression resulted from the specific components unique to the therapies, referring to the specific factors within the psychotherapy field (Imel & Wampold, 2008). In the TF-CBT condition, many components may possibly explain the reduction in parental distress, shame, guilt, and depression. For instance, psychoeducation may have relieved parents' emotional reactions and depression because it allowed them to develop an understanding that their own

and their child's reactions were not unusual and that they were not to blame for the trauma. Furthermore, parents may have taken advantage of the stress regulation techniques, such as relaxation and breathing exercises, provided to their child. Moreover, improved parental skills could have provided caregivers with confidence and mastery and thus enhanced their interactions with the child. Such improved parental skills might have reduced their ambivalence and uncertainty about how to help their child, which again might have resulted in reduced emotional reactions. The parents in the TAU condition may also have been provided with some form of psychoeducation, stress-reducing techniques, parental skills, and/or other interventions targeting their trauma-related reactions. However, we have no further information on this matter. Therefore, we cannot exclude the possibility that the alleviation of parental emotional reactions was due to specific factors in both treatment conditions in addition to the common factors of hope and relief.

**5.1.3 The mediating role of parental depression and emotional reactions.** Changes in parental depression and emotional reactions played a mediating role in the effect of the treatment on child depressive symptoms but, contrary to our expectation, not on child PTS symptoms. The findings of Deblinger and colleagues (1996) may illuminate these findings. They found that parental participation in TF-CBT effectively reduced child depressive symptoms but not child PTS symptoms. In addition, treatment studies of child depression and behavioral problems in particular have shown that the child's treatment effect is enhanced by parental involvement (Fossum, Mørch, Handegård, & Larsson, 2008; Henggeler et al., 2009). Parental interaction with the child may be a stronger exploratory mechanism for child depression than for child PTS reactions, where the trauma experience itself is related to the problem. Individual processing of the trauma history might therefore be more important in reducing the child's PTS symptoms than parental participation and a reduction of parental stress and depression. This conjecture is also supported by the study of King and colleagues

(2000), who did not find any additional effect of parental participation in TF-CBT on child PTS symptoms. This study had a small sample size, however. Nevertheless, it is worth discussing why no studies have found parental participation in therapy to enhance child PTS symptoms, whereas studies consistently show that parental factors do contribute to children's development and maintenance of PTS symptoms (Alisic, Jongmans, et al., 2011; Trickey et al., 2012).

In this regard, a developmental perspective might be useful to discuss, as parents' level of influence may differ depending on the age of the child. A few studies have investigated how the pretreatment level of parental emotional reactions influences the therapeutic outcome of children and youth who have been exposed to trauma. In a randomized controlled study, Cohen and Mannarino (2000) examined 49 children between the ages of 7 and 14 years who were exposed to sexual abuse and did not find that parents' pretreatment emotional reactions influenced a change in child symptoms (J. A. Cohen & Mannarino, 2000). In a previous study, however, the same authors found that the emotional reactions of parents influenced the treatment outcome in preschool children who had been exposed to sexual abuse. The study showed that children of parents with a lower level of emotional reactions pretreatment gained a greater benefit from the therapeutic process than children of parents with a higher level of emotional reactions pretreatment (J. A. Cohen & Mannarino, 1996). As an explanation for the divergent findings in the two abovementioned studies, the children in the earlier study were considerably younger than the children in the more recent study (preschool children vs. older children). Older children and adolescents have developed increased autonomy that may make them less influenced by their parents' reactions and responses (Berk, 2006). They also seek more support outside the family environment (Berk, 2006), and thus, reactions and feedback from peers may become more important than responses from their caregivers. Child age may also have affected the results in the current

study, and we cannot exclude that parental emotional reactions and depression could have had greater impact on the child PTS symptoms within a younger sample.

Nevertheless, treatment mechanisms other than parental participation and change in parental stress may be more important in treating child and adolescent PTS symptoms. Alteration in maladaptive appraisals may be one such mechanism. According to cognitive theories, the trauma memories of people with persistent PTS reactions are poorly integrated into their autobiographical memory, causing these individuals to involuntarily re-experience intrusive memories. In addition, maladaptive appraisals of the trauma and its effects may contribute to a heightened sense of current threat, unwarranted guilt and shame, and/or feelings of being permanently damaged (Brewin, Dalgleish, & Joseph, 1996; Ehlers & Clark, 2000). Some empirical findings support these theories and indicate that changes in maladaptive appraisals mediate treatment outcomes (Nixon et al., 2012; Smith et al., 2013; Smith et al., 2007). TF-CBT involves teaching stress reduction, exposure, and cognitive processing, all of which may contribute to an alteration of maladaptive appraisals which, in turn, may lead to a reduction in posttrauma reactions in the child.

Although the results within the current dissertation were not unambiguous regarding the importance of reducing parental depression/emotional reactions in child trauma therapy, parental involvement in the therapy may still be important for several reasons. First, caregivers rather than the child are the ones often seeking professional help (DiGiuseppe, Linscott, & Hilton, 1996). Parents are key persons in guiding the child into the help system and may also help the child to stay motivated during the therapeutic process. They have the opportunity, responsibility, influence, and power to positively affect the child's situation. Second, involving parents in the assessment procedure of their child is important. Caregivers may hold valuable clinical information about the trauma reminders in the child's close environment. In addition, talking with parents may help identify parental concerns, the quality

of caregivers' relationship with the child, and the family's external support network. Third, by letting parents participate in the trauma narrative, caregivers can play the role of supportive agents. Allowing parents to take a supportive role in the narrative may also compensate for their feelings of insufficiency for not having supported and protected the child when the trauma occurred. In this way, parents have the opportunity to assist their child when the child is experiencing emotional activation and to validate the feelings and thoughts associated with the memories, which they were unable to do during the traumatic event (Drell & Gaensbauer, 1993). The process of sharing the trauma story with the parent may also minimize shame, resistance, and withdrawal behavior in both caregivers and children (Reyes & Lieberman, 2012). This experience may further generalize to other settings and situations, helping to enhance everyday interactions between caregivers and their children and making parent-child interactions more open and genuine.

The therapist may also help caregivers to be more sensitive toward their child's needs. Such sensitivity may contribute to a more responsive, active and involved parental position, which may be important aspects driving changes in both parents' and children's reactions after trauma. Although these changes may not be visible in the short run, they may have an impact in the long run.

## **5.2 Methodological Considerations**

**5.2.1 The phenomena of parental emotional reactions – a construct validity challenge.** Defining the constructs being identified in the EFA was necessary in Paper 1. As part of this analysis, the item content in each domain was evaluated. Furthermore, we evaluated whether the identified constructs and their names were vague, tautological, logically consistent, and consistent with the theoretical structure within which the construct was embedded (Shadish, Cook, & Cambell, 2002). Such an evaluation was essential because any

future users of the PERQdistress, PERQguilt and PERQshame subscales will need to know that the scales examine the concept that they are intended to examine. This process of assessing the constructs concerns the construct validity of the study. Shadish et al. (2002, p 65) describe this process as involving “making inferences from the sampling particulars of a study to the higher-order constructs they represent”. Within the PERQguilt subscale, the item “I have felt afraid since I learned about my child’s trauma” was not conceived as intuitively belonging conceptually to the PERQguilt subscale. Therefore, the justification for keeping the item in this category required more careful evaluation in Paper 1.

The decision to use self-report scales and a clinical interview as measurements in the current study could also be a threat to the study’s construct validity. For instance, studies based on self-report scales may be less valid than observational studies because of responders’ social desirability or self-desirability, referring to “the tendency to present oneself in a good light to the researcher or interviewer” (Pedhazur & Schmelkin, 1991, p. 141). Participants often wish to make a particular impression and present themselves in a particular light. In this study, the parents answered items concerning shame, and given the nature of shame as leading to denial and hiding (Gilbert, 2000; Tangney et al., 2007), one could assume that these answers were especially biased toward social desirability. However, although these response styles could present a threat to the construct validity, I argue that this effect is most likely small in the current study because most of the questionnaires were computer assisted. Responding to a computer versus a human being may influence participants’ answers. For instance, the prevalence of self-reported violence has been shown to be higher in computer-assisted questionnaires than in personal interviews (Cantor & Lynch, 2000). Furthermore, the advantages of using self-report questionnaires may outweigh their disadvantages because they provide researchers with numeric representations of a studied phenomenon, which, in turn, allows relationships with other variables to be explored (Pedhazur & Schmelkin, 1991). For

instance, in this study, the use of self-report questionnaires provided us with the opportunity to explore the relationship between levels of parental emotional reactions and levels of children's symptoms.

### **5.2.2 The internal consistency of the questionnaires –a reliability challenge.**

Whereas construct validity refers to the "ability" of a questionnaire to measure a theoretical and abstract concept or model, reliability refers to the degree to which scores from tests or instruments are free from measurement errors (Pedhazur & Schmelkin, 1991). One of the most commonly used approaches to the estimation of reliability is internal consistency, of which Cronbach's  $\alpha$  index is the most commonly used measure. Internal consistency describes the relatedness between items in one scale and, as such, indicates whether the items in a scale measure the same construct. However, the term internal consistency may be somewhat misleading in that the alpha index is a measure of not only the magnitude of correlations among items but also the number of items included in the scale (Streiner, 2003). Various recommendations have been proposed regarding how high the reliability of a measure should be (Streiner, 2003). Pedhazur and Schmelkin (1991) noted that a determination of whether a measure is acceptable depends on the type of decisions in which the score is based. Lower reliability coefficients are more acceptable in early stages of research, for example, and higher coefficients are required when determining differences among groups (Pedhazur & Schmelkin, 1991). In the current study, all the child variables and parent variables that were used as IVs and DVs had  $\alpha$  indexes above .70.

### **5.2.3 Statistical power and nonfindings – a statistical conclusion validity challenge.**

In the current dissertation, the issue of how to interpret the nonfindings in Paper 4 is highly relevant. Altman and Bland (1995, p. 485) described the problem of nonfindings by pointing out that "absence of evidence is not evidence of absence." They further argued that one should always examine the quantification of an association rather than the  $p$ -value when no



evidence that A causes B is described (Altman & Bland, 1995). It is the strength in the statistical power that should determine whether researchers should believe in their nonfindings. Power refers to “the probability of correctly rejecting a false null hypothesis, (...) usually interpreted as the probability of finding an effect when an effect exists” (Shadish et al, 2002, p. 510). A researcher commits a type II error when he or she fails to reject the null hypothesis when it is false, which again concerns the statistical validity of a study (Shadish et al., 2002). ESs can be examined to evaluate nonfindings. However, the estimates of ESs are less precise within samples with low power. Furthermore, CIs can be investigated in the evaluations of the nonfindings. Narrow CIs indicate that the nonfindings are accurate, (Shadish et al., 2002). In the current study, Cohen’s proposed conventions for small, medium, and large ESs were used as guidelines (Cohen, 1988). However, researchers should always take care when interpreting the magnitude of ESs, as the magnitude of the ES for a given study should always be considered in light of the given context.

Before the source study, a power estimation was conducted to determine the number of participants composing the sample. This estimation was performed because low power is a frequent problem in treatment outcome studies where two or more treatment conditions are compared (Kazdin & Bass, 1989). The standard deviation needed to compute the ESs was taken from previous research. However, in Paper 4, the sample had less power because the participating parents were fewer than the participating children. Nevertheless, in investigating both the ESs and the CIs, we found that the nonfindings were conclusive. Still, we cannot draw a definitive conclusion concerning the negative findings.

**5.2.4 Attrition and missing data – an internal validity challenge.** In the current study, attrition, referring to the loss of participants after randomization took place, was a problem. Attrition from both the treatment (treatment attrition) and/or from the measurement (measurement attrition) occurred. This problem concerns the internal validity of the study,

referred to as “the validity of inferences about whether observed covariation between A (the presumed treatment) and B (the presumed outcome) reflects a causal relationship from A to B as those variables were manipulated or measures” (Shadish et al., 2002, p. 38). Although we did not find greater treatment attrition or measurement attrition in one of the two conditions, missing data still presented a problem in the current dissertation. To determine how to handle the missing data, we investigated the type of missing data. Because the responses were collected on computers, missing data predominantly occurred for full questionnaires. Furthermore, we checked whether the missing data were equally distributed. Lastly, we tested whether the respondents with missing data differed from the participants without missing data on important variables.

Missing data may be random or non-random. Random missing data occurs when a participant accidentally misses a question in focus. Non-random missing data occurs when participants do not want to answer a question, for example, because the question is confusing or too sensitive or the answer choices are not appropriate. Little and Rubin (2002) have categorized missing data into missing completely at random (MCAR), missing at random (MAR), and missing not at random (MNAR). MCAR occurs when the probability that a value for a certain missing variable is unrelated to the value of other observed variables; in other words, when the observed values in the dataset appear to be just a random sample from the dataset if it had been complete (Little & Rubin, 2002). MAR, on the other hand, occurs when the probability that a value for a certain missing variable is related to observed values on other variables (Little & Rubin, 2002). For instance, boys may have more missing values than girls. In the current data, more data were missing for older youth and for those who had experienced more traumatic events; thus, indicating that the missing data were MAR. MNAR occurs when the probability that a value for a certain variable is missing is related to the scores on that variable itself (Little & Rubin, 2002). In therapy studies comparing two therapy methods, for

example, participants in one of the conditions may not have answered the questions because they had dropped out of therapy. In such a case, the probability that an observation was missing would have been dependent on information that was not observed. Common missing data techniques perform poorly with MNAR (Baraldi & Enders, 2010). Fortunately, we did not find a difference between the two treatment groups in the amount of missing data in this study.

The mediation analyses conducted in Mplus, as well as the mixed-effects methods applied in R, provide maximum likelihood estimations under the assumption of MAR (Fairclough, 2010; Muthén & Muthén, 1998- 2010). Both analyses were based on all existing data in the dataset. Most of the data in the current study were collected on a computer, and respondents did not have an option to not answer items in the scale. We therefore only had four single missing items from parents who filled out the questionnaires on paper. A single imputation technique, replacement with the mean, was used on these cases. Then, each missing was imputed once.

Another possible challenge to the internal validity of the study was that changes in the DVs were attributed to the existence of variance in measured IVs when such changes should have been attributed to variance in variables that were not included in the study (third variables), which could be related to the manipulated variable (Shadish et al., 2002). These variables are called confounders (Shadish et al., 2002). One such variable could be the level of emotional reactions of the parent that did not participate in the study. Ideally, we would have collected responses from both parents, and we would have taken into account the other parent's involvement in the child's life more precisely. Moreover, we controlled for neither the time between when the trauma occurred and when the therapy was initiated nor the occurrence of new trauma while the study took place, and these variables could possibly be confounders.

Another possible challenge to the internal validity of the study was the potential influence of the screening on the results. Repeatedly measuring the same parents and children may lead to a bias, as filling out a questionnaire once may influence the scores when the same questionnaire is filled out again (Shadish et al., 2002). For instance, one could assume that the parents remembered and/or gained a greater understanding of the items concerning parental emotional reactions after answering them once, which might have influenced the answers when the questionnaire was completed again. However, although these issues may be considered challenges in the study, one may also assume that the randomized design controlled for the difference in the influence of confounders and the effect of screening between the therapy conditions.

**5.2.5 The relevance of the data outside the current study – an external validity challenge.** Whether the findings in the current sample may be generalized to variations in other persons and outcomes in the study and whether the findings may apply to other samples that were not in the study concerns the external validity of the study (Shadish et al., 2002). The findings and conclusions drawn from this dissertation are based on results obtained from a clinical sample. Such findings are not necessary representative of population-based samples. Children who are referred to mental health clinics may not be completely representative of children with mental health problems in the population. For example, one may assume that parents who bring their child to mental health clinics are initially more worried and stressed. Moreover, of all the participants who were invited to participate in the study, 44 declined. Unfortunately, we do not have further information about why these youth did not wish to participate. It is particularly important acknowledging the representativeness problem concerning the conclusions within the two first papers, where the therapeutic change was not investigated, and where the research questions could have been examined in a population based sample as well. Nevertheless, although the findings were not drawn from a population-

based sample, they may contribute to an understanding of the processes of investigation or may provide some information about the investigated phenomena or the relationships among them.

Furthermore, the exclusion of participants in need of a translator is worth noting. We know that many of the traumatized children and adolescents who are living in Norway have a refugee background with traumatic events such as war and flight in their history. The results in the current study do not necessarily apply to these children and adolescents. Unfortunately, we do not have any further information about these youth and their families. Furthermore, the average age in the current sample was approximately 15 years old, and the results may not necessarily be generalized to younger samples. In addition, more mothers than fathers completed the questionnaires, and thus, the responses may not be as relevant for fathers.

Lastly, most of the youth in this study had experienced several different types of trauma. Nevertheless, the parents were asked to report on their specific reactions to the trauma that their child identified as the worst or disruptive. However, as discussed and taken into account in the second paper of this dissertation, we cannot exclude the possibility that these reports were influenced by emotional reactions related to other types of trauma that the child had experienced. Thus, they might not be entirely representative of the emotional reactions of parents of traumatized children and adolescents in the population.

The above limitations all concern and challenge the external validity of the study. However, some steps were taken to ensure the study's generalizability. First, the study was an effectiveness study that was conducted in ordinary child and adolescent mental health clinics by therapists with ordinary caseloads. Second, the study included relatively few exclusion criteria. Therefore, the current sample should represent a wide range of children and youth who receive trauma treatment and their parents.

### **5.3 Clinical Implications and Suggestions for Future Research**

For clinicians, understanding the emotional impact that a child's trauma experiences may have on parents is important. The use of a valid screening tool may aid clinicians in assessing this emotional impact. To my knowledge, the PERQ is the only instrument that has been designed to measure parents' emotional reactions that are directly linked to the trauma experienced by their child. Parents' answers on this scale may help clinicians to choose the best possible focus for interventions and may provide clinicians with valuable knowledge regarding the interplay between parents and their children.

The findings may contribute to an increased clinical focus on parents' stressful emotional reactions. The overall high levels of stress among caregivers may indicate that being a parent to a child who has experienced a traumatic event is indeed highly stressful, independent of what type of trauma the child has experienced. Emphasizing this high level of stress associated with having a child who has experienced a traumatic event is important in the clinical field. Furthermore, for clinicians, feelings of shame are particularly important to acknowledge and seriously consider. Feelings of shame may prevent parents from seeking professional help. Shameful parents may be afraid that the therapist will blame them for what their child has experienced. If this feeling is not validated, severe cases of domestic violence and other shameful events may remain undisclosed and hidden.

Moreover, for both researchers and clinicians, it is essential to emphasize that parental emotional reactions should be assessed in relation to the traumatic event(s) and understood in light of the caregivers' position in relation to these events. Thus, the whole context of the trauma should be taken into account in evaluations of the type of help that is necessary for both the child and the parents. For example, only by assessing parents' previous experiences with trauma may clinicians fully understand parents' reactions. The context of the trauma should also be emphasized in future research.

Clinicians should also be aware that not only children but also parents show improvements in their reactions after the children receive therapy. Future studies should aim to understand what contributes specifically to such improvement. Moreover, future studies should seek to understand whether parental involvement may enhance child outcomes. These studies should specifically describe how changes are achieved as a result of parental involvement.

Lastly, longitudinal and follow-up studies that follow the trajectories of changes in parents' and children's reactions over time are needed. In this respect, more research should focus on the interplay between parents' emotional reactions and their parenting. To better understand what characterizes parents who have strong emotions and who can still perform their role as loving, caring, and supportive parents will be a valuable contribution in this respect. It is important to keep in mind that the interactions between parents and children after trauma are complex, and the directionality of changes in reactions and the developmental aspects of these interplays are worth investigating more deeply.

## **6 Conclusions**

Overall, the findings in the current dissertation contribute to a more extensive understanding of parents' emotional reactions after their child has experienced one or more traumatic events and the role of such reactions in child trauma treatment. No previous studies have examined parents' emotional reactions in relation to the type of trauma that the child has experienced. Moreover, few studies have focused on the role of these reactions in treatment for traumatized children and adolescents. Therefore, these findings may add to empirical and theoretical research concerning parents' emotional reactions to child trauma and their influence in child trauma treatment.

The papers reveal several interesting findings. First, parents experience diverse emotional reactions after their child has experienced traumatic events. Three types of

emotional reactions, conceptualized as distress, shame, and guilt were found. All three types are considered to be meaningful based on empirical and theoretical contributions regarding parent's emotional reactions after their child has experienced trauma. In light of these findings, these constructs should be used in both research and clinical practice to obtain a more nuanced understanding of caregivers' emotional responses.

Second, the findings show that having a child who has been exposed to a traumatic event is stressful for parents, independent of the type of trauma, but that levels of guilt and shame experienced by parents are particularly dependent on the type of trauma that the child has experienced. Thus, the context and the parents' position in their child's trauma should be taken into consideration in future research and clinical practice.

Third, TF-CBT may be implemented and is effective in regular child and adolescent mental health clinics with samples of children who have been exposed to different types of traumatic events. Fourth, parents also seem to benefit from the therapy provided to their child. In the current sample, however, the alleviation of parental emotional reactions only played a significant mediating role in the treatment effect on child depressive symptoms and not on child PTS symptoms. Thus, mechanisms other than reduced parental emotional reactions and depression may explain the treatment difference on child PTS symptoms.



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## Appendices

### English Version of the Revised PERQ

1. I have felt upset about my child's trauma.
2. I think about what happened to my child while I am working.
3. I have felt sad about my child's traumatic experience.
4. I am afraid of what other people will think about my child's traumatic experience.
5. I feel that I should have been able to keep the trauma from happening.
6. I have felt afraid since I learned about my child's trauma.
7. I have trouble falling asleep at night because I think about what happened to my child.
8. I have felt angry about my child's traumatic experience.
9. Since I learned about my child's traumatic experience, I have been having headaches, stomachaches, etc.
10. I have felt embarrassed about my child's traumatic experience.
11. I have cried about my child's traumatic experience.
12. I have felt ashamed about my child's traumatic experience.
13. I have felt responsible for my child experiencing trauma.
14. I have felt insecure since I learned that my child experienced trauma.
15. I feel guilty that I did not know about the trauma sooner.















# A Randomized Effectiveness Study Comparing Trauma-Focused Cognitive Behavioral Therapy With Therapy as Usual for Youth

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The efficacy of trauma-focused cognitive behavioral therapy (TF-CBT) has been shown in several randomized controlled trials. However, few trials have been conducted in community clinics, few have used therapy as usual (TAU) as a comparison group, and none have been conducted outside of the United States. The objective of this study was to evaluate the effectiveness of TF-CBT in regular community settings compared with TAU. One hundred fifty-six traumatized youth ( $M$  age = 15.1 years, range = 10–18; 79.5% girls) were randomly assigned to TF-CBT or TAU. Intent-to-treat analysis using mixed effects models showed that youth receiving TF-CBT reported significantly lower levels of posttraumatic stress symptoms (est. = 5.78,  $d$  = 0.51), 95% CI [2.32, 9.23]; depression (est. = 7.00,  $d$  = 0.54), 95% CI [2.04, 11.96]; and general mental health symptoms (est. = 2.54,  $d$  = 0.45), 95% CI [0.50, 4.58], compared with youth in the TAU group. Youth assigned to TF-CBT showed significantly greater improvements in functional impairment (est. = -1.05,  $d$  = -0.55), 95% CI [-1.67, -0.42]. Although the same trend was found for anxiety reduction, this difference was not statistically significant (est. = 4.34,  $d$  = 0.30), 95% CI [-1.50, 10.19]. Significantly fewer youths in the TF-CBT condition were diagnosed with posttraumatic stress disorder compared to youths in the TAU condition,  $\chi^2(1, N = 116) = 4.61, p = .031, \Phi = .20$ . Findings indicate that TF-CBT is effective in treating traumatized youth in community mental health clinics and that the program may also be successfully implemented in countries outside the United States.

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A significant number of children and youth throughout the world experience traumatizing events (Copeland, Keeler, Angold, & Costello, 2007; Norris, Friedman, & Watson, 2002); if left untreated, trauma exposure may result in a variety of mental health problems (Dube, Felitti, Dong, Giles, & Anda, 2003; Finkelhor, Ormrod, & Turner, 2009; Ford, Elhai, Connor, & Frueh, 2010). Studies have identified an association between traumatization and

increases in anxiety and mood disorders (Famularo, Fenton, Kinscherff, & Augustyn, 1996) and severe behavioral problems (Saigh, Yasyk, Oberfield, Halamandaris, & McHugh, 2002), but posttraumatic stress symptoms (PTSS) are the most commonly reported symptoms of psychological distress. Clinically significant PTSS levels have been reported in the aftermath of a wide variety of traumatic experiences, such as violence (Kilpatrick et al., 2003), war trauma (Ajdukovic, 1998), abuse (Ackerman, Newton, McPherson, Jones, & Dykman, 1998), chronic illness (Connolly, McCowry, Hayman, Mahony, & Artman, 2004), burns (Saxe et al., 2005), traffic accidents (Meiser-Stedman, Smith, Glucksman, Yule, & Dalgleish, 2008), child sexual abuse (Finkelhor, 1994), and natural disasters (Jensen, Dyb, & Nygaard, 2009; La Greca, Silverman, Vernberg, & Prinstein, 1996).

Given the impairing effects of severe PTSS and other mental health problems that children and adolescents may develop in the aftermath of a traumatic event, effective treatments are needed. A review examining the evidence on psychosocial treatments for children and adolescents exposed to traumatic events concluded that trauma-focused cognitive behavioral therapy (TF-CBT) met the well-established criteria for evidence-based practices (Silverman et al., 2008). TF-CBT has been tested in several randomized controlled trials, which have all demonstrated the efficacy of the program in reducing

PTSS and other emotional problems in children (Cohen & Mannarino, 2008; Silverman et al., 2008). (See Table 1).

Follow-up studies have also shown that the positive treatment gains are maintained (Cohen, Mannarino, & Knudsen, 2005; Deblinger, Mannarino, Cohen, & Steer, 2006; Deblinger, Steer, & Lippmann, 1999). The program was originally developed and investigated in children exposed to sexual abuse (Cohen, Deblinger, Mannarino, & Steer, 2004; Cohen & Mannarino, 1996, 1997, 1998; Deblinger, Lippman, & Steer, 1996; King et al., 2000). However, one recent study documented the use of TF-CBT in children experiencing domestic violence (Cohen, Mannarino, & Iyengar, 2011), and two pilot studies have demonstrated the effective use of TF-CBT in treating childhood traumatic grief (Cohen, Mannarino, & Knudsen, 2004; Cohen, Mannarino, & Staron, 2006). The use of TF-CBT has also been explored with children exposed to catastrophes, such as the September 11 terrorist attacks (Hoagwood, Radigan, Rodriguez, Levitt, & Foster, 2006) and hurricane Katrina (Jaycox et al., 2010); these studies all yielded promising results. Furthermore, a group-based TF-CBT protocol for sexually abused children and their mothers has been tested and showed positive effects (Deblinger, Stauffer, & Steer, 2001). The next step in advancing this research base is to examine whether TF-CBT is also

TABLE 1  
Description of Randomized Controlled Trial Studies Investigating TF-CBT

| <i>Study</i>   | <i>Type Trauma</i>            | <i>N</i> | <i>Age</i> | <i>% Girls</i> | <i>Study Context (TF-CBT)</i> | <i>Comparison Group(s)</i>                                |
|--|-------------------------------|----------|------------|----------------|-------------------------------|---|
| Cohen & Mannarino (1996) <sup>a</sup>                                  | Sexual abuse                  | 67       | 3–6        | 58             | Trauma clinic                 | Nondirective supportive therapy                           |
| Deblinger, Lippman, & Steer (1996) <sup>a</sup>                        | Sexual abuse                  | 90       | 7–13       | 83             | Trauma clinic                 | Parent only<br>Child only community control               |
| Cohen & Mannarino (1998) <sup>a</sup>                                  | Sexual abuse                  | 49       | 7–14       | 69             | Trauma clinic                 | Nondirective supportive therapy                           |
| King et al. (2000)   | Sexual abuse                  | 36       | 5–17       | 69             | Trauma clinic                 | Child alone; Family CBT; waitlist                         |
| Deblinger, Stauffer, & Steer (2001) <sup>a</sup>                       | Sexual abuse                  | 44       | 2–8        | 61             | Trauma clinic                 | Supportive group vs. group CBT                            |
| Cohen, Deblinger, Mannarino, & Steer (2004) <sup>a</sup>               | Sexual abuse                  | 229      | 8–14       | 79             | Trauma clinics                | Child-centered therapy                                    |
| Cohen, Mannarino, & Knudsen (2005) <sup>a</sup>                        | Sexual abuse                  | 82       | 8–15       | 68             | Trauma clinic                 | Nondirective supportive therapy                           |
| Cohen, Mannarino, Perel, & Staron (2007) <sup>a</sup>                  | Sexual abuse                  | 24       | 10–17      | 100            | Trauma clinic                 | Setraline; Placebo  |
| Jaycox et al. (2010)   | Hurricane Katrina             | 118      | 9–13       | 56             | Community clinic & schools    | CBT in school (CBITS)                                     |
| Cohen, Mannarino, & Iyengar (2011) <sup>a</sup>                        | Domestic violence             | 124      | 7–14       | 55             | Community IPV center          | Child-centered therapy                                    |
| Deblinger, Mannarino, Cohen, Runyon & Steer (2011) <sup>a</sup>        | Sexual abuse                  | 210      | 4–11       | 61             | Trauma clinics                | Dismantling study (without trauma narrative & 8 sessions) |
| Scheeringa, Weems, Cohen, Amaya-Jackson, & Guthrie (2011) <sup>a</sup> | Heterogeneous types of trauma | 64       | 3–6        | 34             | Trauma clinic                 | Waitlist  |

*Note.* TF-CBT = trauma-focused cognitive behavioral therapy.

<sup>a</sup>Study by treatment developers.

applicable outside the United States, where the program was developed. In addition, because few of the available studies were conducted in community clinics, few have included patients with multiple types of traumatic experiences, and only one has compared TF-CBT with usual care; more studies are needed to document the benefits of TF-CBT compared to usual clinical care in community clinics. The results obtained in specialized clinics may not be transferrable to community clinics for several reasons. First, studies have found that children and adolescents who are referred to community clinics often have higher levels of co-occurring problems and less family support than samples from university-based research clinics (Ehrenreich-May et al., 2011; Schoenwald & Hoagwood, 2001; Shirk, Karver, & Brown, 2011; Southam-Gerow, Weisz, & Kendall, 2003). In addition, therapists' working conditions often differ. For example, therapists in regular clinics treat a wide variety of disorders, and workloads tend to differ (Kazdin, 2002; Southam-Gerow, Rodríguez, Chorpita, & Daleiden, 2012; Weisz & Addis, 2006; Weisz & Gray, 2008; Weisz et al., 2009).

In this study, we tested whether TF-CBT was superior to therapy as usual (TAU) in eight community clinics for children and adolescents with trauma-related symptoms in Norway. Because youth referred to community clinics often present with a variety of symptom clusters, several different disorders were assessed, including PTSS, depression, anxiety, and general mental health, and clinical evaluations of posttraumatic stress disorder (PTSD) were performed. Based on studies that have shown that receiving any type of treatment leads to better outcomes than no treatment (Wampold et al., 1997), we predicted that youth in both treatment conditions would improve. However, based on previous TF-CBT studies, we predicted that participants in the TF-CBT condition would report significantly greater improvements in all the aforementioned symptom levels compared to participants in the TAU group posttreatment. We also predicted that the number of youth diagnosed with PTSD would be significantly lower in the TF-CBT group compared to the TAU group posttreatment. Finally, we hypothesized that the TF-CBT group would report significantly greater improvements in daily functioning compared with the TAU group.

## METHOD

### Procedure

The study was approved by the Regional Committee for Medical and Health Research Ethics. In addition, written, active consent to participate was provided by both

the children and their parents. The target sample was youth between the ages of 10 and 18 years who had been referred to one of eight community mental health outpatient clinics in Norway between April 2008 and February 2011. Normal referral procedures were followed, as all of the children were referred to treatment by their primary physician or Child Welfare Services. To be eligible for the study, the youth had to have experienced at least one traumatizing event and suffered from significant PTS reactions. The exclusion criteria were acute psychosis, suicidal behavior, and a need for an interpreter.

To assess trauma experiences, we developed a checklist based on the items described in the Traumatic Events Screening Inventory for Children (Ribbe, 1996). This checklist included the following experiences: (a) severe accident, (b) natural disaster, (c) sudden death or severe illness of a person close to the participant, (d) extremely painful or frightening medical procedures, (e) violence or threats of violence outside the family, (f) robbery or assault, (g) kidnapping, (h) witnessing violence outside the family, (i) witnessing violence within the family, (j) physical abuse within the family, (k) sexual abuse outside the family, (l) sexual abuse within the family, and (m) other frightening or overwhelming experiences. If the parent or youth reported exposure to one or more of these events, the youth was assessed for PTSS using the Child PTSD Symptom Scale (CPSS; Foa, Johnson, Feeny, & Treadwell, 2001). Those with scores of 15 or above on the CPSS and at least one symptom in each of the three PTSD symptom criteria (reexperiencing, avoidance, and hyperarousal) were invited to participate in the study. A total of 454 children and adolescents were screened for eligibility using the CPSS. Out of these, 200 children scored above the established cutoff of 15, and 156 agreed to participate in the study (Figure 1).

If the inclusion criteria were met and consent was provided, the youth were randomly assigned to receive either TF-CBT or TAU. At each clinic, a computer-generated, randomization procedure allocated participants into random blocks of four or six in random order with an equal probability of four or six with half (i.e., two or three) assigned to TF-CBT and half to the control group. This procedure was used to enhance the balance between TF-CBT and TAU and also to protect the blind for raters. The randomization was not stratified by any variables. The youth were then further assessed with a battery of instruments measuring mental health. The assessments were computer assisted and conducted by a clinician who was not employed at the clinic and was blinded to the treatment conditions. Symptoms were reassessed midtreatment (after the sixth session) and posttreatment (after 15 sessions). All measures were administered in the same order for all

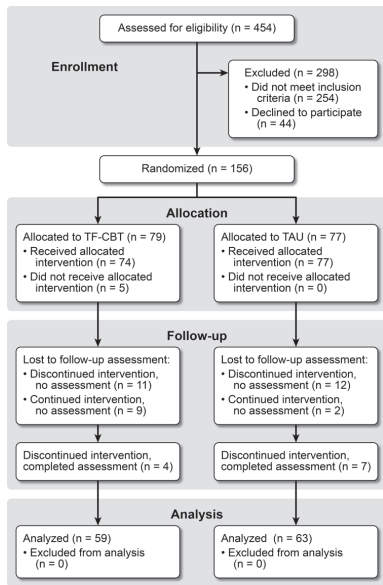


FIGURE 1 Flow chart: Participants.

participants. The youths received a small gift card (e.g., a movie pass) after completing the posttreatment assessment, but no other economic compensation was given.

### Participants

A detailed description of the sample is presented in Tables 2 and 3. The youths reported being exposed to an average of 3.6 different types of traumas ( $SD = 1.8$ , range = 1–10). In total, the children reported the following traumatizing events: 60.9% ( $n = 95$ ) sudden death or severe illness of a person close to them, 59% ( $n = 92$ ) violence or threats of violence outside the family context, 45.5% ( $n = 71$ ) physical abuse within the family, 42.9% ( $n = 67$ ) witnessing violence within the family, 27.6% ( $n = 43$ ) witnessing violence outside the family, 27.6% ( $n = 43$ ) sexual abuse outside the family, 20.5% ( $n = 32$ ) severe accident, 16% ( $n = 25$ ) extremely painful or frightening medical procedures, 10.9% ( $n = 17$ ) robbery or assault, 7.7% ( $n = 12$ ) sexual abuse within the family, 5.8% ( $n = 9$ ) natural disaster, 5.1% ( $n = 8$ ) kidnapping, and 30.8% ( $n = 48$ ) other frightening or overwhelming experiences.

### Therapists

The therapists were recruited from the participating clinics and delivered the treatment at the clinic where

TABLE 2  
Description of Sample

| Demographics of the Children ( $N = 156$ )               | $n$ (%)                      |
|--|------------------------------|
| Gender ( $N = 156$ )                                     |                              |
| Girls  | 124 (79.5)                   |
| Boys   | 32 (20.5)                    |
| Age ( $N = 156$ )  |                              |
| Range  | 10–18                        |
| Mean   | $M = 15.1$<br>( $SD = 2.2$ ) |
| Ethnicity ( $N = 156$ )                                  |                              |
| Norwegian  | 115 (73.7)                   |
| Asian  | 17 (10.9)                    |
| One parent Norwegian                                     | 13 (8.3)                     |
| Western European countries                               | 2 (1.3)                      |
| Eastern European countries                               | 2 (1.3)                      |
| African countries  | 3 (1.9)                      |
| South/Central American countries                         | 2 (1.3)                      |
| Nordic countries   | 1 (0.6)                      |
| Other  | 1 (0.6)                      |
| Living situation ( $N = 156$ )                           |                              |
| Live together with both parents                          | 35 (22.4)                    |
| Live same amount with the mother and father              | 4 (2.6)                      |
| Live mostly or only with the mother                      | 81 (51.9)                    |
| Live mostly or only with the father                      | 14 (9)                       |
| Foster care  | 12 (7.7)                     |
| Other (alone, institution, with boyfriend or girlfriend) | 10 (6.4)                     |
| Household income <sup>a</sup> ( $n = 128$ )              |                              |
| <NK 200,000  | 20 (15.6)                    |
| <USD 35,000  |                              |
| [NK 200,000, NK 500,000], [USD 35,000, USD 87,000]       | 49 (38.3)                    |
| [NK 500,000, 1,000,000 NK] [USD 87,000, USD 174,000]     | 38 (29.7)                    |
| ≥NK 1,000,000 NK   | 9 (7.0)                      |
| ≥USD 174,000   |                              |
| Do not know  | 12 (9.4)                     |
| Traumatic experiences—Total ( $N = 156$ )                |                              |
| Accident   | 32 (20.5)                    |
| Natural disaster   | 9 (5.8)                      |
| Sudden death/injury of a close person                    | 95 (60.9)                    |
| Hospitalization  | 25 (16)                      |
| Violence outside the family                              | 92 (59)                      |
| Robbed   | 17 (10.9)                    |
| Kidnapped  | 8 (5.1)                      |
| Witnessed physical abuse outside the family              | 43 (27.6)                    |
| Witnessed physical abuse inside the family               | 67 (42.9)                    |
| Exposed to physical abuse inside the family              | 71 (45.5)                    |
| Sexual abuse outside the family                          | 43 (27.6)                    |
| Sexual abuse inside the family                           | 12 (7.7)                     |
| Other  | 48 (30.8)                    |
| Total number of trauma experiences ( $N = 156$ )         |                              |
| Range  | 1–10                         |
| Mean   | $M = 3.6$<br>( $SD = 1.8$ )  |

<sup>a</sup>Mean household income for 2010 was \$75,000 USD.

they were employed. The TF-CBT therapists ( $n = 26$ ) were selected by the clinic leader and volunteered to receive training in TF-CBT and provide therapy to the

TABLE 3  
Description of Participating Parent

| Demographics of the Parents ( <i>n</i> = 128)                   | <i>n</i> (%) |
|---|--------------|
| Person who completed the questionnaire ( <i>n</i> = 128)        |              |
| Mother  | 92 (71.9)    |
| Father  | 22 (17.2)    |
| Foster parents  | 11 (8.6)     |
| Other   | 3 (2.3)      |
| Caregiver's employment situation <sup>a</sup> ( <i>n</i> = 119) |              |
| Working full time   | 64 (53.8)    |
| Working part time   | 18 (15.1)    |
| Job seeker  | 4 (3.4)      |
| Student   | 4 (3.4)      |
| Welfare recipient/Other   | 29 (24.4)    |
| Caregiver's education <sup>b</sup> ( <i>n</i> = 120)            |              |
| Completed junior high school                                    | 17 (14.2)    |
| Completed high school   | 44 (36.7)    |
| Completed vocational school                                     | 15 (12.5)    |
| ≤4 years of college/university                                  | 37 (30.8)    |
| >4 years of college/university                                  | 7 (5.8)      |

<sup>a</sup>In 2012, 68% of the population was working full time.

<sup>b</sup>In 2010, 30% of the population had completed high school as their highest level of education.

participants who were randomly selected to receive TF-CBT. The TAU therapists (*n* = 45) received the case through the referral process, and they provided their usual treatment. The therapist group was predominantly female (84.5%), which reflects the gender distribution of therapists in child clinics in Norway. In the TF-CBT condition, each therapist treated an average of 3.0 participants (*SD* = 1.4, range = 1–6). The group consisted of 80.8% (*n* = 21) psychologists, 7.7% (*n* = 2) psychiatrists, 7.7% (*n* = 2) educational therapists, and 3.8% (*n* = 1) social workers. When asked to specify their theoretical orientation, 66.7% (*n* = 16) described their orientation as cognitive-behavioral, 23.1% (*n* = 6) as psychodynamic, 7.7% (*n* = 2) as systemic/family therapy, and 7.7% (*n* = 2) did not report a theoretical orientation. On average, the TF-CBT therapists had 10.2 years of experience (*SD* = 6.4, range = 3–28). In the TAU condition, each therapist treated an average of 1.7 participants (*SD* = 1.3, range = 1–9). This group consisted of 51.1% (*n* = 23) psychologists, 26.6% (*n* = 12) social workers, 17.8% (*n* = 8) educational therapists, and 4.4% (*n* = 2) psychiatrists. In this group, 24.4% (*n* = 11) described their theoretical orientation as cognitive-behavioral, 40.0% (*n* = 18) as psychodynamic, and 17.8% (*n* = 8) family/systemic. The remaining 17.8% (*n* = 8) did not report their orientation. On average, the therapists had 12.5 years of experience (*SD* = 10.3, range = 1–40). The two groups were comparable in terms of the therapists' gender ( $\chi^2 = 0.22$ , *p* = .639) and years of experience, *t*(64) = -1.0, *p* = .320. However, there were significant differences in the therapists' educational backgrounds ( $\chi^2 = 12.9$ , *p* = .024) and

theoretical orientations ( $\chi^2 = 8.24$ , *p* = .041). In addition, the TF-CBT therapists performed significantly more study treatments compared to TAU therapists, *t*(69) = 4.0, *p* < .001.

## Interventions

### TF-CBT

TF-CBT is a short-term, component-based intervention consisting of 12 to 15 sessions. The program integrates cognitive, behavioral, interpersonal, and family therapy principles as well as trauma interventions. Each component is offered to the child and parent in both parallel sessions and co-joint sessions. The components are as follows: psycho-education, teaching relaxation and affective modulation skills, learning cognitive coping skills, working through the trauma narrative, cognitive processing, in vivo mastery of trauma reminders, enhancing safety, and future development. In addition, the parent receives interventions aimed at improving parenting skills (see Cohen, Mannarino, & Deblinger, 2006). The TF-CBT therapists were trained by the developers of the treatment and other approved TF-CBT trainers. All therapists received between 4 and 6 days of initial training. TF-CBT therapists were encouraged to read the treatment manual (Cohen, Mannarino, & Deblinger, 2006) and complete a web-based learning course for trauma-focused cognitive behavioral therapy (<http://www.musc.edu/tfcbt>). Treatment adherence was supported by initial session-by-session supervision provided by trained TF-CBT therapists based on reviews of audio-recorded sessions. As the therapist became more familiar with the program, supervision was reduced to biweekly sessions.

### Therapy as Usual

In the TAU condition, therapists were asked to provide the treatment they believed would be effective for the particular case. All participants received individual treatment (no group treatment), but in 55.3% (*n* = 42) of the cases, parents were also involved in the therapy process. The therapists reported receiving an average of 1.4 hr of supervision (*SD* = 5.3, range = 0–40) per case.

### Treatment Adherence

All therapy sessions were audio recorded. Treatment fidelity was examined by trained TF-CBT therapists. In the TF-CBT group, all sessions were coded using the TF-CBT Fidelity Checklist (Deblinger, Cohen, Mannarino, Murray, & Epstein, 2008). The checklist contains 11 items (rated present vs. absent) that follow the treatment components. The core components that had to be completed in order for a therapy to be defined as TF-CBT were as follows: psychoeducation, relaxation skills, affect

regulation, instruction in the cognitive triangle, working through the trauma narrative, working with dysfunctional thoughts, and the parenting component. Based on these criteria, five cases failed to reach an acceptable level of fidelity.

In the therapy as usual group, at least five sessions were coded in each case (the first, second, third, sixth, and ninth sessions). These sessions were selected to provide information regarding whether the core aspects of TF-CBT were provided. Because the primary aim was to ensure that the therapists were not providing any of the core aspects of TF-CBT, the TF-CBT Fidelity Checklist was used. In cases in which elements of the core components were provided, additional sessions were investigated to rule out treatment overlap; this analysis resulted in 392 coded sessions. In the TAU condition, none of the cases met the adherence criteria for TF-CBT, although some TAU cases may have used certain elements similar to TF-CBT, such as psychoeducation.

### Measurements

Youth exposed to traumatizing events and referred to community child mental health clinics often have multiple problems, including PTSS, depressive symptoms, other anxiety problems, and externalizing problems. Therefore, we assessed a range of possible mental health problems. The primary outcome measure was PTSS. These symptoms were measured using the CPSS and the Clinician-Administered PTSD Scale for Children and Adolescents (CAPS-CA). Secondary outcome measures included the Mood and Feelings Questionnaire (MFQ), the Screen for Child Anxiety-Related Disorders (SCARED), and the Strengths and Difficulties Questionnaire (SDQ).

#### CPSS

The CPSS is a self-report questionnaire developed for children and youth between 10 and 18 years of age that examines the PTSS described in the *Diagnostic and Statistical Manual of Mental Disorders* (4th ed. [DSM-IV]; American Psychiatric Association, 1994; criterion B, reexperience; C, avoidance; and D, hyperarousal; Foa et al., 2001). The CPSS consists of 17 items. The child rated the symptom frequency during the last 2 weeks using a 4-point scale ranging from 0 (*not at all*) to 3 (*5 or more times a week almost always*). In the screening sample of 454 participants, the three subscales showed internal consistencies of  $\alpha = .84$  for the reexperience factor,  $\alpha = .80$  for the avoidance factor,  $\alpha = .75$  for the hyperarousal factor, and  $\alpha = .91$  for the total scale. The PTSS were assessed based on the children's self-reported "worst" trauma.

The CPSS contains an additional scale that measures the influence of PTSS on daily functioning (fCPSS). The child answered *yes* or *no* depending on whether the symptoms affect daily functioning in six areas: friendship, family, school, hobbies and activities, household duties, and

general life satisfaction. A 2-point scale was used: 1 indicated an impact on areas of daily functioning, and 2 indicated no impact on areas of functioning. The Norwegian translation of the scale was approved by the developers. The instrument was completed within 10 to 20 min.

#### The CAPS-CA

The CAPS-CA is a structured clinical interview that has been adapted to be suitable for children and adolescents younger than 15 (Nader et al., 1996; Nader et al., 2004). The CAPS-CA measures trauma exposure and the frequency and intensity of the 17 DSM-IV-defined symptoms of PTSD. In addition, the impact of symptoms in terms of overall distress and functional impairment is assessed, as well as associated features (survivor guilt, shame, and dissociation). In this study, only the diagnostic PTSS were used. Items were scored on 5-point frequency scales from 0 (*none of the time*) to 4 (*most of the time*) and 5-point intensity rating scales from 0 (*not a problem*) to 4 (*a big problem, I have to stop what I am doing*) assessing the past month. Items were scored based on both the youth's answers and clinical judgment during the interview. The total scale showed satisfactory internal consistency ( $\alpha = .90$ ), as did the DSM-IV defined tripartite model (reexperience:  $\alpha = .87$ , avoidance:  $\alpha = .77$ , hyperarousal:  $\alpha = .79$ ).

The DSM-IV algorithm was used to determine a PTSD diagnosis. At least one symptom of the B criterion, three of the C criterion, and two of the D criterion were needed. A frequency score of 1 and an intensity score of 2 were required for a particular symptom to meet the criterion (Weathers, Ruscio, & Keane, 1999).

#### MFQ

The MFQ is a self-report questionnaire designed to assess depressive symptoms in children and youth between 8 and 18 years of age (Angold, Costello, Messer, & Pickles, 1995). The questionnaire consists of 34 items measuring both the full range of DSM-IV diagnostic criteria for depressive disorders and additional items reflecting common affective, cognitive, and somatic features of childhood depression. The child rated the problem frequency during the previous 2 weeks using a 3-point scale: 0 (*not true*), 1 (*sometimes true*), and 2 (*true*). A score of 27 or more was considered to be within clinical range. The instrument showed good internal consistency in this sample ( $\alpha = .91$ ).

#### SCARED

The SCARED is a self-report questionnaire developed by Birmaher et al. (1999) to measure anxiety symptoms in



children and youth aged 8 to 18 years. The instrument consists of 41 items that cover five specific anxiety disorders: panic disorder or significant somatic symptoms, generalized anxiety disorder (GAD), separation anxiety disorder, social anxiety disorder, and school avoidance. The child or youth rated the problem frequency during the previous three months using a 3-point scale: 0 (*not true or hardly ever true*), 1 (*somewhat true or sometimes true*), and 2 (*very true or often true*). A total score of 25 or more was considered to be within the clinical range for anxiety. In this sample, the instrument showed satisfactory internal consistency in terms of the total scale ( $\alpha = .93$ ) and the subscales for panic disorder/significant somatic symptoms ( $\alpha = .90$ ), generalized anxiety disorder ( $\alpha = .83$ ), separation anxiety disorder ( $\alpha = .78$ ), social anxiety disorder ( $\alpha = .85$ ), and school avoidance ( $\alpha = .81$ ).

### SDQ

The SDQ is a self-report questionnaire that covers general mental health problems in children and youth (Goodman, 2001). The SDQ contains 25 items that cover five areas of clinical interest: hyperactivity/inattention (e.g., “restless, overactive”), emotional symptoms (e.g., “has many worries”), conduct problems (e.g., “often has temper tantrums”), peer relation problems (e.g., “picked on or bullied by other children”), and prosocial behavior (e.g., “kind to younger children”). The child rated each item with *not true*, *somewhat true*, and *certainly true* based on their experiences during the previous 6 months (0 to 2 for negatively worded items and 2 to 0 for positively worded items). The general difficulties total score is based on four problem-oriented subscores and a Norwegian norm-sample; a total score of 18 or more was within the 90th percentile (Rønning, Handegaard, Sourander, & Mørch, 2004). In this sample, the total scale showed a satisfactory internal consistency of  $\alpha = .73$ .

### Data Analyses

A power analysis was performed prior to recruitment. Using an estimated difference between intervention and control groups of approximately 0.5 *SD* and requiring a power of 0.80 and  $\alpha = .05$ , this analysis showed that 62 participants were required in each treatment group. Descriptive statistics were used to investigate the characteristics of the sample. A mixed effects model was performed on each of the outcome measures. Mixed effects models account for the nested nature of the data, and they can handle missing data under the missing at random assumption. In addition, mixed effects models have the advantage of estimating measures of random variation both between and within participants (Pinheiro & Bates, 2000). Given the longitudinal design of this study, the data set was nested by participants.

Outcomes were analyzed with various approaches. First, intention-to-treat (ITT) analyses were conducted; data from all recruited participants (including the dropouts) were analyzed in the condition into which they were originally randomized. Next, only the completed cases (defined as completing at least six sessions) were included. The cutoff of six sessions was chosen because this cutoff included participants who had completed at least half of the program and could thus be assumed to have gained some effect from the treatment. Finally, a per-protocol (PP) approach was followed, that is, the data were analyzed with regard to the type of treatment the participants *actually* received. Participants who were randomized to the TF-CBT condition but did not receive allocated treatment were first treated as cases in the TAU-condition (PP1) and then removed from the analyses (PP2). To investigate the association between the diagnostic status of PTSD and therapy condition, an exact chi-square test for independence was conducted. Effect sizes were calculated using Cohen's *d* to show the strength and magnitude of changes within each treatment group and the difference between the interventions. To determine whether changes in symptom levels were clinically significant, we first determine the proportion of participants who met the diagnostic criteria for PTSD posttreatment. Second, we calculated how many participants moved from a dysfunctional to functional level posttreatment, where functional level was defined as being below the clinical cutoff in scales for which norms were available (i.e., MFQ, SCARED, and SDQ). Because there are no available data from normal samples on the CPSS, a clinically significant change was defined as 2 *SD* below the mean T1 score (Wise, 2004). The differences between the two groups were investigated with chi-square statistics. We performed Holm correction in the ITT analyses (five tests) and the completer analyses (five tests) as described in Aickin and Gensler (1996). Briefly, the *p* values were ordered from lowest to highest. With adjustment within a group of *k* tests, the  $i^{\text{th}}$  ( $i = 1, \dots, k$ ) lowest *p* value is multiplied with  $k-i+1$ , starting with the lowest one. If an adjusted *p* value is made  $\geq 1$  by this procedure it is set to 1, and so are all the following *p* values.

All analyses were conducted using the statistics program R (Hornik, 2012) and SPSS, version 17.

## RESULTS

### Analyses

#### *Attrition and Baseline Comparisons*

Of the 156 children and youth who completed the intake assessments, 122 (77.6%) participated in the post-treatment assessment (T3). The attrition group consisted

of 23 youth who dropped out of treatment prior to Session 6 (11 in TF-CBT vs. 12 in TAU) and 11 participants who continued treatment but did not complete the assessments (nine in TF-CBT vs. two in TAU). The attrition rate was not significantly different between the two therapy groups,  $\chi^2(1)=1.17, p=.281, \Phi=-.09$ ). There were no significant differences between the retention group and the attrition group with regard to basic characteristics, such as gender, parent/background information, or primary and secondary outcome variables. However, the attrition group was significantly older than the retention group,  $t(54.67)=2.11, p=.040$ , and the attrition group reported being exposed to significantly higher numbers of different traumatic events,  $t(154)=-3.07, p=.003$ .

There were no significant differences between participants in the two treatment conditions at baseline in terms of age,  $t(154)=-0.15, p=.883$ ; gender,  $\chi^2(1)=2.27, p=.132$ ; ethnicity,  $\chi^2(8)=6.92, p=.545$ ; living/care situation,  $\chi^2(5)=6.72, p=.243$ ; total number of traumas experienced,  $t(154)=0.53, p=.595$ ; household income,  $\chi^2(4)=5.46, p=.244$ ; or the parent's level

of education,  $\chi^2(4)=3.43, p=.488$ . Furthermore, the groups had comparable T1 scores on the CPSS,  $t(154)=-0.05, p=.962$ ; MFQ,  $t(154)=0.05, p=.958$ ; SCARED,  $t(149)=.30, p=.958$ ; and SDQ,  $t(152)=-0.20, p=.840$ .

**Treatment Outcomes**

The means and standard deviations are presented by treatment condition and time, treatment effects, interaction effects, and effect sizes (*d*) in Table 4.

*ITT Analyses*

*Primary outcome measure*

**Child PTSS.** There was a main effect of treatment condition on child PTSS (measured by the CPSS), in which participants in the TF-CBT group scored significantly lower ( $M=11.34, SD=10.52$ ) at T3 compared with participants in the comparison group ( $M=16.87, SD=11.49$ );  $d=0.51, t(154)=3.30, p=.001$  with Holm

TABLE 4  
Descriptions of Outcome Variables: Means and Standard Deviations by Treatment Condition and Time and Effect Sizes

| Outcome | Therapy as Usual               |                                |                                | <i>d</i> <sup>1</sup> | TF-CBT                         |                                |                                | <i>d</i> <sup>2</sup> | <i>d</i> <sup>3</sup> |
|---------|--------------------------------|--------------------------------|--------------------------------|-----------------------|--------------------------------|--------------------------------|--------------------------------|-----------------------|-----------------------|
|         | Time 1<br><i>M (SD)</i>        | Time 2<br><i>M (SD)</i>        | Time 3<br><i>M (SD)</i>        |                       | Time 1<br><i>M (SD)</i>        | Time 2<br><i>M (SD)</i>        | Time 3<br><i>M (SD)</i>        |                       |                       |
| CPSS    | 26.88 (7.90)<br><i>n</i> = 77  | 20.68 (11.63)<br><i>n</i> = 60 | 16.87 (11.49)<br><i>n</i> = 63 | 1.27                  | 26.82 (8.05)<br><i>n</i> = 79  | 18.90 (10.79)<br><i>n</i> = 63 | 11.34 (10.52)<br><i>n</i> = 59 | 1.92                  | 0.51                  |
| fCPSS   | 7.99 (1.40)<br><i>n</i> = 76   | 8.47 (1.89)<br><i>n</i> = 60   | 9.22 (2.09)<br><i>n</i> = 63   | -0.88                 | 8.03 (1.84)<br><i>n</i> = 79   | 8.90 (1.82)<br><i>n</i> = 62   | 10.33 (1.99)<br><i>n</i> = 58  | -1.25                 | -0.55                 |
| CAPS    | 60.65 (21.20)<br><i>n</i> = 77 | -                              | 42.05 (26.58)<br><i>n</i> = 61 | 0.88                  | 60.19 (19.90)<br><i>n</i> = 79 | -                              | 30.55 (25.30)<br><i>n</i> = 55 | 1.49                  | 0.46                  |
| MFQ     | 35.32 (13.32)<br><i>n</i> = 77 | 27.82 (15.87)<br><i>n</i> = 60 | 22.66 (16.24)<br><i>n</i> = 62 | 0.95                  | 35.43 (11.77)<br><i>n</i> = 79 | 24.73 (14.69)<br><i>n</i> = 62 | 14.40 (13.67)<br><i>n</i> = 57 | 1.79                  | 0.54                  |
| SCARED  | 33.32 (16.70)<br><i>n</i> = 76 | 30.38 (17.84)<br><i>n</i> = 60 | 24.82 (17.15)<br><i>n</i> = 61 | 0.51                  | 34.12 (15.97)<br><i>n</i> = 75 | 28.56 (16.56)<br><i>n</i> = 62 | 19.67 (17.27)<br><i>n</i> = 54 | 0.90                  | 0.30                  |
| SDQ     | 19.09 (5.47)<br><i>n</i> = 76  | -                              | 14.54 (6.12)<br><i>n</i> = 59  | 0.83                  | 18.92 (4.90)<br><i>n</i> = 78  | -                              | 11.95 (6.51)<br><i>n</i> = 56  | 1.42                  | 0.45                  |

Note. CPSS = Child PTSD Symptom Scale; fCPSS = PTS symptoms influence on daily functioning; CAPS = Clinician-Administered PTSD Scale; MFQ = Mood and Feelings Questionnaire; SCARED = Screen for Child Anxiety-Related Disorders; SDQ = Strengths and Difficulties Questionnaire.

*d*<sup>1</sup> = calculated based on differences between T1 and T3 in the TAU condition:

$$\frac{\bar{X}_{TAU\ T1} - \bar{X}_{TAU\ T3}}{SD_{TAU\ T1}}$$

*d*<sup>2</sup> = calculated based on differences between T1 and T3 in the TF-CBT condition:

$$\frac{\bar{X}_{TFCBT\ T1} - \bar{X}_{TFCBT\ T3}}{SD_{TF - CBT\ T1}}$$

*d*<sup>3</sup> = calculated based on differences between the two conditions at T3:

$$\frac{\bar{X}_{TAU\ T3} - \bar{X}_{TFCBT\ T3}}{Spooled}$$



adjustment:  $p = .006$ ; there was also a significant Time  $\times$  Group interaction effect,  $F(2) = 5.01$   $p = .007$ , with Holm adjustment:  $p = .037$ . In addition, there was a main effect of treatment in both groups, indicating that participants showed significant reductions in PTSS between the pre- and posttherapy assessments: TF-CBT,  $t(241) = -12.01$ ,  $p < .001$ ; TAU:  $t(241) = -7.80$ ,  $p < .001$ . Measurement of the impact of PTSS on daily functioning (as measured by the fCPSS subscale) revealed a main effect of treatment condition on functional impairment. The results showed that trauma influenced daily functioning significantly less (indicated by higher scores) in the TF-CBT group ( $M = 10.33$ ,  $SD = 1.99$ ) than in the TAU group ( $M = 9.22$ ,  $SD = 2.09$ ) at the end of therapy ( $d = -0.55$ ),  $t(154) = -3.32$ ,  $p = .001$ , with Holm adjustment:  $p = .006$ . In addition, in terms of functional impairment, there was a main effect of treatment on time in both groups.

### Secondary outcome measures

Symptoms of depression, anxiety, and general mental health problems. There was a main effect of treatment condition on children's depressive symptoms. Participants in the TF-CBT condition ( $M = 14.40$ ,  $SD = 13.67$ ) scored significantly lower than those in the TAU condition ( $M = 22.67$ ,  $SD = 16.24$ ) on depressive symptoms at T3 ( $d = 0.54$ ),  $t(154) = 2.79$ ,  $p = .006$ , with Holm adjustment:  $p = .018$ . Furthermore, there was a main effect of treatment condition on children's general mental health problems. Participants in TF-CBT group had significantly lower scores ( $M = 11.95$ ,  $SD = 6.51$ ) than the youths in the TAU group

( $M = 14.54$ ,  $SD = 6.12$ ) at the end of therapy ( $d = 0.45$ ),  $t(152) = 2.46$ ,  $p = .015$ , with Holm adjustment:  $p = .030$ . There was no main effect of treatment condition on child anxiety symptoms ( $d = 0.30$ ),  $t(150) = 1.47$ ,  $p = .144$ , with Holm adjustment:  $p = .144$ . To further investigate this finding, we analyzed the SCARED subscales separately and found that only generalized anxiety disorder showed a main effect of treatment condition,  $t(150) = 2.10$ ,  $p = .037$ . For a more detailed description of these results, see Tables 4 and 5.

### Completer Analyses

PTSS. The analysis of the completer cases yielded similar results as the ITT analyses. There was a main effect of treatment condition on children's PTSS (as measured by CPSS); youth in the TF-CBT group scored significantly lower on PTSS at T3 than participants in the comparison group,  $t(120) = 2.96$ ,  $p = .004$  with Holm adjustment;  $p = .011$ ; and there was a significant Time  $\times$  Group interaction effect,  $F(1) = 3.73$ ,  $p = .0008$ , with Holm adjustment:  $p = .040$ . Again, there was a main effect of treatment in both groups; these youth exhibited significant reductions in PTSS after therapy. Furthermore, the negative impact of trauma symptoms on daily functioning was significantly reduced in the TF-CBT group compared to the TAU group at the end of therapy,  $t(118) = -3.42$ ,  $p = .001$ , with Holm adjustment:  $p = .004$ .

Completer analyses also showed a main effect of treatment condition on depressive symptoms,  $t(117) = 3.13$ ,  $p = .002$ , with Holm adjustment:  $p = .009$ , and children's general mental health symptoms,  $t(113) = 2.44$ ,  $p = .016$ , with Holm adjustment:  $p = .032$ . However, there was no main effect of treatment condition on children's anxiety

TABLE 5  
Treatment Effects Between Conditions and Interaction Values

| Outcome | Treatment Effect (ITT) |              |      | Interaction<br>Time $\times$ Group | Treatment Effect (Completers) |              |      | Interaction<br>Time $\times$ Group |
|---------|------------------------|--------------|------|------------------------------------|-------------------------------|--------------|------|------------------------------------|
|         | Val. (Est.)            | 95% CI       | p    |                                    | Value (Est.)                  | 95% CI       | p    |                                    |
| CPSS    |                        |              |      |                                    |                               |              |      |                                    |
| T2      | 1.73                   | -1.72, 5.16  | .324 | $p = .007$                         | 1.30                          | -2.52, 5.12  | .502 | $p = .008$                         |
| T3      | 5.78                   | 2.32, 9.23   | .001 |                                    | 5.53                          | 1.83, 9.23   | .004 |                                    |
| fCPSS   |                        |              |      |                                    |                               |              |      |                                    |
| T2      | -0.38                  | -1.00, 0.24  | .227 | $p = .011$                         | -0.44                         | -1.12, 0.24  | .203 | $p = .026$                         |
| T3      | -1.05                  | -1.67, -0.42 | .001 |                                    | -1.13                         | -1.79, -0.48 | .001 |                                    |
| MFQ     |                        |              |      |                                    |                               |              |      |                                    |
| T2      | 2.21                   | -2.70, 7.12  | .375 | $p = .022$                         | 4.11                          | -1.27, 9.50  | .133 | $p = .065$                         |
| T3      | 7.00                   | 2.04, 11.96  | .006 |                                    | 8.26                          | 3.03, 13.48  | .002 |                                    |
| SCARED  |                        |              |      |                                    |                               |              |      |                                    |
| T2      | 0.59                   | -5.15, 6.33  | .839 | $p = .150$                         | 1.79                          | -4.64, 8.22  | .583 | $p = .186$                         |
| T3      | 4.34                   | -1.50, 10.19 | .144 |                                    | 5.15                          | -1.13, 11.44 | .107 |                                    |
| SDQ     |                        |              |      |                                    |                               |              |      |                                    |
| T3      | 2.54                   | 0.50, 4.58   | .015 | $p = .026$                         | 2.60                          | 0.49, 4.70   | .016 | $p = .036$                         |

Note. CPSS = Child PTSD Symptom Scale; fCPSS = PTS symptoms influence on daily functioning; MFQ = Mood and Feelings Questionnaire; SCARED = Screen for Child Anxiety-Related Disorders; SDQ = Strengths and Difficulties Questionnaire.

symptoms,  $t(113) = 1.62$ ,  $p = .107$ , with Holm adjustment:  $p = .107$ . See Table 5 for a more detailed description of these results.

**Per-protocol analyses.** Five cases from the TF-CBT group did not receive TF-CBT, and following a per-protocol approach, the five cases were treated as cases in the comparison group (PP1) or taken out of the analyses (PP2). Both the PP1 and PP2 analyses yielded similar results as the ITT and completer analyses.

**Diagnostic criteria for PTSD.** Diagnostic CAPS interviews conducted on all participants prior to treatment showed that 66.7% of the participants met the diagnostic criteria for full PTSD. At this time, there was no significant relationship between therapy condition and PTSD diagnosis,  $\chi^2(1, N = 116) = 1.55$ ,  $p = .213$ ,  $\phi = .10$ . However, there was a significant association between therapy condition and PTSD diagnosis posttreatment,  $\chi^2(1, N = 116) = 4.61$ ,  $p = .031$ ,  $\phi = .20$ . In the TF-CBT group, 18.2% of the participants ( $n = 10$  of 55) fulfilled the diagnostic criteria compared to 36.1% ( $n = 22$  of 61) of participants in the TAU group. In terms of diagnostic remission, significantly more participants in the TF-CBT group lost their PTSD diagnosis from T1 to T3 (77.8%,  $n = 28$  of 36) compared to the TAU group (54.8%,  $n = 23$  of 42),  $\chi^2(1, N = 78) = 4.54$ ,  $p = .033$ ,  $\phi = -.24$ . Of those participants with no diagnosis at T1, two participants in the TF-CBT and three in the TAU group fulfilled diagnostic criteria at T3.

**Clinically significant change.** Pretreatment, all participants were above the clinical range for CPSS ( $\geq 11$ ), and this number was reduced to 45.8% ( $n = 27$ ) in the TF-CBT group and 65.1% ( $n = 41$ ) in the TAU group,  $\chi^2(1, N = 122) = 4.61$ ,  $p = .032$ ,  $\phi = .19$ , posttreatment. Regarding the MFQ, 72.4% ( $n = 113$ ) of participants were above the clinical range pretreatment. After treatment, this number was reduced to 19.3% ( $n = 11$ ) in the TF-CBT group and 38.7% ( $n = 24$ ) in the TAU group,  $\chi^2(1, N = 119) = 5.39$ ,  $p = .020$ ,  $\phi = .21$ . Group differences were not present for (a) the SCARED, pretreatment: 64.7% ( $n = 101$ ); posttreatment: 40% ( $n = 20$ ) in the TF-CBT group and 37.7% ( $n = 23$ ) in the TAU group;  $\chi^2(1, N = 115) = 0.01$ ,  $p = .941$ ,  $\phi = .01$ , or (b) the SDQ, pretreatment: 50.6% ( $n = 91$ ); posttreatment: 25.0% ( $n = 14$ ) in the TF-CBT group and 27.1% ( $n = 16$ ) in the TAU group;  $\chi^2(1, N = 115) = 0.07$ ,  $p = .796$ ,  $\phi = .02$ .

## DISCUSSION

The purpose of this study was to evaluate the effectiveness of TF-CBT by comparing it to the therapy that is usually provided in community clinics. This is the first

randomized study to evaluate the effectiveness of TF-CBT outside of the United States, where the program was developed. This study is also one of the few studies to use a participant sample consisting of multitraumatized youths exhibiting a wide range of psychological symptoms. As expected, the youth in both treatment groups showed significant improvement from pre- to posttherapy in terms of PTSS, depression, anxiety, and general mental health functioning. In addition, in line with our hypotheses, there were significant differences between groups. Regarding total PTSS scores, the negative impact of PTSS on daily functioning, depressive symptoms, and general mental health problems, participants in the TF-CBT condition scored significantly lower compared to those in the TAU group posttreatment. In addition, significantly fewer participants in the TF-CBT condition met the diagnostic criteria for full PTSD posttreatment. In contrast, there were no significant differences in anxiety symptoms between the two treatment conditions. Taken together, these results add to the existing body of research on TF-CBT (Silverman et al., 2008) and indicate that TF-CBT may also be more effective in reducing a wide range of symptoms than usual care, at least as usual care was practiced in these clinics.

The finding that participants in the TF-CBT group experienced a significant reduction not only in PTS reactions but also other symptoms is in agreement with the findings of previous TF-CBT studies (Cohen, Deblinger, et al., 2004; Cohen et al., 2011; Deblinger et al., 1996). Because PTSD often co-occurs with other disorders, this is an important finding for clinicians. The reduction in depression is particularly interesting to note, as some evidence-based treatments for depression reported in other studies do not outperform treatment as usual (Kerfoot, Harrington, Harrington, Rogers, & Verduyn, 2004; Weisz et al., 2009). Although we did not specifically examine which components may have been particularly beneficial for treatment outcomes in this study, teaching skills with which to regulate emotions and correct maladaptive appraisals appears to be fundamental for many effective interventions (Berliner, 2005). The cognitive and affect regulation components incorporated in TF-CBT may address symptoms related to both depression and posttraumatic stress. Alternatively, the reduction in depressive symptoms may be a result of a decline in PTS reactions. Traumatized youth may, for example, begin to feel hope about the future when they experience an alleviation of PTSS. It is also interesting to note that participants receiving TF-CBT showed a significantly greater reduction in general mental health problems, such as externalizing behavior, emotional problems, social and peer problems, hyperactivity and concentration problems, compared to participants in the TAU group. This finding appears to support the

claim of TF-CBT developers that TF-CBT is a broad-based treatment that targets the range of symptoms that traumatized youth typically present in community mental health clinics (Cohen, Mannarino, & Deblinger, 2006).

Contrary to our expectations and findings from other TF-CBT studies, we did not find significant differences in the reduction of anxiety symptoms across treatment conditions. Interestingly, an examination of the different subgroups of anxiety revealed that GAD scores were significantly more reduced in the TF-CBT group than in the TAU group. It is possible that social anxiety, panic disorder, specific phobias, and school avoidance require more targeted exposure interventions than provided in TF-CBT. In contrast, the nature of the “free-floating” anxiety often associated with GAD may be more easily changed by nonspecific techniques, such as cognitive restructuring, affect regulation, and relaxation. Future studies should examine this further.

It is also noteworthy that we did not need to make any significant cultural adaptations while implementing the program in Norway. This finding may reflect the flexible nature of the program, in which therapists are encouraged to specifically tailor the interventions to each child. This cultural flexibility suggests that TF-CBT may be a promising treatment program that can be transported, without extensive adaptation, to countries outside of the United States. In fact, researchers in other European countries who are working on implementing TF-CBT have reported similar experiences (Murray & Skavenski, 2012). However, the implementation efforts that are currently ongoing in several low-resource countries, such as Zambia, Tanzania, Cambodia, and the Democratic Republic of Congo, suggest that cultural differences and the limited availabilities of educated therapists require modifications in TF-CBT implementation. These modifications are described as minor though, suggesting that TF-CBT may translate well to cultures outside the United States (Murray & Skavenski, 2012).

This study has several methodological strengths. In addition to using a randomized controlled trial design, which is considered to be the gold standard for studying treatment efficacy, participants were recruited through standard referral procedures and were thus more likely to reflect regular cases. Furthermore, the assessments were conducted by evaluators who were naïve to the treatment condition, thereby reducing the risk of researcher allegiance bias. Finally, there was extensive fidelity reporting. However, the results must be viewed in light of some important limitations. First, there were significantly more psychologists with postgraduate training among the TF-CBT therapists compared to the TAU therapists. Second, the TF-CBT therapists received substantially more supervision than the TAU

therapists. Therefore, the results may also be a consequence of clinical supervision. On the other hand, all the TF-CBT therapists were new to the intervention, and the enhanced supervision was part of their TF-CBT training. One might thus expect even more improvement in outcomes as the therapists become more familiar with the program and more at ease with tailoring the program to each child’s needs. However, studies have also shown that therapists tend to “drift” away from treatment protocols over time; therefore, it cannot be definitively concluded that increasing therapists’ exposure to TF-CBT would improve outcomes (Saunders & Hanson, *in press*). Another limitation is that the therapists were not randomized. The TF-CBT therapists volunteered to learn TF-CBT. Randomizing therapists could have reduced the possible effect of therapist variables. Most of the therapist in the TF-CBT group described their theoretical orientation as cognitive-behavioral, whereas most of the TAU therapists describe their orientation as psychodynamic, and this could have influenced the results. It is also reasonable to assume that the TF-CBT therapists were highly motivated, and this may have affected the results. Therapists who volunteered for TF-CBT training may also have been more likely to use the program with success and fidelity than other clinicians at the same clinic. Finally, although the findings suggest that TF-CBT is equally effective in helping boys and girls, the number of boys in the study was small. Future studies should make an effort to include more boys to determine whether there are gender differences.

#### Implication for Research, Policy and Practice

There is reason to believe that many youth often suffer from undiagnosed PTSD and that they often do not receive adequate treatment. Documenting effective treatments that can be provided within the realm of regular clinical care is therefore of vital importance. The findings from this study indicate that TF-CBT may be an effective treatment for traumatized youth in community clinics in Norway and thus emphasize the promise of this program in being successfully transported to countries outside of the United States. The developers of TF-CBT have conducted an impressive amount of their own research documenting the usefulness of TF-CBT, and they have inspired many other studies as well. However, on the basis of meta-analyses, in which the authors claim that the positive results found in studies using manualized treatments are, in part, explained by researcher bias (Leykin & DeRubeis, 2009), independent replications are needed to minimize the possible attribution of the previous findings of the effectiveness of TF-CBT to expectancy effects. This study demonstrates that although both treatment

groups experienced significant reductions in symptoms, the type of treatment appeared to play an important role in alleviating PTSS and other mental health problems. However, it is noteworthy that some participants did not respond as well to the treatment program, and further research should focus on achieving a greater understanding of why some groups of children do not respond well to the program. In summary, it is promising that the treatment results appear to hold up across trauma experiences that include multiple and severe interpersonal traumas. Whether these treatment effects will persist in follow-up analyses 18 months after treatment remains undetermined.

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RESEARCH

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# The change and the mediating role of parental emotional reactions and depression in the treatment of traumatized youth: results from a randomized controlled study

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## Abstract

**Background:** Trauma-Focused Cognitive Behavioral Therapy (TF-CBT) has been shown to efficiently treat children and youth exposed to traumatizing events. However, few studies have looked into mechanisms that may distinguish this treatment from other treatments. The objective of this study was to investigate whether the parents' emotional reactions and depressive symptoms change over the course of therapy in the treatment conditions of TF-CBT and Therapy as Usual (TAU), and whether changes in the reactions mediate the difference between the treatment conditions on child post-traumatic stress (PTS) symptoms and child depressive symptoms.

**Method:** A sample of 135 caregivers of 135 traumatized children and youth ( $M$  age = 14.8,  $SD$  = 2.2, 80% girls) was randomly assigned to receive either TF-CBT or TAU. The parents' emotional reactions were measured using the Parental Emotional Reaction Questionnaire (PERQ), and their depressive symptoms were measured using the Center for Epidemiologic Studies Depression Scale (CES-D). The children's outcomes were post-traumatic stress (PTS) reactions and depression, as measured by the Clinician-Administered PTSD Scale for Children and Adolescents (CAPS-CA) and Mood and Feelings Questionnaire (MFQ), respectively.

**Results:** The parents' emotional reactions and depressive symptoms decreased significantly from pre- to post-therapy, but no significant differences between the two treatment conditions were found. The changes in reactions did not significantly mediate the treatment difference between TF-CBT and TAU on child PTS symptoms. However a mediating effect was found on child depressive symptoms.

**Conclusion:** The results showed that although the parents experienced reductions in emotional reactions and depressive symptoms when their child received therapy, this was only significantly related to the difference in outcome between TF-CBT and TAU on child depressive symptoms. Possible explanations for these results are discussed along with the implications for clinicians and suggestions for future research.

**Trial registration:** Clinical Trials identifier: NCT00635752

**Keywords:** Parents, Emotional reactions, Trauma treatment, Children and adolescents

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## Background

The role of parents has often been emphasized in models depicting factors associated with the development and maintenance of children's reactions following traumatic experiences [1-3]. In line with this, several studies have shown the associations between parental reactions and their children's symptom formation and adjustment after trauma [4-6]. More specifically, parental psychopathology is considered a risk factor for children's development of posttraumatic stress disorder (PTSD) [7], and conversely, decreases in parental trauma-related symptoms has been found to predict lower levels of PTSD symptoms in children [8]. In addition, some treatment studies have investigated the association between parental symptoms and child outcomes [9,10]. For example, Weems and Scheeringa [9] found that the level of maternal depression pretreatment influenced child PTS-symptoms measured at follow-up in a sample of children aged 3 to 6 who were included either in a 12-weeks manualized CBT or a in a wait-list control group. Higher depression scores reported by the mothers were associated with increasing PTS-symptoms throughout the process. The results from this study may indicate that targeting parents' depression may enhance treatment maintenance.

The critical role parents may have on children's well-being is also reflected in the practice parameters for the treatment of children and adolescents with PTSD, where including parents as important agents of treatment change is recommended [11]. Adhering to this, parents are designated a significant role in Trauma-Focused Cognitive Behavioral Therapy (TF-CBT), a recommended treatment for children exposed to traumatizing events [12,13]. In TF-CBT, parents participate in both individual and conjoint sessions with the child [7]. One reason for involving parents in the treatment is to improve their parenting skills so they can be supportive and sensitive towards their child's needs. Another reason is that, as parents may often experience strong negative emotions in relation to their child's trauma, participation may alleviate parents' own trauma specific reactions and depression [7].

Parents may react in several ways in relation to their child's trauma. Feelings of distress, shame and guilt may be prominent [14]. They may also feel vulnerable without adequate coping skills to handle the situation and their child's difficulties. Furthermore, they may feel depressed because of what has happened to their child [15]. Involving parents in their child's treatment may provide them with hope that their child will fare well, in addition to reinforcing parental skills, thus possibly helping parents feel more competent and less helpless. Parents may also learn coping skills that they can use themselves to reduce stress and emotional reactions and alter maladaptive thoughts [7]. Alleviating stress may be

especially helpful for parents who have experienced traumatizing events themselves or have been vicariously traumatized by their children's experiences. Therefore, although TF-CBT is described as being primarily child-focused, the developers claim that involving parents in treatment may help them to cope better with their own difficulties as well [7,8].

TF-CBT studies examining the relationship between parents' emotional reactions and child outcomes have shown mixed results. In an early study of sexually abused children, Cohen & Mannarino [16] found that there was a correlation between parental emotional reactions and child treatment outcome. The results did not differ between TF-CBT and non-directive supportive therapy, and the authors concluded that addressing parental distress related to their child's trauma is important in providing effective treatment. In a later study, it was shown that parents of sexually abused children who participated in TF-CBT along with their children showed more improvements in their own levels of trauma-specific distress compared to parents of children receiving child-centered therapy (CCT), a non-directive child/ parent-centered treatment model [17]. Another study by Carrion, Kletter, Weems, Berry and Rettger [18] showed that when comparing a PTS treatment with a waitlist control group for youth exposed to interpersonal violence, caregivers' anxiety and depression decreased in both conditions. In that study, however, there was only a significant effect of treatment on parental anxiety.

Furthermore, a study by Deblinger, Lippman & Steer [19] showed that including parents in TF-CBT was helpful for reducing child-reported depression and parent-reported behavior problems, but not in reducing child PTS symptoms. In line with this, King and colleagues [20] found that including parents in treatment did not improve the efficacy of TF-CBT on child PTS symptoms. The authors conclude that although trauma focused cognitive-behavioral treatment was useful for traumatized children; further research is required on the significance of caregiver involvement. In sum, these studies imply that parents seem to benefit themselves from engaging in their child's treatment, but whether this mediates child outcomes is unclear.

Although TF-CBT is widely used and is the recommended treatment for children and youth exposed to traumas [12,13], few studies have actually looked into what change mechanisms that distinguish this method from other treatments. In particular, there is a lack of knowledge of what role parents may play in the treatment, whether parental emotional reactions and depression are significantly reduced during therapy and whether reductions in parental emotional stress and depression mediate the treatment difference between TF-CBT and TAU.

## Aims

The overarching goal of this study was to understand more about the role that parents play in treatment of traumatized children and youth by investigating the following issues: 1) whether caregivers reported changes in their own emotional reactions and depressive symptoms during therapy, and whether the reported changes differed between the two treatment conditions, and 2) whether the effect of treatment on child post-traumatic stress symptoms and child depressive symptoms was mediated by changes in parental emotional reactions and depressive symptoms. In line with previous studies, it was hypothesized that the level of parental depressive symptoms and emotional reactions would decline from pre- to post-therapy in both treatment conditions but that the reduction would be significantly larger in the TF-CBT group. Furthermore, it was expected that reductions in parental emotional and depressive reactions would mediate the effect of treatment on child PTS symptoms and child depressive symptoms.

## Method

The study builds upon a randomized effectiveness trial conducted in the period of April 2008 – December 2012 in which TF-CBT was shown to be more efficient in reducing child posttraumatic stress symptoms and depression than TAU [21]. Preliminary results from the same trial indicate that one mediating pathway of child PTS symptoms was changes in maladaptive appraisals. Eight child and adolescent mental health clinics were involved in the study. Four of the clinics were located in small cities, two in a large city and two in suburban areas. The results of the source trial showed that youth in the TF-CBT condition reported significantly lower levels of PTS symptoms ( $d = 0.51$ ,  $t(154) = 3.30$ ,  $p = .001$ ), depressive symptoms ( $d = 0.54$ ,  $t(154) = 2.79$ ,  $p = .006$ ) and general mental health symptoms ( $d = 0.45$ ,  $t(152) = 2.46$ ,  $p = .015$ ) than participants receiving TAU [21].

## Procedures

The children and youth were referred to the eight community clinics according to regular practice (i.e., by their general practitioners or Child Protective Services). The inclusion criteria to the study were experiencing at least one potentially traumatizing event and suffering from PTS-symptoms above the cutoff score of 15 on the Child Post-Traumatic Symptom Scale (CPSS) [22]. The exclusion criteria were acute psychosis, active suicidal behavior, intellectual disability, or non-proficiency in the Norwegian language. The youth were screened for potentially traumatizing events and PTS symptoms at their respective clinics by a licensed psychologist who was blind to the treatment conditions. To assess participants' trauma experiences, a short interview was developed

using the questions from the Traumatic Events Screening Inventory for Children (TESI-C) [23]. The interview consists of 12 items that investigate the child's exposure to different types of traumatic events. The psychologist coded 'yes' only if the child reported feeling scared, helpless, in despair or confused during or immediately after the event. Most of the children reported more than one traumatic experience, and were, therefore, asked to identify the trauma they experienced as being the worst. In addition, the youth had to report PTS symptoms above the cutoff score of 15 on the CPSS [22]. The time between trauma exposure and assessment needed to be at least four weeks. The parents accompanying the children were assessed for depressive symptoms and emotional reactions in response to the trauma their children had identified as worst. The parents completed the questionnaires primarily on a computer. If the parents did not participate in the particular sessions where the assessments were being scheduled, the questionnaire was sent home with the child or mailed to the caregiver, or the assessment was conducted over the telephone.

All assessments were performed at three time points: pre-treatment (T1), mid-treatment (after the 6th session; T2) and post-treatment (after the 15th session; T3). The therapies varied in lengths. On average, the T3-assessment was conducted 7.5 months after the T1-assessment, and the T2-assessment was conducted 3.5 months after the pre-assessment. Information about parental depression and/or/parental emotional reactions was collected from 130 (96.2%) of the parents at T1, 90 (66.6%) at T2 and 94 (69.6%) at T3. A few parents did not answer the questionnaires at T1 but answered the questionnaires at T2 and/ or T3. Thus, although only 130 parents were assessed at T1, the total number of parents assessed at one or more time points were 135. After receiving information about the study, both the children and parents provided written, active consent to participate. The study was approved by the Regional Committee for Medical and Health Research Ethics (REC). More details of study procedures are described in the source study [21].

## Participants

A detailed description of the sample is presented in Table 1. The sample comprised 135 caregivers of 135 traumatized children and youth (see Figure 1). Most of the parents were mothers ( $n = 98$ , 72.6%); 22 (16.3%) were fathers and 15 (11.1%) were foster parents or other close relatives serving as caregivers. Most caregivers were Norwegian ( $n = 111$ , 82.2%); approximately one third ( $n = 46$ , 36.2%) had completed high school as their highest education level, and approximately half ( $n = 68$ , 54.4%) reported being employed full time.

**Table 1 Description of participating parents and children**

| Demographics of the parents (N = 135)  | n (%)               |
|--|---------------------|
| <b>Person who completed the questionnaire (n = 135)</b>                                      |                     |
| Mother   | 98 (72.6)           |
| Father   | 22 (16.3)           |
| Foster parents   | 12 (8.9)            |
| Other  | 3 (2.2)             |
| <b>Caregivers' employment situations <sup>a</sup>(n = 125; lower n, due to missing data)</b> |                     |
| Working full time  | 68 (54.4)           |
| Working part time  | 18 (14.4)           |
| Job seeker   | 4 (3.2)             |
| Student  | 4 (3.2)             |
| Welfare recipient/Other  | 31 (24.8)           |
| <b>Caregivers' education<sup>b</sup> (n = 127; lower n, due to missing data)</b>             |                     |
| Completed junior high school   | 17 (13.4)           |
| Completed high school  | 46 (36.2)           |
| Completed vocational school  | 15 (11.8)           |
| <=4 years of college/university  | 41 (32.3)           |
| > 4 years of college/university  | 8 (6.3)             |
| <b>Caregivers' ethnicity</b>   |                     |
| Study country  | 111 (82.2)          |
| Asian  | 11 (8.1)            |
| Western European Countries   | 3 (2.2)             |
| African Countries  | 4 (3)               |
| South/ Central American Countries  | 2 (1.5)             |
| Eastern European Countries   | 3 (2.2)             |
| Northern American Countries  | 1 (0.7)             |
| Demographics of the children (N = 135)   | n (%)               |
| <b>Child's gender (n = 135)</b>  |                     |
| Girls  | 108 (80)            |
| Boys   | 27 (20)             |
| <b>Child's age (n = 135)</b>   |                     |
| Range  | 10-18               |
| Mean   | M = 14.8 (SD = 2.2) |
| <b>Child's living situation (n = 135)</b>  |                     |
| Lives together with both parents   | 31 (23)             |
| Lives equally with mother and father, but parents are divorced                               | 4 (3)               |
| Live most or only with mother  | 70 (51.9)           |
| Live most or only with father  | 13 (9.6)            |
| Foster care  | 12 (8.9)            |
| Other (alone, institution, with boyfriend)   | 5 (3.7)             |
| <b>Household income (n = 117; lower n, due to missing data)</b>                              |                     |
| < NOK 200,000 (< USD 35,000)   | 17 (14.5)           |
| [NOK 200,000, NOK 500,000] ([USD 35,000, 87,000])  | 46 (39.3)           |
| [NOK 500,000,1.000.000] ([USD 87,000, 174,000])  | 39 (33.3)           |

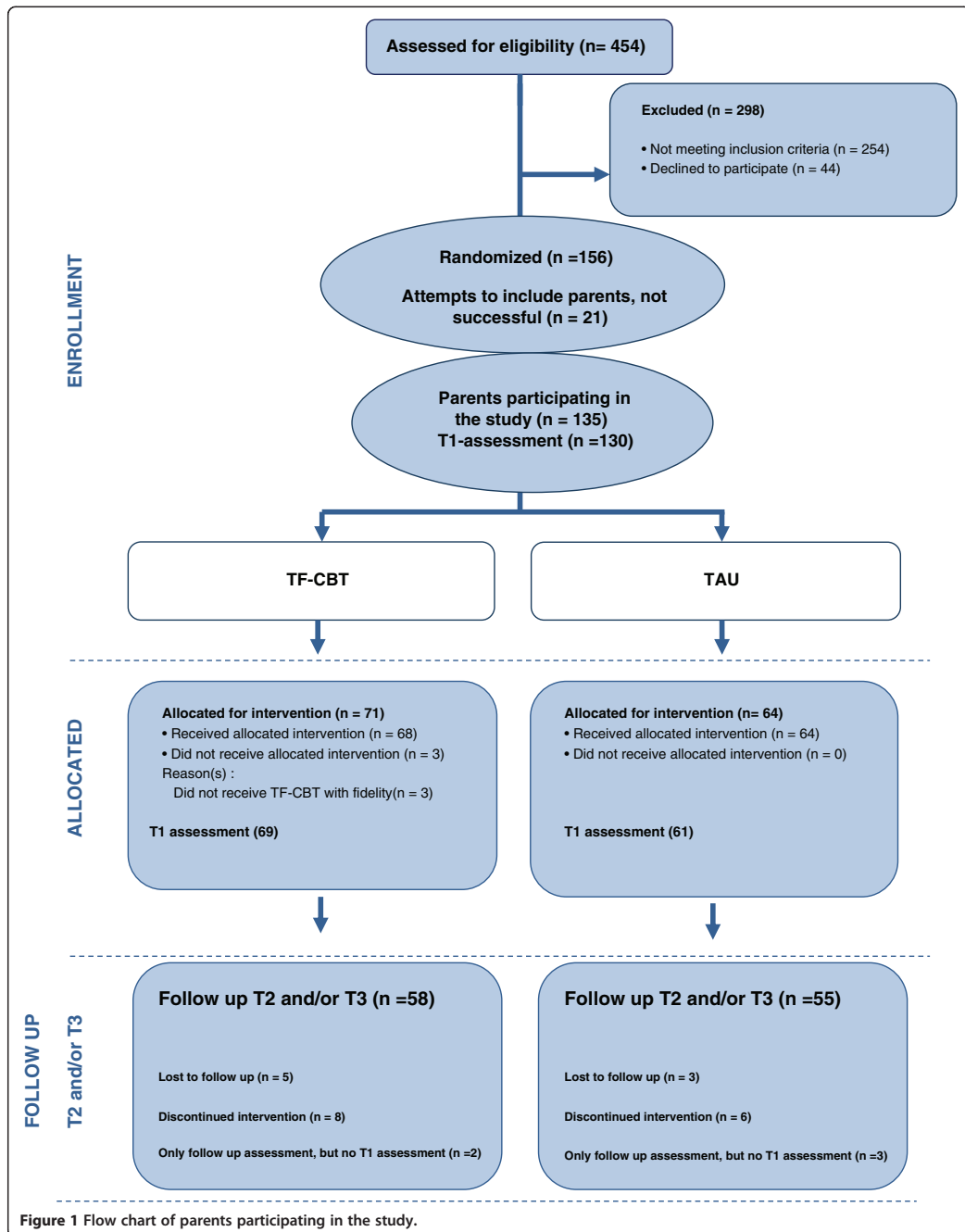
**Table 1 Description of participating parents and children (Continued)**

|  |                       |
|--|-----------------------|
| > NOK 1,000,000 (>USD 174,000)                                 | 9 (7.7)               |
| Do not know  | 6 (5.1)               |
| <b>Trauma groups, Child's primary (worst) trauma (n = 135)</b> |                       |
| Accident   | 3 (2.2)               |
| Sudden death/ injury of a close person                         | 25 (18.5)             |
| Hospitalization  | 1 (0.7)               |
| Extrafamilial violence   | 23 (17)               |
| Robbed   | 1 (0.7)               |
| Witness physical abuse inside family                           | 5 (3.7)               |
| Exposed to physical abuse inside family                        | 38 (28.1)             |
| Sexual abuse outside family                                    | 28 (20.7)             |
| Sexual abuse inside family                                     | 11 (8.1)              |
| <b>Months since worst trauma occurred (n = 135)</b>            |                       |
| Range  | 1-138                 |
| Mean   | M = 30.0. (SD = 32.8) |
| <b>Child's total number of traumatic experiences (n = 135)</b> |                       |
| Range  | 1-8                   |
| Mean   | M = 3.5 (SD = 1.7)    |
| <b>Child's scores on the CAPS-CA, T1 (n = 135)</b>             |                       |
| Range  | 9-125                 |
| Mean   | M = 60.4 (SD = 20.3)  |
| <b>Child's scores on the CPSS, T1 (n = 135)</b>                |                       |
| Range  | 15-46                 |
| Mean (SD)  | M = 29.9 (SD = 7.6)   |

<sup>a</sup>In 2012, 68% of the (country) population worked full-time.

<sup>b</sup>In 2010, the highest level of education for 30% of the (country) population was completing high school.

The children ranged in age from 10 to 18 years ( $M$  age = 14.8,  $SD$  = 2.2), and 108 (80.0%) were girls. More than half of the children lived in single-parent households headed by their mothers ( $n$  = 70, 51.9%). All of the youth had experienced at least one traumatic event that occurred  $\geq$  four weeks before the study inclusion and had developed significant PTS symptoms assessed using the Child Post-Traumatic Symptom Scale (CPSS). On average, the participants reported having been exposed to 3.5 ( $SD$  = 1.7, range 1–8) different types of traumatic events. When asked to identify their worst trauma, 43 (31.8%) reported being exposed to domestic violence, 23 (17%) had experienced extra-familial violence, 28 (20.7%) sexual abuse outside the family, 11 (8.1%) had been exposed to sexual abuse within the family, 25 (18.5%) had experienced traumatic loss (i.e. sudden death or severe illness of a close person), and the remaining 5 participants (3.6%) had been exposed to accidents or other forms of non-interpersonal traumas.



### Treatment conditions

A computer-generated randomized block procedure at each clinic was used to randomly assign the participants to either TF-CBT or TAU. The TF-CBT therapists ( $n = 26$ ) volunteered to receive training in TF-CBT and to provide therapy to the participants who were randomly selected to receive TF-CBT. The TAU therapists ( $n = 45$ ) provided their usual treatment. All therapy sessions were audio recorded to enable treatment fidelity coding. Trained TF-CBT therapists coded fidelity by using the TF-CBT Fidelity Checklist developed by the treatment developers [24]. In this checklist, 11 items are rated as either “present” or “absent”. These items follow the treatment components of TF-CBT. The core components (psychoeducation, relaxation skills, affect regulation, instruction in the cognitive triangle, working through the trauma narrative, working with dysfunctional thoughts, and the parenting component) had to be completed in order for a therapy to be defined as TF-CBT. In cases where there was any uncertainty or questions about the fidelity, this was determined by consensus. Based on these criteria, three TF-CBT cases failed to reach the level of required fidelity. In the TF-CBT group, all sessions in all cases were coded for fidelity. The same Fidelity Checklist was used for the TAU-cases where 392 sessions were coded. The main aim by reviewing the TAU-cases was to ensure that the therapists were not providing TF-CBT. At least five sessions (the first, second, third, sixth, and ninth sessions) were coded in each TAU case. Additional sessions were investigated if elements of the core components were provided also in the TAU-sessions. Although some TAU cases used certain elements similar to the TF-CBT-components, none of the TAU cases met the adherence criteria for TF-CBT.

### TF-CBT

TF-CBT is a 12–15 session, trauma-specific treatment consisting of psycho-education, learning relaxation skills, affective modulation skills, cognitive coping skills, working through the trauma narrative, cognitive processing, in vivo mastery of trauma reminders, and enhancing safety and future developments, coupled with a parental component. The parental component is focused on improving parenting skills; each treatment component provided to the child is also demonstrated for the parent in both parallel and con-joint sessions [7].

The TF-CBT therapists consisted of 21 (80.8%) psychologists, two (7.7%) psychiatrists, two (7.7%) educational therapists and one (3.8%) social worker. The therapists had 10.2 years of experience on average ( $SD = 6.4$  years, range 3–28 years). They were all trained in the treatment protocol by the treatment developers and other approved TF-CBT trainers. The TF-CBT therapists each treated an average of 3.0 ( $SD = 1.4$ , range 1–6) of parent–child dyads. All therapists received four to six days of training, read the

treatment manual [7] and completed a web-based course on trauma-focused cognitive behavioral therapy ([www.musc.edu/tfcbt](http://www.musc.edu/tfcbt), 2013).

Of the 61 completed TF-CBT cases, caregivers participated in 56 cases (91.8%). In the five cases in which parents were not involved in the therapy, the children were older than 16 years. In these cases, the parents were perpetrators, had substance abuse problems, were struggling with their own mental health problems, and/or the youth lived alone without parental contact. When drop-outs were included, the parents participated in 60 of 71 cases (84.5%).

### TAU

The TAU therapists provided the treatment they considered most suitable in each individual case. In total, 45 TAU therapists volunteered to participate, and each therapist treated an average of 1.7 ( $SD = 1.3$ , range 1–9) participants (either individual youth or parent–child dyads). They described their theoretical orientations as psychodynamic ( $n = 17$ , 45.9%), cognitive-behavioral ( $n = 11$ , 29.7%), and family/systemic ( $n = 9$ , 24.3%). There were 23 (51.1%) psychologists, 12 (26.7%) social workers, eight (17.8%) educational therapists, and two (4.4%) psychiatrists. In 35 ( $n = 67.3\%$ ) of the 52 completed TAU cases, parents were involved in more than three sessions. In nine of these cases (25.7%), the parents attended the sessions together with the children; five (14.3%) had sessions alone with their child’s therapist, and 21 (60%) had some combination of the above. When including the drop-outs in these calculations, parents participated in 39 of 64 (60.9%) initiated TAU therapies. Of these 39 therapies, 10 (25.6%) parents attended the sessions together with the children, six (15.4%) had sessions alone with their child’s therapist, and 23 (58.9%) had some combination of the above.

### Parent measures

#### *Parent emotional reaction questionnaire (PERQ)*

The PERQ measures parents’ emotional reactions to their children’s traumatic experiences [25]. The parent rates a specific emotional reaction on a 5-point Likert scale ranging from never to always (e.g., 1 = never, 5 = always), depending on how often they have experienced the reaction during the last two weeks. The original instrument consisted of 15 items. However, the last item in the scale, “I feel guilty that I did not know about the trauma sooner,” was excluded because most of the parents in this study learned about the trauma immediately after it occurred. The scale’s authors have previously found the PERQ to have good validity and reliability. Internal consistency for the scale was calculated to be .87, and test-retest reliability was .90 [25]. The instrument has been used in several treatment studies [16,26–28].



### **Center for epidemiologic studies depression scale (CES-D)**

The CES-D is a 20-question self-reporting instrument designed to measure depressive symptoms in the general adult population [24]. Parents are instructed to report how often they have experienced each of 20 depressive symptoms during the last week on a 4-point Likert scale ranging from 0–3 (e.g., 0 = rarely or none of the time, 3 = most or all of the time). Scores of 16 or above are considered indicative of clinically significant symptoms of depression [29]. The scale has also been found to have adequate concurrent validity and split-half and coefficient alpha reliability for both general populations and clinical samples [24]. The current study yielded an internal consistency score of  $\alpha = .91$ .

### **Child measures**

#### ***The clinician-administered PTSD scale for children and adolescents (CAPS-CA)***

The CAPS-CA is a structured clinical interview for children and adolescents; it assesses the frequency and intensity of the 17 DSM-IV-defined PTSD symptoms [30,31]. Items are scored on 5-point frequency scales (e.g., from 0 = “None of the Time” to 4 = “Most of the Time”) and 5-point intensity rating scales (e.g., from 0 = “Not a Problem” to 4 = “A Big Problem, I Have to Stop What I Am Doing”) for the past month. Items are scored based on both the youth’s answers and on the clinician’s judgment. The total scale showed satisfactory internal consistency ( $\alpha = .90$ ).

#### ***Mood and feelings questionnaire (MFQ)***

MFQ is a 34-question self-report questionnaire designed to assess depressive symptoms in children and youth between eight and 18 years of age [32]. The questionnaire measures the full range of DSM IV diagnostic criteria for depressive disorders as well as additional items reflecting common affective, cognitive, and somatic features of childhood depression. The child rates the problem frequency during the last two weeks using a three-point scale from 0–2 (0 = Not true, 1 = Sometimes true, 2 = True). In this sample the instrument showed good internal consistency ( $\alpha = .91$ ).

### **Data analyses**

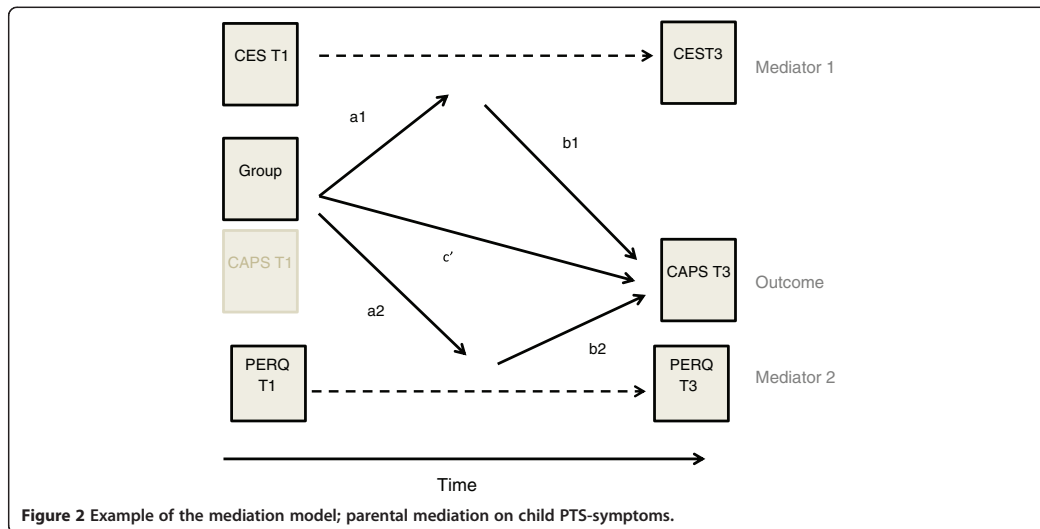
Descriptive statistics were applied to investigate the sample characteristics. Effect sizes, using Cohen’s  $d$  ( $d$ ), were calculated to show the strength and magnitude of change in parental emotional reactions (measured by PERQ) and in parental depressive scores (measured by CES-D) within each treatment group, as well as the difference between the interventions. Mixed effects models were estimated to investigate change in the different parental scores across time. Mixed effects models handle missing data under the missing at random (MAR)

assumption [33]. The approach takes into account the nested nature of the data and has the advantage of estimating a measure of random variation both between and within the participants [34]. The models analyzed two parental dependent variables of parental emotional reactions and parental depressive symptoms in separate analyses, and the independent variables were therapy condition and time, including a condition by time interaction. Within the mixed effects models, intention-to-treat (ITT) analyses were conducted, meaning that all recruited parents ( $n = 135$ , including drop-outs and the few TF-CBT cases failing to reach the acceptable level of fidelity) were analyzed in the condition into which they were originally randomized.

Multiple mediation models, which were devised by Preacher and Hayes [35], were used to examine the mediating role of change in parental emotional reactions and parental depressive symptoms in the effectiveness of TF-CBT on TAU. The two mediators in the models were; 1) the change in parental emotional reactions scores 2) the change in parental depressive scores. The mediation models were estimated two times with different outcome measures: 1) child PTS symptoms at T3 and 2) child depressive symptoms at T3 (see Figure 2 for example of the mediation model on child PTS symptoms).

The bootstrap resampling method was applied using 10,000 re-samples of the data [36], and bootstrap percentile confidence intervals were computed and relationships were considered as significant if 0 was outside these intervals. The mediation analysis comprised two different models: one model for the mediator, which included the a-path that indicated the relationship between the main independent variable (IV) and the mediator (M), and one model for the outcome, including the b-path showing the relationship between the M and the dependent variable and the c’-path showing the relationship between the IV and DV, while controlling for the M [35,36]. The main reason for applying the mediation model was not to look into the different paths separately but to investigate the indirect effect of change in parental emotional reactions and depression on child outcomes. As such, a significant indirect effect could be present even though the relationships represented in the individual paths were not significant. The mediator analyses were conducted only on the completed therapy cases. The treatment of missing data in the mediation analyses, provided by Mplus was full information maximum likelihood (FIML) under the missing at random (MAR) assumption [37].

We computed the intra-class correlation (ICC) within the data set because more than one dyad of parent and child had the same therapist, and because more than one dyad of child and parent was treated at the same



**Figure 2** Example of the mediation model; parental mediation on child PTSD-symptoms.

clinic. In general, a high ICC requires the application of multilevel modeling (HLM) because this indicates that much variation in the outcome variable is due to nesting groups. A need to consider using HLM is present if ICC is 0.25 or above [38,39]. All ICCs for the therapist and clinical levels in child outcomes and the mediators were below .05, which is well below the recommended level of .25 [38], therefore clustering of therapist and clinic was not taken into account in the analyses. Mixed effects models used the R (The R Foundation for Statistical Computing, Vienna, Austria) package nlme, mediation analyses used Mplus [37], while SPSS, version 17 (IBM SPSS Statistics, 2011) was used for other analyses.

## Results

### Attrition and baseline comparisons

Of the 135 parents and children dyads included in the study, 22 (16.3%) dropped out of therapy before session six. The drop-out rate was not significantly different in the two treatment conditions ( $p = .464$ ). There were no significant differences between the retention group and the attrition group regarding basic characteristics, such as children's gender ( $p = .816$ ) and age ( $p = .136$ ), parental background information (parents' ethnicity;  $p = .914$  parents' education;  $p = .439$  and parents' employment situation;  $p = .652$ ), the child's total number ( $p = .896$ ) and type ( $p = .925$ ) of experienced traumas, or any outcome variables for the children (CAPS;  $p = .982$  and MFQ;  $p = .111$ ) at baseline. The parents in the retention group and attrition group did not differ significantly from one another on the parental outcome measures either (PERQ;  $p = .181$  and CES-D;  $p = .914$ ).

### Comparisons of therapists in TF-CBT and TAU

There was a statistically significant difference between the groups in terms of therapists' years of experience in which therapists in the TAU group reported significantly more years of experience ( $M = 15.87$ ,  $SD = 12.89$ ) than did the therapists in the TF-CBT group ( $M = 9.69$ ,  $SD = 5.73$ ),  $p < .001$ . Furthermore, there were significant differences in therapists' educational background as there were more psychologists in the TF-CBT condition ( $p < .001$ ), and the TF-CBT therapists had significantly more participant cases compared to TAU ( $p < .001$ ).

### Change analyses

Means and standard deviations divided into treatment condition and time are presented in Table 2, and treatment effects and interaction effects are presented in Table 3. There was a main effect of time in both treatment groups on parental depressive scores, which indicated that parents had significant reductions in their depressive scores both in TF-CBT,  $t(171) = -5.40$ ,  $p < .001$ , and in TAU:  $t(171) = -2.14$ ,  $p = .034$ . There was no significant main effect of treatment condition at the end of treatment, indicating that parents in the two groups did not differ significantly from one another regarding their depressive scores at the end of treatment;  $t(132) = 1.69$ ,  $p = .094$ . The interaction between time and group, however, was significant, indicating that the slopes of the different conditions over time were significantly different from each other in the two conditions with a superior effect of TF-CBT at T2 and T3 ( $p = .022$ ).

There was a main effect of time in both treatment groups for PERQ scores, indicating that parents had a



**Table 2 Descriptions of parental outcome variables: means and SD by treatment condition and time and effect size**

| Outcome | Therapy as usual        |                         |                         | $d_1$ | TF-CBT                  |                         |                         | $d_2$ | $d_3$ |
|---------|-------------------------|-------------------------|-------------------------|-------|-------------------------|-------------------------|-------------------------|-------|-------|
|         | Time 1                  | Time 2                  | Time 3                  |       | Time 1                  | Time 2                  | Time 3                  |       |       |
|         | M (SD)                  | M (SD)                  | M (SD)                  |       | M (SD)                  | M (SD)                  | M (SD)                  |       |       |
| CES-D   | 17.25 (9.75)<br>n = 61  | 17.60 (12.52)<br>n = 43 | 13.39 (11.91)<br>n = 44 | 0.40  | 17.55 (12.28)<br>n = 66 | 13.26 (10.98)<br>n = 47 | 10.96 (10.35)<br>n = 48 | 0.54  | 0.22  |
| Perq    | 35.22 (11.09)<br>n = 58 | 31.60 (11.37)<br>n = 43 | 31.64 (11.39)<br>n = 45 | 0.32  | 37.00 (9.97)<br>n = 69  | 31.16 (10.02)<br>n = 45 | 28.33 (10.28)<br>n = 48 | 0.87  | 0.31  |

Note. PERQ = Parental Emotional Reaction Questionnaire, CES-D = Center for Epidemiologic Studies Depression Scale.

$d_1$  = calculated based on differences between T1 and T3 in the TAU-condition:  $\frac{\text{TAU T1} - \text{TAU T3}}{\text{SD TAU T1}}$

$d_2$  = calculated based on differences between T1 and T3 in the TF-CBT-condition:  $\frac{\text{TF-CBT T1} - \text{TF-CBT T3}}{\text{SD TF-CBT T1}}$

$d_3$  = calculated based on differences between the two conditions at T3:  $\frac{\text{TAU T3} - \text{TF-CBT T3}}{\text{SD pooled}}$  where  $\text{SD pooled} = \sqrt{\frac{(n_1 - 1)\text{SD}_1^2 + (n_2 - 1)\text{SD}_2^2}{n_1 + n_2 - 2}}$ .

significant reduction in their own distress reactions from pre- to post-therapy in TF-CBT:  $t(167) = -6.50, p < .001$ , as well as in TAU;  $t(167) = -3.03, p = .003$ . However, even though the TF-CBT parents reported lower levels of distress at the end of therapy, this difference was not statistically significant;  $t(74) = 1.43, p = .154$ . There was no significant time by group interaction either ( $p = .078$ ).

**Mediation analyses**

The first model, using the children’s PTS symptoms (CAPS-CA) as an outcome variable, did not reveal a significant indirect effect of treatment via the mediators together (CES-D and PERQ): estimate = 1.08, 95% bootstrap percentile CI [-1.59, 6.29]. Examining the depressive symptoms (CES-D) and the emotional reactions (PERQ) separately showed that neither of the scores on the individual scale revealed any significant results. CES-D: estimate = 2.27, 95% bootstrap percentile CI [-0.40, 9.55],

and PERQ: estimate = -1.19, 95% bootstrap percentile CI [-6.85, 0.72].

The second mediation model was applied using the child depressive scores (MFQ) as the outcome. A significant indirect treatment effect was found using the two mediators of change in child depression (CES-D) and parental emotional reactions (PERQ) together: estimate = 2.03, 95% bootstrap percentile CI [0.11, 4.97], but only one of the mediators had a significant individual mediating effect: CES-D; estimate; 2.86, 95% bias corrected CI [0.57, 6.76]. No significant individual mediating effect of PERQ was found; estimate; -0.82, 95% bootstrap percentile CI [-3.55, 0.27]. Furthermore, worth mentioning was that there was a significant relationship between overall change in parental depressive symptoms and child depressive symptoms; estimate; 0.61, bias corrected CI [0.23, 0.93] (cf. the b-path in the model). The results from the mediation results are presented in Table 4 and Table 5.

**Table 3 Treatment effects a) between times within each treatment condition and b) between treatments conditions**

| Outcome          | Treatment effect: |                 |                 | a) Within group analyses |                            |      |
|------------------|-------------------|-----------------|-----------------|--------------------------|----------------------------|------|
|                  | TF-CBT            |                 | p               | TAU                      |                            | p    |
|                  | Estimate          | 95% CI          |                 | Estimate                 | 95% CI                     |      |
| CES-D            | -3.88             | - 6.37 to -1.38 | .003            | 0.68                     | -1.90 to 3.28              | .603 |
| T2 vs T1         | -6.73             | - 9.19 to -4.27 | <.001           | -2.78                    | -5.35 to -0.21             | .034 |
| T3 vs T1         |                   |                 |                 |                          |                            |      |
| PERQ             |                   |                 |                 |                          |                            |      |
| T2 vs T1         | -5.80             | - 8.51 to -3.01 | <.001           | -3.83                    | -6.71 to -0.95             | .010 |
| T3 vs T1         | -8.71             | -11.35 to -6.02 | <.001           | -4.27                    | -7.06 to -1.49             | .003 |
|                  |                   |                 |                 |                          |                            |      |
| Outcome          | Treatment Effect  |                 | b Between group |                          | Interaction: Time by Group |      |
|                  | Estimate          | 95% CI          | p               | p                        |                            |      |
| CES-D            |                   |                 |                 |                          |                            |      |
| TF-CBT vs TAU T3 | 3.62              | -0.61 to 7.86   | .094            | .022                     |                            |      |
| PERQ             |                   |                 |                 |                          |                            |      |
| TF-CBT vs TAU T3 | 2.95              | -1.12 to 7.01   | .154            | .078                     |                            |      |

Note. PERQ = Parental Emotional Reaction Questionnaire, CES-D = Center for Epidemiologic Studies Depression Scale.

**Table 4 Parental mediation on child PTS (with Bootstrap Method)**

| Effect                | Estimate | 95% CI Bootstrap percentile |
|-----------------------|----------|-----------------------------|
| <b>a</b>              | -        | -                           |
| CES-D                 | 3.83     | -0.05 to 7.81               |
| PERQ                  | 3.35     | -1.01 to 7.67               |
| <b>b</b>              | -        | -                           |
| CES-D                 | 0.59     | -0.24 to 1.41               |
| PERQ                  | -0.36    | -1.06 to 0.38               |
| <b>c'</b>             | 10.33    | 0.14 to 20.60               |
| <b>Total Indirect</b> | 1.08     | -1.59 to 6.29               |
| CES-D                 | 2.27     | -0.40 to 9.55               |
| PERQ                  | -1.19    | -6.85 to 0.72               |

Note. CES-D = Center for Epidemiologic Studies Depression Scale, PERQ = Total scale of Parental Emotional Reaction Questionnaire. *a* = the relationship between the IV and the M, *b* = the relationship between the M and the DV, *c'* = the relationship between the IV and DV, while controlling for the M, Total indirect: The indirect effect of the M on the relationship between IV and D. IV = Group.

**Discussion**

The primary aim of this study was to improve our understanding of the role that a parent’s own distress and depressive reactions plays in the treatment of traumatized children and youth. Specifically, we wanted to investigate 1) whether caregivers reported changes in their own emotional reactions and depressive symptoms during the therapy process and whether the changes differed between TF-CBT and TAU and 2) whether the effect of treatment on child PTS symptoms and child

depressive symptoms was mediated by change in parental emotional reactions and depressive symptoms. The results showed that parents in both conditions experienced a significant reduction in emotional reactions as well as in depressive reactions from pre- to post-therapy. The investigation of change in parental emotional reactions and depression as possible mediators of the treatment effect showed that the reactions did significantly mediate the child depressive symptoms, but not the child PTS reactions.

The fact that parents in both treatment groups experienced an alleviation of their own emotional reactions and depression was as expected and in line with previous studies. The alteration in parental reactions in both groups may be attributed to enhanced feelings of hope and expectations that professional support will help their children function and cope better in the future. Because treatment expectancies have been shown to relate to outcomes in adult treatment studies [40-42], it may be that positive expectancies regarding their children’s treatment outcomes could indirectly result in less distress and fewer depressive reactions in parents as well. It may also be that having another person participate in and share the responsibility for their children’s well-being, may evoke relief within parents and help them feel less vulnerable and alone. One could also expect that the reduction in parental symptoms was a result, at least partly, of the children’s improvement. However, because only one single association between parental and child improvement was found in this sample (parental depression did relate to child depression), this explanation was not supported.

Contrary to our expectations, change in parental emotional reactions and depression did not seem to mediate the effect of treatment on children’s post-traumatic stress symptoms. However, the reactions mediated the child’s depressive symptoms significantly. We are unaware of any other studies that have examined parental reactions as a mediator of childhood trauma treatment outcome. However, the findings may be seen in light of the studies by King et al. [20] and Deblinger et al. [19] that found that caregiver participation in therapy did not have any additional effect on children’s PTS symptoms. Deblinger et al. [19] investigated the various effects of mother and child participation in CBT for sexually abused children. Three different treatment conditions were evaluated: 1) mother alone 2) mother and child together and 3) child alone. The study showed that the greatest reduction in PTS symptoms occurred when the child was present in the therapeutic process, and that the caregiver’s participation did not influence the child’s PTS improvement [19]. However, parental involvement did have an additional effect on the children’s depressive symptoms and children’s externalizing behavior. It may be that treating child depression and

**Table 5 Parental mediation on child depression (with Bootstrap Method)**

| Effect                | Estimate | 95% CI Bootstrap percentile |
|-----------------------|----------|-----------------------------|
| <b>a</b>              | -        | -                           |
| CES-D                 | 4.67     | 0.94 to 8.61                |
| PERQ                  | 2.88     | -1.46 to 7.24               |
| <b>b</b>              | -        | -                           |
| CES-D                 | 0.61     | 0.23 to 0.93                |
| PERQ                  | -0.29    | -0.66 to 0.10               |
| <b>c'</b>             | 6.19     | -0.59 to 11.85              |
| <b>Total Indirect</b> | 2.03     | 0.11 to 4.97                |
| CES-D                 | 2.86     | 0.57 to 6.76                |
| PERQ                  | -0.82    | -3.55 to 0.27               |

Note. CES-D = Center for Epidemiologic Studies Depression Scale, PERQ = Total scale of Parental Emotional Reaction Questionnaire. *a* = the relationship between the IV and the M, *b* = the relationship between the M and the DV, *c'* = the relationship between the IV and DV, while controlling for the M, Total indirect: the indirect effect of the M on the relationship between IV and D. IV = Group.

child externalizing problems involves different change mechanisms than does treating post-trauma symptoms and other anxiety disorders. In fact, La Greca, Silverman, and Lochman [43] and Silverman and colleagues [13] point out that there is little evidence within the child anxiety literature that targeting parental skills alone and involving parents in treatment contributes to positive child outcomes. This may also be the case for children who suffer from PTS reactions after trauma.

Targeting maladaptive appraisals, on the other hand, has been found to mediate PTS symptoms in samples of traumatized children and youth [44]. This is also in line with cognitive theories on PTSD sequelae claiming that maladaptive appraisals and trauma memory processing characteristics contribute to developing and maintaining posttraumatic stress reactions [45]. In addition, preliminary results from the current effectiveness trial indicate that changes in maladaptive appraisals mediate the treatment effect on child PTS symptoms. Thus, although it may seem surprising from a developmental perspective that changes in parental emotional reactions were not found to be significantly related to the treatment effect on child PTS symptoms, the findings of the current study may indicate that other factors may be more important in mediating the effect of treatment on child PTS-symptoms. Still, the parents' alleviation did play a role in explaining why the youth were less depressed in TF-CBT than in TAU.

#### Limitations and future research

Some limitations in this study are worth noting. First of all, although it is an advantage that participants were measured at more than two time points, associations might have appeared clearer within a wider timeframe. Transactions of reactions between parents and their children are complex, and with more frequent measurements and different and multiple measures, e.g., other than self-reported measures, it would have been possible to capture a more complete picture of the interplay between the development of parental stress and children's trauma-related symptoms over time. Future studies should aim to investigate longitudinal trajectories of parental and child's reactions with multiple measures over time.

Second, although the age range was wide (10–18 years), the majority of participants were adolescents, and the mean age was 14.8 years. It would be interesting to see whether the present results apply to younger samples as well, especially because the potential influence of parents' emotional reactions on child development may differ between developmental phases. Third, the study comprised a sample of traumatized children and youth commonly seen in community mental health clinics. Still, the exclusion of participants who did not speak

Norwegian could limit the generalizability of these findings to other ethnic groups. In addition, though the mixture of different traumatic experiences in this sample mirrors the population commonly seen in community mental health clinics and is considered a strength of the study, this heterogeneity could also interfere with our findings. Furthermore, although the dropout rates did not differ significantly between the two treatment conditions, the participants' decision to terminate treatment could have influenced the results. A small sample size with a high dropout rate also deserves to be mentioned as study limitations. Concerning the negative findings, investigation of confidence intervals is essential in order to evaluate whether the findings are conclusively or inconclusively negative. The CIs displayed within these results were relatively small, indicating that they represent conclusive negative findings. However, this observation cannot be concluded with certainty. Lastly, the therapists, especially in the TAU-condition, differed in their theoretical orientations and educational qualifications. In addition, most therapists (in both conditions) treated more than one case. One can neither assume parental ratings nor child's ratings to be fully independent of this. Preferably, therapists should have been randomized into one of the two conditions to minimize therapist effects. A focus and examination of whether and how therapist factors influence the treatment results need more attention in future treatment research.

Overall, this study's findings suggest the need for future research on the mechanisms of change in treatments for traumatized children and youth. Such research could inform theoretical approaches and aid clinicians in their work. It would also be of interest to further explore whether emotional reactions differ between mothers and fathers and between sons and daughters and to determine how parents' own trauma history may influence their reactions and parenting behaviors. Future studies should also seek to understand why parents may experience less emotional stress and depressive reactions when their child receives therapy. A qualitative approach to explore how parents experience the therapy provided to their children would be a valuable contribution in this respect. The impact of time is also a potential area for future research.

#### Conclusion

The findings show that parents also reap benefits when their children receive treatment. However, although parents' emotional reactions and depressive symptoms were reduced during the therapy, this did not seem to be related to the difference between TF-CBT and TAU on child PTS-symptoms. However, the parental alleviation did mediate child depressive symptoms significantly.

Even though changes in parental reactions were not significantly related to treatment outcome on child PTS

symptoms, it is important to emphasize that it may still be helpful to include parents in therapy with traumatized youth. Clinicians should be aware of, and open to, the fact that traumatized children and youth may behave in manners that are difficult for parents to handle. Because the children's behavior may differ from the norm, parents may need counseling on how to respond to these changes and on how to enhance their parenting skills. They may also need help in how to cope with their own responses to the child's trauma experiences because excessive feelings of distress, guilt, shame or sadness may contribute to the maintenance of child post-trauma reactions. On the other hand, although children may be negatively influenced by excessive parental emotional strain, such reactions can also be a sign of parental sensitivity and concern. Helping parents to find a good balance between caring and overreacting may be an important task for clinicians.

For clinicians treating traumatized youth suffering from PTSD, the results of the study may support the importance of working individually with children to reduce trauma-related symptoms. The results also indicate that involving parents in treatment may help parents to reduce their own emotional reactions.

#### Abbreviations

TF-CBT: Trauma-focused cognitive behavioral therapy; TAU: Therapy as usual; PTS symptoms: Post-traumatic stress symptoms; PERQ: Parental emotional reaction questionnaire; CES-D: Center for epidemiologic studies depression scale; CAPS-CA: Clinician-administered ptsd scale for children and adolescents; MFQ: Mood and feelings questionnaire.

#### Competing interests

The authors declare that they have no competing interests.

#### Authors' contributions

TH contributed to collecting data, performing the statistical analyses and drafted the manuscript. TKJ designed and coordinated the study and contributed to the manuscript. TW-L contributed to the statistical analyses and contributed with critical comments on the manuscript. All authors read and approved the final manuscript.

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