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Published in:
Current Opinion in Psychiatry

DOI:
[10.1097/YCO.0b013e32835b2c01](https://doi.org/10.1097/YCO.0b013e32835b2c01)

2013

[Link to publication](#)

Citation for published version (APA):

Patrick, S., Perrin, S., Tim, D., Richard, M.-S., David M, C., & William, Y. (2013). Treatment of Posttraumatic Stress Disorder in Children and Adolescents. *Current Opinion in Psychiatry*, 26(1), 66-72.
<https://doi.org/10.1097/YCO.0b013e32835b2c01>

Total number of authors:
6

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Treatment of posttraumatic stress disorder in children and adolescents

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Purpose of review

We review recent evidence regarding risk factors for childhood posttraumatic stress disorder (PTSD) and treatment outcome studies from 2010 to 2012 including dissemination studies, early intervention studies and studies involving preschool children.

Recent findings

Recent large-scale epidemiological surveys confirm that PTSD occurs in a minority of children and young people exposed to trauma. Detailed follow-up studies of trauma-exposed young people have investigated factors that distinguish those who develop a chronic PTSD from those who do not, with recent studies highlighting the importance of cognitive (thoughts, beliefs and memories) and social factors. Such findings are informative in developing treatments for young people with PTSD. Recent randomized controlled trials (RCTs) confirm that trauma-focused cognitive behaviour therapy (TF-CBT) is a highly efficacious treatment for PTSD, although questions remain about effective treatment components. A small number of dissemination studies indicate that TF-CBT can be effective when delivered in school and community settings. One recent RCT shows that TF-CBT is feasible and highly beneficial for very young preschool children. Studies of early intervention show mixed findings.

Summary

Various forms of theory-based TF-CBT are highly effective in the treatment of children and adolescents with PTSD. Further work is needed to replicate and extend initial promising outcomes of TF-CBT for very young children. Dissemination studies and early intervention studies show mixed findings and further work is needed.

Keywords

children and adolescents, posttraumatic stress disorder, trauma, treatment

INTRODUCTION

Traumatic events are defined in the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) [1] as (1) involving 'actual or threatened death or serious injury, or a threat to the physical integrity of self or others'; and (2) the person's response at the time involved 'fear, helplessness or horror' (or disorganized or agitated behaviour in children). In the DSM-V, it is proposed that the second part of the definition be dropped because it has little utility with adults or children. Recent epidemiological studies in the United States have confirmed that exposure to a range of traumatic events defined in this way is very common among adolescents [2,3]. However, community prevalence of posttraumatic stress disorder (PTSD) is low, at about 5% [4]. In the Great Smokey Mountain Study [5], the conditional probability of developing subclinical PTSD

following exposure to traumatic events was about 3%. The relative rarity of PTSD among children compared with adults is likely to be due in part to the developmental insensitivity of the DSM-IV diagnosis. It has been known for some time [6] that subsyndromal PTSD is associated with significant distress and functional impairment among young

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Curr Opin Psychiatry 2013, 26:66–72

DOI:10.1097/YCO.0b013e32835b2c01

KEY POINTS

- Trauma-Focused CBT (TF-CBT) is a highly effective treatment for PTSD in children and young people exposed to a range of traumatic events.
- TF-CBT is feasible to deliver to young preschool children and their parents, and initial trial evidence for its efficacy is very encouraging.
- Dissemination studies suggest that delivery of TF-CBT programmes in schools can be both acceptable to young people and effective.
- Single-session early intervention for all trauma-exposed children has not been shown to be helpful, but screen-and-intervene approaches to early intervention appear promising.

people, and a recent review [7¹¹] argues that the optimal algorithm for PTSD in children may require fewer symptoms than specified in the DSM-IV. This is especially true for young preschool children (see below). Nevertheless, it is now clear that most trauma-exposed young people do not develop chronic PTSD. In this context, recent research has investigated factors that might distinguish the minority of trauma-exposed young people who develop persistent PTSD from the majority who are resilient. Identification of potentially modifiable maintaining factors can inform the development of effective treatments.

RISK AND MAINTAINING FACTORS

The recent meta-analysis of risk factors by Trickey *et al.* [8¹²] brings some clarity to a growing literature. Sixty-four studies of PTSD among 32 238 young people (6–18 years old) were included, and 25 risk factors were examined. Broadly, and in line with previous meta-analyses of risk factors in adults, it was found that peritraumatic and posttraumatic factors showed larger effect sizes on persistent PTSD than pretrauma demographic factors and the severity of exposure. Specifically, demographic factors such as age, sex and ethnicity showed small effects, whereas peritraumatic factors such as fear and the perception of life threat during the event showed large effects. A number of posttrauma factors showed large to medium effect sizes, including cognitive factors (thought suppression, blaming others, distraction); social and family factors (poor social support, social withdrawal, poor family functioning); and psychological factors (severity of initial PTSD symptoms and comorbid psychological problems). Some caution is needed in interpreting these findings, given the relatively small number of

included participants for some variables (e.g. $N = 115$ for thought suppression). However, in terms of clinical application, it is encouraging that the most significant maintaining factors are those that can in principle be targeted and modified in therapy.

For example, as predicted by cognitive theory [9], the recent longitudinal study by Nixon *et al.* [10¹³] extended earlier work [11,12] to show that cognitive misappraisals of children who had been exposed to a wide range of single event traumas played a greater role in their adjustment than biological factors. Misappraisals also appear to be important to the adjustment of children who have been repeatedly maltreated, abused or neglected [13]. Cross-cultural support for the role of negative trauma-related appraisals was found in a very large study of Chinese adolescents exposed to the Wenchuan earthquake in China [14]. As predicted by cognitive models, the particular characteristics of trauma memories – specifically their degree of disorganization – have recently been found to distinguish trauma-exposed children with acute stress disorder (ASD) from those without ASD [15]. Emerging evidence suggests that social support [16¹⁴] and social connectedness [17] are strongly related to persistent PTSD, but not to ASD [18].

From a treatment point of view, it is helpful to identify factors that influence the maintenance of persistent PTSD over time, because modifying such factors may lead to reduction in symptoms. There is need for further well-designed prospective studies of trauma-exposed young people that can delineate PTSD trajectories over time and distinguish clearly between onset and maintaining factors [19,20¹⁵]. Nevertheless, increased understanding of childhood PTSD has already led to the development of theory-driven treatments, which have in turn been rigorously evaluated. We review recently published (2010–2012) treatment evaluation studies below.

TREATMENT

Trauma-focused cognitive behaviour therapy (TF-CBT) is based on clearly articulated and empirically supported theories, and has the most empirical support of all treatments for childhood PTSD. Recent practice parameters from the USA [21] are in line with earlier UK guidelines [22]: both recommend TF-CBT as a first-line treatment for young people with PTSD. Recent treatment outcome studies have supported these recommendations.

Exposure to the trauma memory is a key component of most forms of TF-CBT. Gilboa-Schechtman *et al.* [23¹⁶] directly compared 12–15 sessions of prolonged exposure (a form of CBT)

with 15–18 sessions of psychodynamic therapy in a randomized controlled trial (RCT) for adolescents ($N=38$) who had developed PTSD as a primary diagnosis following exposure to single-incident trauma. Both treatments were associated with reductions in PTSD and depression at posttreatment and at follow-up. However, prolonged exposure was superior to psychodynamic therapy in reducing PTSD symptoms ($P<0.05$) and depression symptoms ($P<0.05$). At posttreatment, 68% of those who started prolonged exposure were free of PTSD posttreatment compared with 37% of those who started psychodynamic therapy ($P=0.05$). At 6-month follow up, the equivalent figures were 63% (prolonged exposure) and 26% (psychodynamic therapy) ($P<0.01$). Of those who completed the treatment, 87% (prolonged exposure) and 47% (psychodynamic therapy) were free of PTSD diagnosis posttreatment.

In contrast, the RCT by Nixon *et al.* [24[■]] showed that a form of cognitive therapy, which explicitly precluded exposure, was highly efficacious for adolescents suffering from PTSD. Adolescents ($N=33$) who had developed PTSD or subsyndromal PTSD (i.e. at least one symptom from each of the three DSM clusters) after exposure to single-incident trauma such as road traffic accidents and assaults were included. They were randomly allocated to either nine sessions of cognitive therapy (including anxiety management, cognitive restructuring and working with parents) or to nine sessions of TF-CBT (including the same components as well as imaginal and in-vivo exposure). In the cognitive therapy arm, 90% of completers ($N=10$) and 56% of the intention-to-treat samples ($N=16$) were diagnosis-free at posttreatment. In the CBT arm, 91% of completers ($N=11$) and 65% of the intention-to-treat samples ($N=17$) were diagnosis-free at posttreatment. Differences between cognitive therapy and TF-CBT were not significant. This suggests that techniques aimed at modifying trauma-related misappraisals and dysfunctional beliefs may be as important as therapist-guided exposure in reducing symptoms of childhood PTSD. Indeed, an earlier study [25] found that changes in trauma-related misappraisals mediated the effect of TF-CBT (relative to a waiting list control condition) on PTSD symptoms in children and adolescents who had been exposed to assaults and accidents. The relative contribution of exposure techniques and cognitive techniques to symptom reduction is not yet clear, but it may be that their careful integration is important to successful outcome. Although TF-CBT is a powerful treatment, further investigations of mediators and moderators will help to refine and enhance future protocols for

young people who develop PTSD after a single-event trauma.

Deblinger *et al.* [26[■]] also investigated the relative importance of exposure-based therapy components in an evaluation of TF-CBT for children who developed PTSD symptoms following sexual abuse. In an extension and replication of earlier work, they tested directly whether the development of a trauma narrative was necessary for symptom reduction. Children ($N=210$, 4–11 years old) and their parents were randomized to one of four conditions: eight sessions with or without a trauma narrative component, or 16 sessions with or without a trauma narrative. As well as replicating their previous findings of a large effect for TF-CBT across all treatment conditions (effect size across all outcome measures and all treatment arms, $d=0.94$), some specific main effects and interactive effects were observed. For example, children allocated to the conditions that included a trauma narrative component reported less fear associated with thinking or talking about the abuse, and less general anxiety, compared with children in the conditions that did not include a trauma narrative component. Many of the children in the trauma narrative conditions reported that talking about the abuse specifically was the most important part of therapy. However, parents assigned to the 16-session, no trauma narrative condition reported greater increases in effective parenting practices and fewer externalizing child behavioural problems. This study is therefore an important step towards the delivery of psychological therapies that are tailored towards young children's specific profile of post-trauma difficulties.

To date, the majority of RCTs evaluating psychological treatment for childhood PTSD have been carried out in academic centres. There is also a small but growing literature suggesting that TF-CBT can be effective when delivered by education professionals in schools, or by community-based clinicians for patients referred via standard clinical pathways. For example, Jaycox *et al.* [27[■]] screened nearly 700 schoolchildren in the aftermath of Hurricane Katrina and identified 195 with elevated symptoms of PTSD. These children were then invited either to participate in a school-based group CBT programme or to attend a local mental health clinic and receive TF-CBT. Both treatments were effective in reducing PTSD symptoms, with TF-CBT showing marginally better outcomes. Importantly, 98% of the children who were offered the school-based programme accepted treatment, and 91% completed treatment. In contrast, only 37% of children offered TF-CBT at the clinic started treatment, and only 9% completed. Treatment location as opposed to treatment

type appeared to have a large influence on treatment uptake, and some families asked for the TF-CBT to be delivered at the school. School-based treatment may be more convenient and/or less stigmatizing for some families.

Rolfsnes and Idsoe's [28] review and meta-analysis of school-based treatment programmes for childhood PTSD included 19 studies that used either a randomized design ($N=9$) or a quasi-experimental design with a control condition ($N=10$). Sixteen studies (six RCTs) evaluated CBT; the other RCTs evaluated play therapy, eye movement desensitization and reprocessing (EMDR) and mind-body techniques. Medium to large effects were found in 11 of the CBT evaluations, and small to medium effects in four of the CBT studies. One very large quasi-experimental study of war-affected children in Lebanon did not find any effect of CBT on PTSD symptoms. The two school-based RCTs of play therapy and EMDR (vs. wait list control) also showed medium to large effect sizes. The weight of evidence suggests that school-based programmes delivered by education professionals can be effective, although further RCTs are required. Delivery in schools may significantly improve access and uptake of treatment, and may be especially helpful in situations in which many young people have been traumatized, such as can occur after disasters or accidents.

However, some caution is warranted. Wonderlich *et al.* [29] developed a multiphase programme to identify therapists in community clinics who were interested in (but not already using) evidence-based treatment approaches for adolescents exposed to repeated abuse. Therapists were trained in two evidence-based treatments for PTSD, and local supervision groups were established. The authors detail not only the significant uptake of the training programme but also the obstacles involved in encouraging community clinicians to record routine clinical outcome data. In a subsequent uncontrolled pilot evaluation phase of the programme, adolescents ($N=79$, aged 8–18 years) who had been exposed to multiple traumas received either individual TF-CBT or a group-based CBT approach. Youth in both treatment conditions experienced reductions in symptoms of PTSD, anxiety and depression, although these reductions were modest.

EARLY INTERVENTION

The growing evidence for the powerful effect of TF-CBT on chronic PTSD has stimulated efforts to intervene earlier so that persistent PTSD can be prevented.

Zehnder *et al.* [30] randomly allocated a consecutive series of 99 children (7–16 years old) either

to a one-off debriefing session (comprising psychoeducation and reconstruction of the accident) or to standard medical care, 10 days after a road traffic accident. At assessment 2 and 6 months later, there was no difference between the groups in terms of PTSD symptoms (although younger children in the intervention group showed improvement in depression and behaviour problems). This result is consistent with two earlier reports of negative findings when a one-off, early intervention was offered to all trauma-exposed children [31,32], and with the negative findings for psychological debriefing in adults [33,34].

An alternative early intervention approach was trialled by Kassam-Adams *et al.* [35]. Hospitalized injured children ($N=290$, 8–17 years old) were screened for PTSD symptoms, and those above cut off ($N=85$) were randomly allocated to a two-session intervention, which was contrasted with usual care. At assessment 6 weeks and 6 months after injury, there was no difference between the groups in terms of PTSD symptoms.

A similar design was employed by Berkowitz *et al.* [36], using a more intensive intervention that extended over a longer time period. Children ($N=176$, 7–17 years old) exposed to a variety of traumatic events were screened, and those endorsing at least one symptom of PTSD ($N=106$) were randomly allocated either to a four-session intervention, which was delivered within the first 2 months after exposure, or to a supportive comparison intervention. The intervention, The Child and Family Traumatic Stress Intervention (CFTSI), was flexibly delivered to parents and children, and included psychoeducation, techniques to improve family communication and behavioural and cognitive skills teaching (coping enhancement). Assessment after intervention and at 6-month follow-up showed significant and meaningful improvements in PTSD in the CFTSI group relative to the comparison group.

Taken together, these studies show that, although universal single-session early interventions have not been helpful, screen-and-intervene approaches appear feasible and promising. Very brief early interventions of one or two sessions are unlikely to be beneficial, whereas approaches involving at least four sessions, delivered flexibly to children and families, seem highly promising. Studies are very few and further work is needed.

YOUNG CHILDREN

The studies reviewed above include children from about 7 years old through to late adolescence. What is known about the presentation

and treatment of PTSD in infants and very young children?

Very young children are certainly exposed to potentially traumatic events. However, community surveys and studies of trauma-exposed children generally show very low rates of PTSD diagnosis according to the DSM-IV criteria. For example, Saigh *et al.* [37] found that none of their sample of very young children who were exposed to the September 11 attacks in New York met criteria for a DSM-IV PTSD diagnosis. This may arise either because young children are especially resilient (due, for example, to cognitive immaturity) or because the DSM-IV criteria are developmentally insensitive. To address this important question, Scheeringa *et al.* [7¹¹] formulated an alternative algorithm for diagnosing PTSD in preschoolers. This alternative algorithm (PTSD-AA) reduces the threshold for diagnosis by dropping the required number of avoidance symptoms and by refining some of the existing DSM symptoms to make them more developmentally sensitive. A series of studies by Scheeringa's group and others [7¹¹] has reported promising findings with respect to the criterion, convergent, discriminant and predictive validity of PTSD-AA. The alternative algorithm approach is now widely used by research groups and has been incorporated into the DSM-V proposal for a subtype of PTSD in children younger than 6 years. This new DSM-V preschool subtype is consistent with the overall DSM-V approach, which includes four symptom clusters, but otherwise appears to match Scheeringa's PTSD-AA very closely. A recent report of posttraumatic stress reactions among very young (1–6 year old) burn victims [38] found that PTSD-AA and the DSM-V preschool subtype identified nearly identical children and provided developmentally sensitive and valid measures of PTSD. At 1 month post-trauma, PTSD-AA and the DSM-V preschool subtype diagnosed 25% of young children, far more than the incidence of 5% according to DSM-IV.

Alongside this growing consensus on the differing presentation of PTSD in infants and preschool children, advances have been made in treatment. Scheeringa *et al.* [39¹¹] conducted an RCT of TF-CBT for preschool children ($N = 64$, 3–6 year olds). The fundamental principles of TF-CBT were adhered to, but important adaptations were made for working with younger children. These included greater parental involvement (sessions were observed by mothers, or joint sessions carried out), greater emphasis on behavioural management training and relaxation training, the use of visual aids (e.g. cartoons for psych-education) and the use of drawing and playing to complete imaginal reliving. The intervention was feasible to deliver and showed

large effect sizes relative to a wait list control condition. This is highly promising for the treatment of very young traumatized children, but requires replication and extension.

COMPLEX POSTTRAUMATIC STRESS DISORDER IN CHILDREN

The term complex PTSD is used to refer to the potential sequelae of exposure to multiple, repeated or prolonged traumatic events. There is little consensus on the phenomenology of complex PTSD in adults. Some authors find that the construct is not useful and that it has little empirical support as a distinct entity [40¹¹]. Others note that the distinguishing feature is affective dysregulation alongside PTSD symptoms [41]. There are very few empirical studies of young people and complex PTSD. In our clinic, we see adolescents who have been exposed to multiple traumas as young children. Trauma histories typically involve repeated witnessing or suffering abuse and interpersonal violence at home. These young people may present with very clear, severe, chronic PTSD symptoms, alongside marked mood dysregulation. Mood lability may include intense anger and aggressive violent outbursts, or episodes of very low mood accompanied by hopelessness, suicidal ideas and self-harm. Mood changes may be short lived and often appear to be triggered by interpersonal difficulties or sensitivities. Young people with this sort of presentation can present diagnostic challenges and are variously referred to trauma services, depression services or services for young people with emerging unstable personality disorders. We have found that young people with such difficulties can benefit from a trauma-focused intervention. Before engaging in trauma-focused work, treatment components aimed at increasing affective stability are necessary. These may include arousal reduction (relaxation training), functional analysis of triggers and responses to mood shifts (chain analysis), and coping skills teaching of adaptive responses to triggers and mood shifts, including behavioural activation approaches. Further coping skills training around trauma-specific symptoms, such as image manipulation techniques, may also be needed prior to engaging in memory-focused work. When memory-focused work is started, this often takes a narrative approach, constructing a timeline to contextualize multiple exposure to trauma. Typical TF-CBT techniques can be used for each of the young person's traumatic experiences if necessary, although in our experience a few memories are often particularly prominent and problematic, and these are likely to be focused on during therapy. To our knowledge, there are no

treatment outcome studies for young patients who present with these sorts of difficulties.

CONCLUSION

Various forms of TF-CBT have been shown to be highly effective for young people who develop PTSD following single-incident trauma: remission rates of around 90% have now been reported in several well-designed trials [23[■],24[■],25]. Three recent trials have highlighted the importance of both exposure and cognitive techniques in treatment. Our clinical experience is that the careful integration of these two central components is tolerated well by young patients and is beneficial. Recent trials were of modest size, and further large-scale evaluations with broad inclusion criteria are now needed. Nevertheless, on the basis of trials to date, clinicians can be confident in recommending TF-CBT for young patients with PTSD. Recent findings on the effects of adapted TF-CBT for PTSD in preschool children are highly encouraging, although replication and extension are now needed. Further work is also required to develop early intervention approaches: current evidence suggests that a move towards developing screen-and-intervene approaches rather than universal single-session debriefing will be productive. School-based delivery of TF-CBT may improve uptake and accessibility, but further work is needed to ensure that protocols are effective when implemented in these settings. Complex PTSD is a contentious construct when used with adults, and research with children is currently lacking.

Acknowledgements

None.

Conflicts of interest

There are no conflicts of interest.

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- of special interest
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