The world is a scary place? INvestigating Treatments and Assessment for Children after Trauma
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Chapter 7

Summary and general discussion
Alice returns to the department for child and adolescent psychiatry for the posttreatment interview. She is careful not to mention which therapy she has received in front of the researcher. The interview is the same as before the treatment, however Alice’s answers are completely different. Alice does not feel bad about herself anymore about being involved in the accident. The past two weeks she went to school without taking a detour and was not bothered by any bad feelings or pictures popping into her head. She is very cheerful and plans a big birthday party with all her friends.

The starting point for this PhD thesis was the investigation of the comparative effectiveness of two active trauma-focused psychotherapies for children. For this we conducted a randomized controlled trial (RCT) of Trauma-Focused Cognitive Behavioral Therapy (TF-CBT) and Eye Movement Desensitization and Reprocessing (EMDR). The preparation of this study included the validation of an assessment tool for PTSD in children, the Clinician-Administered PTSD Scale for Children and Adolescents (CAPS-CA). Due to slow recruitment, we decided to expand the inclusion criteria for our RCT. Since we planned to also include children who were exposed to multiple-event trauma, we first conducted a systematic review to find out if TF-CBT and EMDR have shown to be effective interventions for this group of children. During our work on the RCT, DSM-5 criteria for PTSD became known. The inclusion of trauma-related cognitions in these criteria led us to the investigation of the effects of psychotherapy on these cognitions by means of a meta-analysis. With yet again no validated instrument at hand to investigate trauma-related cognitions in the Dutch child population, we validated the Dutch version of the Child Posttraumatic Cognitions Inventory (CPTCI).
Summary

Since valid and reliable assessment tools for PTSD in children are scarce, we validated the Dutch version of the CAPS-CA, as described in Chapter 2. This interview has been developed to assess the 17 PTSD symptoms conform DSM-IV-TR standards. The results from our study suggest that the Dutch version of the CAPS-CA shows psychometric properties that are as good as those of the original English version. In accordance with earlier studies, we found that the interview was more reliable in older children than in younger children (e.g., Saltzman et al., 2006; Harrington, 2008). We found the smallest Cronbach’s $\alpha$ for symptom cluster C in the age group 8–12 years. Results from the inter-rater analyses confirmed that the CAPS-CA has good inter-rater reliability. Concerning the validity of the CAPS-CA, we found strong correlations between the CAPS-CA and the CRIES-13, a screening tool for PTSD. Correlations with measures of anxiety, depression and behavioral problems were less strong. Diagnostic agreement between the CAPS-CA and the ADIS C/P PTSD module was only poor to fair. The comparison of pretreatment CAPS-CA scores and posttreatment CAPS-CA scores revealed that children scored significantly lower posttreatment. This indicated that the CAPS-CA is sensitive to treatment effects. Based on our results we concluded that the Dutch CAPS-CA was suitable for clinical practice.

To find out what was known about treatments for children who were exposed to maltreatment and, more specifically, if TF-CBT and EMDR have shown to be effective for these children, we conducted a systematic review. Our literature search resulted in 17,077 hits from which we identified 33 relevant studies. Different studies showed that TF-CBT outperformed nontrauma-focused control conditions and other trauma-focused therapies. One RCT compared different versions of TF-CBT showing that the trauma narrative was essential to PTSD symptom reduction (Deblinger et al., 2011). Results from EMDR studies were more erratic. Generally, EMDR showed good results on co-morbid problems, outperforming a waitlist and a standard care condition, and showing similar results as TF-CBT. With respect to PTSD symptoms however, one study found that EMDR showed symptom reductions similar to TF-CBT whereas another study did not find differences between EMDR and a waitlist condition. In general results from our review indicated that TF-CBT is effective in reducing PTSD symptoms in children who were exposed to maltreatment.
EMDR also showed promising results. Therefore we were encouraged in our decision to expand the inclusion criteria of our RCT to children who had experienced multiple–event trauma, like maltreatment.

Equipped with a validated interview for the assessment of PTSD in children, we investigated the effects of TF–CBT and EMDR. We randomly assigned 48 children aged 8–18 years to either eight sessions of TF–CBT or eight sessions of EMDR. Treatment could be terminated before the eighth session if PTSD symptoms were reduced to a minimum, quantified by a cut–off point on a validated PTSD screening questionnaire, the CRIES–13. We found that TF–CBT and EMDR reduced PTSD symptoms to the same degree. There were no statistically significant between treatment differences with respect to co–morbid problems, either. However, parental reports on co–morbid problems suggested that EMDR did not effectively reduce problems with respect to separation anxiety, social phobia, conduct problems and hyperactivity. Whereas apart from prosocial behavior of their child, parents in the TF–CTB condition reported improvements on co–morbid problems. Considering treatment duration, we found that children in the EMDR condition on average received less treatment sessions than in the TF–CTB condition. This difference, however, did not reach statistical significance. Additionally we found that the largest change in PTSD symptomatology was achieved between sessions two and five for both conditions. These are the sessions in which both treatment protocols start with modules of exposure and cognitive restructuring. Overall our results suggest, that TF–CBT and EMDR are effective and efficient in reducing PTSD symptoms in children. In this study, we measured PTSD according to DSM–IV–TR standards. Meanwhile DSM–5 has come out, with new criteria that will have to be taken into account.

One of the biggest changes in the DSM–5 diagnostic criteria for PTSD is the inclusion of trauma–related cognitions. Therefore, we wanted to find out what the effects of psychotherapy on trauma–related cognitions are. We conducted a meta–analysis with three different hypotheses. Hypothesis 1: Trauma–focused CBT leads to a larger reduction of PTSD symptoms and trauma–related cognitions than nonactive control conditions (e.g., waitlist and minimal attention conditions) or nontrauma–focused interventions (e.g., present–centered therapy, treatment as usual or relaxation). Hypothesis 2: Trauma–focused interventions that include modules of cognitive restructuring reduce trauma–related cognitions more effectively than trauma–focused interventions that include modules of exposure
but do not include modules of cognitive restructuring. Hypothesis 3: If trauma-focused interventions reduce trauma-related cognitions (Hypothesis 2), then that reduction is maintained at long-term follow-up.

Our literature search resulted in more than 6000 hits. We identified 16 relevant studies from these hits. Based on these studies, we found strong evidence supporting Hypothesis 1. However, we had to reject Hypotheses 2 and 3. We found only small effect sizes in favor of treatments with cognitive restructuring. Especially the combination of imaginal exposure and in vivo exposure seemed to be as effective as the combination of imaginal exposure, in vivo exposure and cognitive restructuring. This indicated that the cognitive restructuring module did not have an additive rewarding effect on top of the combination of imaginal and in vivo exposure. Our meta-analysis also revealed that there were no reports of RCTs that investigated EMDR and in which trauma-related cognitions were measured by means of a validated questionnaire. Furthermore, we found only one study for adolescents that fulfilled our inclusion criteria. Therefore, we can conclude for adult populations that trauma-focused psychotherapy reduces trauma-related cognitions; however based on this meta-analysis we cannot make inferences about EMDR and child populations.

These results emphasize once more that research regarding children still lags behind that in adults. And yet again (déjà-vu from Chapter 2) we were faced with the situation that there was no validated Dutch questionnaire available for the assessment of trauma-related cognitions in children. Therefore we validated the Dutch version of the Child Posttraumatic Cognitions Inventory (CPTCI). The questionnaire consists of 25 items, which form two subscales: the permanent and disturbing change subscale (CPTCI-PC) and the fragile person in a scary world subscale (CPTCI-SW). We first tested the factor structure of the CPTCI and then further evaluated the reliability and validity of the questionnaire. In line with our expectations, our analyses supported the two-factor structure of the instrument. Furthermore we found that the CPTCI correlated strongly with measures of PTSD, depression and other anxiety disorders. Pre- and posttreatment data from a group of children who received either TF- CBT or EMDR revealed that change scores on the CAPS-CA and change scores on the CPTCI were strongly correlated. This indicated that the CPTCI is sensitive to treatment effects. Overall our results suggest that the Dutch CPTCI is a valid and reliable questionnaire.
General discussion

Treatment of PTSD

When I started this research, the most pressing question was if there are effective treatments that help children who experienced a traumatic event. After five years of research I can gladly say that there are treatments that effectively reduce PTSD symptoms. In our RCT we showed that both, TF–CBT and EMDR, reduce PTSD to the same extent. Previous research indicated that TF–CBT and EMDR reduced PTSD more effectively than nontrauma-focused interventions or nonactive interventions. However, as pointed out in the NICE guidelines (2005) for PTSD, most RCTs on the effectiveness of TF–CBT were conducted in sexually abused children. Therefore it was less well established that TF–CBT helped in other populations, too. During the past years, several studies have picked up on this criticism and showed that TF–CBT is effective in children who experienced single traumatic events, (interpersonal) violence or (manmade/natural) disasters (see for an overview Cary & McMillen, 2012). Another point Stallard (2006) called attention to, was the need for studies that compared TF–CBT to other active interventions. Although several studies in
the past years heeded this recommendation and compared TF-CBT to active nontrauma–focused CBT (e.g., Cohen, Mannarino, & Iyengar, 2011), the lack of a comparison of two active trauma–focused interventions remained. The study by Jaberghaderi et al. (2004) was the only comparative study of EMDR and TF-CBT in children when we started our research. In previous chapters we already mentioned that this study suffered from several limitations (like the small sample size and different termination criteria for TF-CBT and EMDR). During the course of our study, de Roos et al. (2011) published their RCT of CBT and EMDR. Critics commented on this research that the CBT condition did not qualify as TF-CBT. We kept in mind the limitations of treatment outcome studies in children with PTSD thus far, especially of EMDR and TF-CBT, when we set off to conduct our RCT.

At the start of our RCT, we included only children who experienced a road traffic accident. The inclusion of this study group fit well in the research track of the department. Furthermore we wanted to include a relatively homogeneous group of participants. That way it would have been easier to determine child factors that contribute to treatment response to either therapy. However, since recruitment was slow, we decided to broaden the inclusion criteria which led to a more diverse sample. An advantage of this was that we were able to demonstrate that in a diverse sample with children who had experienced different kinds of traumatic events, EMDR and TF-CBT effectively reduced PTSD symptoms. Another contribution of our study to the literature is that by using short eight sessions protocols, we showed that EMDR and TF-CBT are both efficient treatments. Previously, Deblinger et al. (2010) demonstrated that an eight sessions TF-CBT protocol was almost as effective as a 16 sessions protocol. The twice as long protocol resulted in the reduction of only one extra PTSD symptom. Our results support the effectiveness of the short eight sessions TF-CBT protocol.

Through our assessment during the course of treatment, we also demonstrated that in EMDR and TF-CBT, the largest reduction of PTSD symptoms occurred between sessions two and five. In both protocols children start with exposure and cognitive restructuring in sessions three and four. Although the approaches differ by which both therapies introduce these modules, the effect on PTSD symptoms seems to be identical. This finding is similar to findings from adult populations, in which researchers repeatedly demonstrated that different active trauma–focused treatments, show similar
effects on PTSD symptoms (e.g., Powers et al., 2010). Powers et al. suggested that this might be due to the fact that they all include exposure. However, results from our meta-analysis indicated that one type of exposure alone was not as powerful as the combination of different exposure modules: Imaginal exposure alone did not seem to be as effective as the combination of imaginal and in vivo exposure or the combination of imaginal exposure and cognitive restructuring. These results imply that imaginal exposure alone is not the most powerful technique but that in combination with other modules works well for PTSD reduction. Comparisons of EMDR with and without eye movements also demonstrated that eye movements have an additive beneficial effect, thus indicating that the effect of EMDR on PTSD is not only due to the exposure element alone (e.g., Lee & Cuijpers, 2013). Excessive laboratory research on EMDR furthermore supports the theory that EMDR works by taxing working memory during recall (van den Hout & Engelhard, 2012). Thus in EMDR the combination of exposure plus burdening the working memory seems to be the key to successful symptom reduction, while in TF–CBT the combination of imaginal exposure (writing the trauma–narrative) plus cognitive restructuring might be the golden combination.

If the cognitive restructuring component is a key element in TF–CBT one could argue that older children whose cognitive abilities are more developed, might profit more from TF–CBT than younger children. Meanwhile it has been argued that given the nonverbal character of EMDR, young children might profit well from EMDR. Based on the previous arguments one could assume that EMDR is more efficient for younger children than TF–CBT. However, in explorative analyses of our data we did find neither within (treatment) group differences between age groups nor between (treatment) group differences. Thus, the question which therapy works best for which child does not seem to depend on age. In a meta–analysis on the effect of EMDR on PTSD in children, Rodenburg et al. (2009) found a moderating effect of gender. Trials that included larger percentages of male participants showed larger effect sizes for EMDR, indicating that male participants responded better to treatment than female participants. We found in our trial that this is not only true for EMDR but also for TF–CBT. In both conditions, boys showed a larger reduction of PTSD than girls. This finding corresponds to results from previous research (e.g., Trask, Walsh, & Dilillo, 2011). Thus based on these results it seems unlikely that gender determines whether a child responds better to EMDR or TF–CBT. Results from
studies in our review article indicated, that TF-CBT effectively reduced PTSD symptoms in maltreated children, while results for EMDR were less convincing. Therefore, another hypothesis was that children who experienced multiple-event trauma profit more from TF-CBT than from EMDR. Yet preliminary analyses of our results showed that in both conditions, children showed about the same percentage of PTSD reduction whether they were treated for single- or multiple-event trauma. This suggests that neither TF-CBT nor EMDR were more effective for either kind of trauma-type.

As we pointed out in our systematic review, children who experienced maltreatment often suffer besides from PTSD from co-morbid problems, too, which might interfere with trauma-therapy. These problems need to be addressed as well, possibly in more phase-oriented approaches. The girl who deteriorated in our RCT suffered by far from more co-morbid problems than other children in our sample. It is possible that her problems interfered with trauma-therapy and ultimately led to an increase in PTSD symptoms. This girl might have profited from a longer therapeutic trajectory with more attention paid to stabilization and besides PTSD also attention for co-morbid problems. Yet another look at the data tells us that co-morbid problems cannot be the only factor that influence the success of trauma-therapy. Statistical and visual inspection of the data did not indicate that children with more co-morbid problems showed the least improvement. This was true for both EMDR and TF-CBT. Investigation of the three children who did not improve during treatment (besides the girl who deteriorated), tells us that they were all treated with TF-CBT. This is however the only common factor all three children shared. Thus at this stage we cannot draw conclusions about why some children do not respond to treatment.

Another concern besides treatment non-response is treatment dropout. In our RCT, we were confronted with a dropout rate of 25%. While this is at the lower end of the spectrum of dropout rates for intervention trials and outpatient populations, in which dropout rates climb up to 60% (Stallard, 2006; Wierzbicki & Pekarik, 1993), this is still a substantial number. There were four children in our trial who never turned up for therapy and five children stopped showing up for therapy after one or more sessions. These children did not differ from treatment completers in terms of demographic variables or symptom severity. Remarkably though, for all but for one of the children who stopped during the course of therapy, parents were not at all involved in the therapy. These
four children were all treated with EMDR. For 81% of the children who finished treatment (72% in the EMDR condition and 89% in the TF–CBT condition), parents spent either some time alone with the therapist or joint their child’s session(s). Although both our protocols included the involvement of parents during therapy, therapists might have been more used to include the parents when treating a child with TF–CBT than when treating a child with EMDR, since TF–CBT originally includes specific parent and joint parent–child modules. There is some evidence that for trauma–exposed children, implementation of protocolled treatment engagement strategies help to keep children in treatment (CATS consortium, 2007; Saxe, Heidi Ellis, Fogler, & Navalta, 2012). Saxe et al. (2012) showed that dropout rates can be reduced to 10% if the child’s social environment is involved in the treatment and if psychological and practical barriers are identified and overcome. These results are encouraging. Since we know that we can provide treatments that work well for the majority of children, future research should be directed at the question what keeps children in treatment.

If we had a lot more data from a lot more patients, we would have been able to conduct more statistical analyses and probably would have identified some variables that predict treatment outcome. Then we would have found out what therapy works best for which child, would have been able to tell why children do not respond to treatment and could have moved on to find a solution for these children. Unfortunately, RCTs are very time and resource consuming and therefore the execution of a large enough RCT by only one organization is not feasible (in the Netherlands). Co-operations between organizations such as the one we used in our validation studies can help solve this issue. One condition for this to be an option is the more widespread introduction of validated assessment instruments for PTSD.

**Challenges in (research on) diagnostics and treatment of children with PTSD**

Our validation studies, which are reported in Chapters 2 and 5, show promising results. We found that the CAPS–CA as well as the CPTCI are valid and reliable instruments and therefore can be used for the assessment of PTSD and trauma–related cognitions. Still, our studies also indicate that both instruments have some psychometric weaknesses with regard to divergent validity. As expected, they correlated strongly with instruments that are used
to assess PTSD. Yet besides they correlated strongly with instruments that are used for the assessment of depression and anxiety disorders. However, rather than a failure of the instruments, this lack of divergent validity can potentially also be attributed to the construct of PTSD itself: Not all PTSD symptoms are distinctive from symptoms of other disorders. For example, in the DSM-IV-TR criteria for PTSD, four symptoms overlap with major depressive disorder (MDD) and three symptoms overlap with generalized anxiety disorder (GAD). Thus these symptoms are not exclusive for PTSD and do not help to distinguish children with PTSD from children with MDD or GAD. This makes it less surprising, that the CAPS-CA correlated strongly with measures of depression and anxiety. Due to this symptom overlap, it becomes more logical from a theoretical point of view that an instrument measuring PTSD actually needs to correlate with instruments measuring depression and anxiety.

Throughout the discussion about DSM-5 criteria, researchers have proposed to eliminate symptoms that overlap with depression and anxiety disorders from the PTSD criteria (Brewin, Lanius, Novac, Schnyder, & Galea, 2009). Study results from Grubaugh, Long, Elhai, Frueh and Magruder (2010) supported this proposal. They demonstrated that a more parsimonious model of PTSD, without overlapping symptoms, showed the same structural validity and diagnostic accuracy as a model based on DSM-IV-TR criteria. A strong counterargument in this discussion is however that the numbing/dysphoria component is central to PTSD. Researchers investigating the factor structure of PTSD have repeatedly found a numbing/dysphoria factor besides the re-experiencing, avoidance, and arousal factors. This numbing/dysphoria factor comprised those items that overlap with depression (e.g., Simms, Watson and Doebbeling, 2002; Palmieri & Fitzgerald, 2005). This four-factor structure has been pursued for DSM-5 and instead of a more parsimonious solution, symptoms overlapping with depression are now part of the new symptom cluster negative alterations in cognitions and mood. By including more clarification or revising the wording of these symptoms, an effort has been made to make them more distinctive for PTSD (Friedman, Resick, Bryant, & Brewin, 2011).

Besides these old DSM-IV symptoms, this new symptom cluster also includes new symptom criteria targeting trauma-related cognitions. Adding yet another set of new symptoms makes PTSD an even more complex construct. Besides that, the inclusion of trauma-related cognitions in DSM-5 criteria will result in even more overlap between the PTSD and depression and anxiety
disorders, since distorted, dysfunctional beliefs are also common in these disorder (Beck, 2005; Friedman et al., 2011). This is also reflected in the results from our validation of the CPTCI: We found strong correlations between the CPTCI and measures of PTSD but also with measures of anxiety and depression. (Just like we found strong correlations between the CAPS–CA and measures of anxiety and depression.) Thus it might be even more difficult in the future to distinguish PTSD symptoms from anxiety or depressive symptoms.

Another aspect that makes the diagnostic assessment of PTSD precarious is comorbidity. Children with PTSD are more likely to show co–morbid disorders than traumatized children without PTSD. Frequently seen concurrent diagnoses of PTSD in children are mood and anxiety disorders or Attention Deficit/Hyperactivity Disorder (Ackerman, Newton, McPherson, Jones, & Dykman, 1998; Famularo, Fenton, Kinscherff, & Augustyn, 1996). The general concern with co–morbid disorders is that they are more observable in children than, for example, internalizing symptoms of PTSD, and therefore targeted more often with treatment instead of PTSD (Cohen & Scheeringa, 2009). Thus, it is important to precisely examine the onset of symptoms and if possible, collect information from more than one source (e.g., include information from the child but also from the parent and possibly from teachers) to capture all of the child’s symptoms.

Research has repeatedly demonstrated that parent and child reports of PTSD symptoms rarely match (e.g., Meiser–Stedman, Smith, Glucksman, Yule, & Dalgleish, 2007). This also corresponds to our findings that results on the parent version of the ADIS neither matched results from the CAPS–CA, nor results from the ADIS child version. It has been proposed that children might hide their feelings from their parents because they do not want to upset them. It is also possible that parents have huge expectations about the coping abilities of their child and therefore under–report symptoms, or as suggested earlier that they only report the more obvious, externalizing symptoms (Meiser–Stedman et al., 2007). On the other hand, children’s reports lack accuracy with respect to their own symptoms if they do not relate the symptoms to the event that they experienced or if they suffer deeply from avoidance symptoms and deny having any trouble. Hence, to avoid misdiagnosis, it is important not to rely completely on child or parent information alone but to gather information from all available sources.
Based on experience from general clinical practice, we know that parents might experience diagnostic assessments and questionnaires as a burden. Providing them with scientific evidence might help to convince them of the importance of parent and child conveyed information. Both clinicians and researcher can benefit from cooperation between science and practice. The strength of our research is that it has all been conducted in the clinical practice under normal daily circumstances. We administer the CAPS-CA and the CPTCI in everyday general practice and know what we can expect from these instruments. We have shown that our treatment protocols work for the majority of children treated at our institute. Thus we can take further steps and investigate treatment dropout, treatment non-respondents and work on collaborations with other institutions.

This dissertation provides more insight in the treatment and assessment of children with PTSD. We have demonstrated that TF-CBT and EMDR are both effective and efficient. We furthermore added two validated instruments for the assessment of PTSD and trauma-related cognitions to the Dutch test-battery. Keeping in mind the changes that DSM-5 criteria will bring, we showed in our meta-analysis that trauma-focused therapy also leads to the reduction of trauma-related cognitions. Although we filled some gaps with our researches, there is still plenty of room for scientific research in the field of non-response, dropout, efficacy of treatments on trauma-related cognitions and so on. We should strive for more collaboration between institutions to answer our questions more easily, thereby raising the level of care for traumatized children.
„Nichts als reine Gedanken
Die sich um Süßes ranken
Du lachst dich lall und lull
Die Seele auf normalnull“

*Frank Ramond/Annett Louisan, from the song ‘Unbekümmert’*