

**Development and validation of the Child Post-Traumatic Cognitions
Inventory (CPTCI)**

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Development and validation of the
Child Post-Traumatic Cognitions Inventory (CPTCI)

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CPTCI

Abstract

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Background: Negative trauma-related cognitions have been found to be a significant factor in the maintenance of post-traumatic stress disorder (PTSD) in adults. Initial studies of such appraisals in trauma-exposed children and adolescents suggest that this is an important line of research in youth, yet empirically validated measures for use with younger populations are lacking. A measure of negative trauma-related cognitions for use with children and adolescents, the Child Post-Traumatic Cognitions Inventory (CPTCI) is presented. The measure was devised as an age-appropriate version of the adult Post-Traumatic Cognitions Inventory (Foa, E. B., Ehlers, A., Clark, D. M., Tolin, D. F., & Orsillo, S. M. (1999). *The Posttraumatic Cognitions Inventory (PTCI): Development and validation. Psychological Assessment, 11*, 303-314.). Methods: The CPTCI was developed and validated within a large (n = 570) sample, comprising community and trauma-exposed samples of children and adolescents aged 6-18 years. Results: Principal components analysis suggested a two-component structure. These components were labelled ‘permanent and disturbing change’ and ‘fragile person in a scary world’, and were each found to possess good internal consistency, test-retest reliability, convergent validity, and discriminative validity. The reliability and validity of these sub-scales was present regardless of whether the measure was completed in the acute phase or several months after a trauma. Scores on these sub-scales did not vary with age. Conclusions: The CPTCI is a reliable and valid measure that is not specific to the type of trauma exposure, and shows considerable promise as a research and clinical tool. The structure of this measure suggests that appraisals concerning the more abstract consequences of a trauma, as well as physical threat and vulnerability, are pertinent factors in trauma-exposed children and adolescents, even prepubescent children.

Key words: Post-traumatic stress disorder, children, adolescents, appraisals, cognition.

CPTCI

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3 Central to the theoretical issues surrounding post-traumatic stress disorder (PTSD)
4 is the question of why some individuals experience only transient distress following a
5 trauma, while others experience chronic and disabling symptoms (Dalgleish, 2004).
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Central to the theoretical issues surrounding post-traumatic stress disorder (PTSD) is the question of why some individuals experience only transient distress following a trauma, while others experience chronic and disabling symptoms (Dalgleish, 2004). Cognitive models of PTSD in adults (Brewin et al., 1996; Dalgleish, 2004; Ehlers & Clark, 2000; Foa & Rothbaum, 1998) have suggested that dysfunctional appraisals, relating to the trauma, the world, the self, and PTSD symptoms themselves, play a significant role in maintaining the disorder.

These models suggest several pathways by which negative trauma-related appraisals might maintain PTSD symptoms. In particular they argue that such appraisals can contribute to creating a sense of “current threat” (Ehlers & Clark, 2000) and encourage the use of maladaptive coping strategies. Foa and Rothbaum (1998) suggested two main types of appraisal that mediate the development of PTSD: the idea that the world is a completely dangerous place, and the view of oneself as incompetent.

The Post-Traumatic Cognitions Inventory for adults (PTCI; Foa et al., 1999) represents an attempt to develop a comprehensive measure of trauma appraisals considered by recent cognitive models (Dalgleish, 2004; Ehlers & Clark, 2000; Foa & Rothbaum, 1998) to maintain PTSD symptoms. The measure was developed in a large sample and found to possess a meaningful three-component structure: negative beliefs about self (e.g. “I can’t deal with even the slightest upset”, “I have permanently changed for the worse”), negative beliefs about the world (e.g. “the world is a dangerous place”), and self-blame (e.g. “the event happened because of the way I acted”). In the original study, each component had excellent internal consistency, test-retest reliability, convergent validity, and discriminative validity.

The PTCI has been further validated in a sample of motor vehicle accident (MVA) survivors (Beck et al., 2004), has been shown to correlate both with PTSD in a sample of

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Emergency Room staff (Laposa & Alden, 2003) and with ASD in a sample of motor vehicle accident and assault survivors (Nixon & Bryant, 2005), and predicted PTSD in a sample of firefighters (Bryant & Guthrie, 2005; Bryant & Guthrie, 2007). In addition, changes in PTCI scores are associated with improvement of PTSD symptoms following either prolonged exposure therapy or prolonged exposure plus cognitive restructuring (Foa & Rauch, 2004).

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There has been far less consideration of the role of trauma-related appraisals and PTSD in children and adolescents (Meiser-Stedman, 2002). Mannarino and colleagues (1994) devised the Children's Attributions and Perceptions Scale (CAPS), a semi-structured interview, as a measure of different attributions pertaining to sexual abuse (e.g. feeling different from peers, blaming themselves for the abuse). The measure was found to have acceptable internal reliability and test-retest reliability. Sexually abused girls scored significantly higher on each of the CAPS sub-scales, relative to a non-abused control group, while higher scores on these measures were significantly correlated with depression and anxiety measures. In a further study comparing the CAPS to measures of more general (i.e. not abuse-specific) negative attributions, the CAPS was most able to distinguish between sexually abused girls and controls (Mannarino & Cohen, 1996). Similarly, Spaccarelli (1995) found that negative abuse-specific appraisals (measured using the Negative Appraisals of Sexual Abuse Scale), were related to anxiety, depression and post-traumatic stress.

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A small but growing number of studies have examined the role of negative trauma-related appraisals in the development of PTSD in children exposed to non-sexual-abuse, single-event trauma. Ehlers, Mayou, and Bryant (2003) used a single item ("Do you ever think that something is wrong with you because you cannot forget the accident, for example, do you ever feel you are going mad?") in MVA survivors, and found that this

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3 predicted severity of post-traumatic stress symptoms at later assessments. Stallard and
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5 Smith (2007), also found that single items indexing alienation from other people, negative
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7 interpretation of PTSD symptoms, permanent change, and heightened future danger, were
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9 associated with PTSD symptoms in a sample of MVA survivors assessed 8 months post-
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11 trauma. While these studies point to the potential application of a cognitive model of PTSD
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13 to children and adolescents, they also underline the importance of having reliable and valid
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15 measures of post-traumatic appraisals for use with this age group.
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20 The aim of the present study was to develop a measure for assessing negative post-
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22 traumatic appraisals for children and adolescents – the Children’s Posttraumatic Cognitions
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24 Inventory (CPTCI). This multi-item measure was derived from the adult PTCI (Foa et al.,
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26 1999), and its properties were investigated in children exposed to single-event trauma, as
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28 opposed to more chronic trauma such as sexual abuse. It was intended that the CPTCI
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30 would both inform our understanding of a potentially significant mechanism in the
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32 development of PTSD in children and adolescents, and also provide a clinically useful tool
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34 for assessment and prediction.
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41 Method

42 *Participants*

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45 In total, 570 children and adolescents aged 6-17 years completed the CPTCI while
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47 participating in studies of post-traumatic stress in youth. The first sample (S1) comprised
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49 223 children and adolescents (aged 11-18, mean = 14.6 years, SD = 2.3, 131 [58.7%]
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51 female), participating in a cross-sectional community study of post-traumatic stress in UK
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53 secondary school pupils. Participants completed the CPTCI in relation to the most
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55 frightening event they had experienced in the previous two months. The second sample
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57 (S2) comprised 138 children and adolescents (aged 6-17, mean = 12.8 years, SD = 2.7, 58
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3 [42.0%] female), assessed at least 6-months post-trauma by researchers at the Maudsley
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5 Hospital Child Traumatic Stress Clinic in London as part of ongoing research studies
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7 and/or for treatment. These children and adolescents had been exposed to an assault or
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9 MVA, or had witnessed such events. The third sample (S3) comprised 209 children and
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11 adolescents (aged 6-17, mean = 11.4 years, SD = 2.9, 79 [37.8%] female), participating in
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13 prospective studies of children and adolescents admitted to hospitals in Sydney and
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15 Adelaide following injury (e.g. MVAs, falls). These children and adolescents were
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17 assessed within the first month post-trauma.
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*Measures**The Post-Traumatic Cognitions Inventory – child version (CPTCI)*

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27 The items for the CPTCI were drawn primarily from the 33-item adult PTCI (Foa et
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29 al., 1999). Each item was adapted to be appropriate for children and adolescents and
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31 included in the initial item pool for the CPTCI. Several additional items deemed suitable
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33 for children that would address the key concepts that make up the adult PTCI were also
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35 included in the initial pool of 41 items. The additional items were mainly inspired by other
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37 research that has been aimed at testing cognitive models of PTSD in adults (Steil & Ehlers,
38
39 2000). These items related to negative appraisals of traumatic stress symptoms (e.g. “My
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41 reactions since the frightening event mean something is seriously wrong with me”). One
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43 item (“I feel like a robot sometimes”) was not translated from the PTCI to the CPTCI as
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45 an age-appropriate version of this item could be devised.
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51 The preliminary measure comprised 41 items. Possible responses were “Don’t
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53 agree at all”, “Don’t agree a bit”, “Agree a bit”, or “Agree a lot”.
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Revised Impact of Event Scale, child version

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58 Participants in S1 and S2 completed the Revised Impact of Event, child version
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60 (RIES-C; Dyregrov & Yule, 1995), a self-report measure of post-traumatic stress

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3 symptoms. The RIES-C sub-scales and total score have satisfactory to good internal
4 reliability (Smith et al., 2003). The measure has good convergent (Giannopoulou et al.,
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6 2006) and criterion (Perrin et al., 2005) validity.
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Child Post-Traumatic Stress Scale

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12 The Child Post-Traumatic Stress Scale (CPSS; Foa et al., 2001) was completed by
13 participants in S2 and a sub-set of participants in S3. The CPSS is a self-report
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15 questionnaire developed to assess the severity of PTSD symptoms in children. The
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17 measure possesses good internal consistency (alpha = .89) and excellent test-retest
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19 reliability (r = .84).
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Depression Self-Rating Scale

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26 The Depression Self-Rating Scale (DSRS; Birlleson, 1981) is an 18-item self-report
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28 measure of childhood depression. The measure has excellent internal consistency (split-
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30 half reliability coefficient = .86) and test-retest reliability (r = .80). The DSRS was
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32 completed by a large sub-sample (N = 104; 75.4%) of participants in S2.
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Anxiety Disorder Interview Schedule, child and parent report version

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38 Participants in S2 completed the PTSD schedule of the Anxiety Disorders
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40 Interview Schedule, child and parent report version (ADIS-C/P; Silverman & Albano,
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42 1996). The ADIS-C/P is a structured interview battery designed for the assessment of
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44 anxiety disorders in children and adolescents. The ADIS-C/P benefits from the inclusion of
45
46 an appropriate measure of impairment and the use of the DSM-IV in devising the schedule.
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48 It has been shown to possess excellent test-retest reliability (Silverman, Saavedra, & Pina,
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50 2001).
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Child Acute Stress Reaction Questionnaire / Acute Stress Checklist for children

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56 Participants in S3 completed a self-report questionnaire assessing whether they met
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58 criteria for Acute Stress Disorder (ASD). ASD was introduced in the DSM-IV as a way of
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3 encapsulating traumatic stress symptoms within the first month post-trauma, when PTSD
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5 can not be diagnosed (Harvey & Bryant, 2002).
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8 The relative immaturity of the literature concerning ASD in youth is such that
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10 different measures of ASD were used at different sites contributing to S3. A diagnosis of
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12 ASD was made using either the Child Acute Stress Questionnaire (CASQ; Winston et al.,
13
14 2002) or the Acute Stress Checklist for children (ASC-Kids; Kassam-Adams, 2006). The
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16 CASQ is a 48-item self-report measure of acute post-traumatic stress, from which a
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18 provisional diagnostic status can be derived. The CASQ total score has excellent internal
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20 consistency (Cronbach's $\alpha = .94$) and good test-retest reliability ($r = .79$; Winston et al.,
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22 2002). The ASC-Kids is a refined 29-item version of the CASQ. As with the CASQ, the
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24 ASC-Kids is a self-report measure of acute stress symptoms that reflects the DSM-IV
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26 criteria for ASD, such that a symptom severity score and ASD diagnosis can be derived.
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28 The measure has good internal reliability (Cronbach's $\alpha = .86$) and test retest reliability (r
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30 = $.76$; Kassam-Adams, 2006).
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Procedure

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38 Informed consent was obtained from all participants at each site. In the case of
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40 young children (i.e., those aged 6-7 years), parents or legal guardians gave informed
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42 consent on behalf of their children, while the children themselves gave their assent to
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44 participating. Participants completed the CPTCI and other measures in relation to the event
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46 that precipitated their attendance at hospital (for prospective study participants in S2 and
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48 S3), the trauma they had sought treatment for (for clinic-referred participants in S2), or the
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50 most frightening experience from the previous two months (for school pupils in S1). In the
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52 prospective study samples and the treatment-seeking sample, children also completed an
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54 interview that assessed ASD (if they were assessed within four weeks of the trauma) or
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56 PTSD (if they were assessed three or more months post-trauma). A selection of
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3 participants from S2 (n=41) and S3 (n=112) completed the CPTCI on a second occasion,
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5 thus permitting calculation of test-retest reliability statistics.
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Results

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12 The statistical procedures used to evaluate the properties of the CPTCI followed as
13 far as possible those used by Foa et al. (Foa et al., 1999) to evaluate the adult PTCI. Where
14 there was heterogeneity of variance, non-parametric rather than parametric analyses were
15 conducted.
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Item reduction and component stability

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22 The 41 items of the preliminary CPTCI were submitted to a principal components
23 analysis (PCA) using the data set obtained from S1. Examination of the scree plot implied
24 a two-component solution. The analysis was repeated with a forced two-component
25 solution, and subjected to varimax rotation. The first component accounted for 32.9% of
26 variance, while the second component accounted for an additional 6.2% of variance. The
27 25 items (see Table 1; S1 data) that were found to load more than .50 on a given
28 component, and less than .40 on the other component were retained within the
29 questionnaire and subjected to further analysis.
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43 Inspection of the derived components revealed meaningful groupings: the first
44 component, comprising 13 items, corresponded to a sense of 'permanent and disturbing
45 change' (hereafter referred to as the CPTCI-PC) since the trauma (e.g. "My life has been
46 destroyed by the frightening event", "My reactions since the frightening event mean I will
47 never get over it"), while the second component, comprising 12 items, corresponded to a
48 sense of being a 'fragile person in a scary world' (hereafter referred to as the CPTCI-SW;
49 e.g. "I don't trust people", "I am a coward"). A third PCA was run with the 25 retained
50 items, and again subjected to varimax rotation. In this solution, the first component
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3 accounted for 37.3% of variance, while the second component accounted for an additional
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5 9.2% of variance. The final 25-item measure is presented in Appendix A.
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8 In order to further verify this solution, the forced two-component solution PCA was
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10 performed again using the data from S2 and S3 (see Table 1). In S2 the overall two-
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12 component solution explained 51.89% of variance in the model, while in S3 the two-
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14 component solution explained 48.28% of variance. A small number of items completed by
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16 participants in S3 showed substantial loadings for the component other than that to which
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18 they had been allocated based on the data from S1. These were mainly items completed by
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20 participants in S3 that contributed to the CPTCI-SW component. Despite this, it was
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22 nevertheless decided to persist with a two-component solution given the stability of the
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24 CPTCI-SW component in S1 and S2, and its good internal consistency within S3 (see
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26 below).
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31 The stability and replicability of the CPTCI components were evaluated by
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33 calculating factor congruence coefficients (a measure of similarity between two
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35 configurations) for each component, comparing the scores of the different samples. When
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37 comparing S1 and S2, the factor congruence coefficients were .99 for Component 1
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39 (CPTCI-PC), and .99 for Component 2 (CPTCI-SW), for S1 and S3 they were .99 and .90,
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41 and for S2 and S3 they were .99 and .91, respectively. All these values are considered to be
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43 in the borderline (.89-.92) or excellent (.98-1.00) range (MacCallum et al., 1999),
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45 indicating that the factors replicated moderately well across samples.
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Internal consistency

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51 The Cronbach's alpha coefficients for the CPTCI-PC component and for the
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53 CPTCI-SW component were .91 and .87 in S1, .93 and .88 in S2, and .92 and .86 in S3,
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55 suggesting that each component of the CPTCI possessed good internal reliability. When
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57 participants from all three samples were re-ordered by age group (6-8 years, 9-11 years,
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3 12-14 years, and 15-18 years), internal consistency was found to be good regardless of
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5 which age group was considered (all Cronbach's alpha coefficients > .75).
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8 Test-retest reliability

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10 Test-retest reliability was assessed using sub-samples from S2 and S3. A sub-
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12 sample of 41 participants in S2 completed the CPTCI on two occasions, with an interval of
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14 approximately three months between assessments. Both the CPTCI-PC ($r = .78, p < .0001$)
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16 and the CPTCI-SW ($r = .72, p < .0001$) sub-scales had good test-retest reliability in this
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18 sample. A sub-sample of participants from S3 ($N = 112; 53.6\%$) completed the CPTCI 6-8
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20 weeks after they had initially completed the measure in the acute phase. Again, both the
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22 CPTCI-PC ($r = .76, p < .0001$) and CPTCI-SW ($r = .70, p < .0001$) sub-scales had good test-
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24 retest reliability.
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29 Convergent validity

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31 The convergent validity of the CPTCI was established by examining the association
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33 between each of its sub-scales and the total score with self-report measures of post-
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35 traumatic stress symptoms and depression. Each CPTCI sub-scale and the CPTCI total
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37 score was significantly and positively correlated with the measures used to index post-
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39 traumatic stress symptoms (the RIES-C and the CPSS) in each sample where they were
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41 completed (all $r_s > .5$). Likewise the CPTCI sub-scales and total score were significantly
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43 and positively correlated with depressive symptoms in a sub-set of S2 participants who
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45 completed the DSRS (all $r_s > .6$).
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51 In order to ensure that the relationship between PTSD symptoms and negative post-
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53 traumatic appraisals was not simply an artifact of the relationship between depression and
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55 such appraisals (Foa et al., 1999), the correlations between the RIES-C or CPSS and
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57 CPTCI scores for participants in S2 were repeated while partialling out DSRS scores. The
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59 RIES-C continued to be significantly correlated with the CPTCI-PC ($r = .35, p < .0001$), the
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3 CPTCI-SW ($r = .31, p < .001$), and the CPTCI total score ($r = .36, p < .0001$), and the CPSS
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5 also continued to be significantly correlated with the CPTCI-PC ($r = .63, p < .0001$), the
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7 CPTCI-SW ($r = .51, p < .0001$), and the CPTCI total score ($r = .63, p < .0001$).
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10 The degree of specificity of the association between the CPTCI and post-traumatic
11 stress symptomatology, relative to depressive symptoms, was examined by comparing
12 correlation coefficients of the association between CPTCI sub-scales and psychopathology
13 measures. These analyses were performed for the RIES-C, CPSS, and DSRS in S2, using z
14 scores to compare Fisher transformed correlation coefficients. There were no significant
15 differences between the strength of the CPTCI correlations with the RIES-C and DSRS (all
16 $ps > .27$), but the correlation coefficient for the association between CPSS and the CPTCI-
17 PC sub-scale was significantly stronger than that between the DSRS and the CPTCI-PC
18 sub-scale ($z = 2.37, p < .02$).
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Discriminant validity

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34 The discriminant validity of the CPTCI was assessed by comparing PTSD and non-
35 PTSD youth in S2 and ASD and non-ASD youth in S3. Mean scores for these sub-samples
36 are displayed in Table 2. The sub-samples with ASD and PTSD scored significantly higher
37 on each CPTCI sub-scale and total score relative to the non-ASD sub-samples (CPTCI-PC:
38 Mann-Whitney $U = 341, p < .002$, effect size = .91; CPTCI-SW: $t = 4.31, p < .0001$, effect
39 size = 1.16; total score: Mann-Whitney $U = 318, p < .001$, effect size = 1.09) and non-PTSD
40 sub-samples (CPTCI-PC: Mann-Whitney $U = 384.5, p < .0001$, effect size = 1.88; CPTCI-
41 SW: $t = 7.70, p < .0001$, effect size = 1.39; total score: Mann-Whitney $U = 420.5, p < .0001$,
42 effect size = 1.82), supporting the discriminant validity of the measure.
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55 Mann-Whitney U statistics and t -tests were used to examine whether scores on the
56 CPTCI differed according to the type of trauma experienced by participants in S2 and S3.
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58 The most frequently endorsed trauma types in these samples were MVAs ($n = 204$) and
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3 assaults (n = 56). Participants exposed to assaults scored higher on the CPTCI-PC sub-
4 scale (M = 23.71, SD = 9.91, vs M = 18.65, SD = 7.95M; Mann-Whitney U = 3823.5,
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6 scale (M = 23.71, SD = 9.91, vs M = 18.65, SD = 7.95M; Mann-Whitney U = 3823.5,
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8 p<.0001), the CPTCI-SW sub-scale (M = 27.25, SD = 9.08, vs M = 22.53, SD = 7.72; t =
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10 3.90, p<.0001), and the total scale score (M = 50.96, SD = 18.02, vs M = 41.18, SD =
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12 14.67; Mann-Whitney U = 3778.0, p<.0001) than those exposed to MVAs.

Age and gender analysis

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17 Scores on the CPTCI sub-scales differentiated by age group and gender are
18 displayed in Table 3. These scores are based on participants' data pooled together from S1,
19 S2, and S3. No age-related differences were observed for either CPTCI sub-scale or the
20 total score. Female participants scored higher on the CPTCI-SW sub-scale (Mann-Whitney
21 U = 32779.5, p<.0001) and on the total score (t = 2.77, p <.007).

Discussion

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33 This study presents data concerning the psychometric properties of a measure of
34 trauma-related appraisals in children and adolescents – the Children's Posttraumatic
35 Cognitions Inventory (CPTCI). This evaluation was conducted in a large sample (n = 570)
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37 of both trauma-exposed and non-trauma exposed children and adolescents, aged 6-18
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39 years. The sub-scales of the 25-item CPTCI were found to have a stable component
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41 structure and good internal reliability, test-retest reliability, convergent validity, and
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43 discriminative validity.
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The main weakness of the CPTCI concerned the component structure of the
CPTCI-SW sub-scale in S3, where some items failed to load satisfactorily on the CPTCI-
SW component. This may be attributable to the early stage at which participants in S3
completed the CPTCI. Nevertheless, each CPTCI sub-scale had excellent internal
reliability in this population.

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The two-component structure of the CPTCI yielded sub-scales of a somewhat different nature to that observed in the PTCI. Rather than appraisals about the self and the world, as in the PTCI, the CPTCI's components consisted of items pertaining to an insult to the individual's sense of self and future (the CPTCI-PC sub-scale), and ongoing physical threat and personal weakness (the CPTCI-SW sub-scale). The blame items that comprised a distinct component in the PTCI did not satisfactorily cluster together from the 41 items that were initially analysed. This departure from the original PTCI may reflect the inclusion of a number of items derived from other measures that have indexed adult cognitions in the aftermath of trauma, particularly negative interpretations of PTSD symptoms. These items may have underpinned the emergence of the CPTCI-PC sub-scale. The clear demarcation of a component reflecting cognitions about personal integrity and psychological injury, as opposed to future physical threat, and possessing internal consistency and convergent and discriminant validity is theoretically significant and supports the application of a major component of adult cognitive models of PTSD (e.g. Ehlers & Clark, 2000) to youth.

The finding that the CPTCI sub-scales were reliable and valid measures within the *acute* phase following a traumatic stressor (as evidenced by the findings for S3) suggests that the appraisals implicated within cognitive models of PTSD may have relevance shortly after a trauma has occurred, and do not result from having persistent post-traumatic stress symptoms. Further research is needed to investigate the reliability of these cognitions over time, as we have only been able to establish test-retest reliability between three and six months post-trauma within a sub-sample of participants from S2. Given the natural recovery that occurs in some individuals in the weeks and months following a traumatic stressor (Dalgleish et al., 2008; Meiser-Stedman et al., 2005), it may be that children and adolescents' initially negative trauma-related cognitions may shift over time.

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The items comprising the CPTCI-SW sub-scale of the CPTCI reflect cognitions around physical threat and vulnerability that are reasonably widespread in youth, even in young children (Muris et al., 2003). This may explain the absence of any age group differences on this sub-scale. That females scored higher on this sub-scale and the CPTCI total score is also explicable within the wider childhood anxiety literature that suggests that females have more severe anxiety and fears (e.g. Muris et al., 2001). An absence of age-related difference on the CPTCI-PC sub-scale, however, is more difficult to explain. The more abstract concepts this sub-scale refers to might be expected to require a cognitive sophistication beyond that of 6-8 year olds, yet this age group scored as highly as the older age groups and scores for this group had satisfactory internal consistency. A related concept is addressed by the 'mental incapacitation concerns' factor of the Childhood Anxiety Sensitivity Index (Silverman et al., 1999), a scale shown to have satisfactory internal consistency and factor stability within samples of both anxiety clinic and non-anxiety clinic children aged 7-16 years. Concerns around one's own post-traumatic psychological functioning may explain the association between the CASI and acute post-traumatic stress symptoms in older children and adolescents (Meiser-Stedman et al., 2007). The present study adds to an emerging evidence base that posits a role for meta-cognitive processes in the maintenance of anxiety disorders in even quite young children.

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From a clinical perspective, the development of a valid measure of trauma-related appraisals that may be contributing to the maintenance of post-traumatic stress symptoms will be useful for assessing children and adolescents with disabling post-traumatic stress symptoms, and then developing a psychological formulation for their difficulties that guides treatment. The final 25-item version of the CPTCI is easily administered. While there have been successful attempts previously to index trauma-related cognitions in youth subjected to sexual abuse, the CPTCI was specifically designed to be neutral to the type of

CPTCI

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3 trauma experienced, thereby broadening its application to children exposed to a variety of
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5 single-event traumas.
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8 The CPTCI benefits from being standardised within a large population of children
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10 and adolescents, that included youth who completed the CPTCI within the acute phase
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12 following a trauma as well as several months later. Initial studies using the CPTCI suggest
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14 that it is useful for psychological mechanisms involved in the maintenance of PTSD in
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16 children and adolescents (e.g. Salmon et al., 2007). In particular, Smith and colleagues
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18 (2007) have shown that the effects of CBT for children and adolescents with PTSD were
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20 partially mediated by changes in CPTCI scores, while Bryant and colleagues (2007)
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22 showed that scores on the CPTCI-SW sub-scale in the acute phase predicted 6-month
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24 PTSD severity over and above initial ASD in 7-13 year olds exposed to MVAs.
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29 There are areas in which this measure requires further exploration, however. The
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31 data sets presented here predominantly comprise children exposed to traumatic events that
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33 did not last for longer than a few minutes and affected few people (e.g. MVAs). Youth
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35 exposed to more enduring and widely devastating traumatic stressors, such as wars or
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37 natural disasters, may appraise their experiences in a different way, e.g. in terms of wider
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39 community impact. Furthermore, the usefulness of the CPTCI has not been examined in
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41 children and adolescents exposed to multiple traumas, such as ongoing physical or sexual
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43 abuse. The presence of more negative trauma-related appraisals in the participants exposed
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45 to assaults, relative to those exposed to MVAs, supports this need to investigate how
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47 different stressors may impact on a young person's subsequent appraisals. Finally, while
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49 each CPTCI sub-scale was found to have satisfactory internal consistency in the 6-8 year
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51 old age group, no additional checks were made in the youngest participants to ensure
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53 comprehension of the items on this and other questionnaire measures. Future studies will
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55 need to address these issues if this measure is to have broader usefulness.
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CPTCI

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Table 1. Component loadings of CPTCI items by sample

Item	Component 1	Component 2
	S1 / S2 / S3	S1 / S2 / S3
I feel like I am a different person since the frightening event.	.56/.61/.46	
I used to be a happy person but now I am always sad.	.57/.65/.51	
I will never be able to have normal feelings again.	.70/.79/.69	
I'm scared that I'll get so angry that I'll break something or hurt someone.	.62/.52/.62	
My life has been destroyed by the frightening event.	.79/.76/.66	
My reactions since the frightening event mean I have changed for the worse.	.76/.72/.67	
My reactions since the frightening event mean I will never get over it.	.77/.64/.57	
My reactions since the frightening event mean something is seriously wrong with me.	.70/.81/.65	
My reactions since the frightening event show that I must be going crazy.	.63/.80/.76	
Not being able to get over all my fears means that I am a failure.	.57/.70/.68	
Nothing good can happen to me anymore.	.59/.62/.62	
Something terrible will happen if I do not try to control my thoughts about the frightening event.	.58/.72/.65	
The frightening event has changed me forever.	.67/.66/.56	

CPTCI

1	Anyone could hurt me.	.66/.67/.45
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3	Bad things always happen.	.68/.54/.52
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5	Everyone lets me down.	.65/.59/.20
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7	I am a coward.	.57/.60/.22
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9	I am no good.	.52/.41/.13
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11	I can't cope when things get tough.	.58/.77/.56
12		
13	I can't stop bad things from happening to me.	.67/.59/.71
14		
15	I don't trust people.	.69/.65/.23
16		
17	I have to be really careful because something bad could	.67/.59/.79
18	happen.	
19		
20	I have to watch out for danger all the time.	.53/.63/.78
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22	Life is not fair.	.52/.34/.48
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24	Small things upset me.	.55/.60/.60
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S1 = Sample 1; S2 = Sample 2; S3 = Sample 3.

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Table 2. Means and Standard Deviations for CPTCI sub-scales by sample and diagnosis

CPTCI sub-scale	S1			S2			S3		
	PTSD (n=78)	No PTSD (n=134)	Total (n=223)	PTSD (n= 46)	No PTSD (n=87)	Total (n=138)	ASD (n=10)	No ASD (n=169)	Total (n=209)
'Permanent & disturbing change'	19.59 (7.03)	14.53 (3.26)	16.37 (5.56)	31.70 (9.25)	17.55 (5.21)	22.40 (9.48)	25.90 (12.84)	16.83 (5.94)	17.53 (7.07)
'Fragile person in a scary world'	26.14 (7.22)	17.83 (5.41)	20.87 (7.26)	32.57 (7.41)	22.56 (6.97)	26.00 (8.53)	29.80 (9.53)	20.33 (6.57)	21.04 (7.25)
Total score	45.72 (12.58)	32.36 (7.62)	37.24 (11.61)	64.26 (15.18)	40.11 (11.04)	48.40 (16.90)	55.70 (20.92)	37.16 (11.78)	38.57 (13.57)

S1 = Sample 1; S2 = Sample 2; S3 = Sample 3; PTSD = Post-Traumatic Stress Disorder; ASD = Acute Stress Disorder.

All PTSD vs no PTSD and ASD vs no ASD differences are significant at $p < .002$.

CPTCI

Table 3. Means and standard deviations on CPTCI sub-scales by age group and gender across whole sample

CPTCI sub-scale	Age group				Gender		Total sample (n = 563)
	6-8 years (n = 49)	9-11 years (n = 157)	12-14 years (n = 182)	15-18 years (n = 175)	Female (n = 268)	Male (n = 302)	
'Permanent and disturbing change'	18.41 (6.73)	17.87 (7.37)	18.07 (7.16)	18.90 (8.53)	18.62 (7.73)	17.93 (7.47)	18.30 (7.63)
'Fragile person in a scary world'	23.04 (7.14)	21.62 (7.08)	21.44 (7.65)	23.47 (8.82)	23.58 (8.24) ^a	20.93 (7.32) ^b	22.26 (7.88)
Total score	41.45 (12.74)	39.49 (13.64)	39.51 (13.87)	42.37 (16.19)	42.20 (14.90) ^a	38.86 (13.91) ^b	40.56 (14.50)

Standard deviations presented in parentheses. Superscript characters indicate a significant difference, at p<.01.

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Appendix A

Child Post-Traumatic Cognitions Inventory (CPTCI)

We would like to know what kinds of thoughts and feelings you've been having after the frightening event. Below is a list of statements. Please read each statement carefully and tell us how much you AGREE or DISAGREE with each statement by ticking one box. People react to frightening events in many different ways. There are no right or wrong answers to these statements.

1. Don't agree at all
2. Don't agree a bit
3. Agree a bit
4. Agree a lot

1. Anyone could hurt me.
2. Everyone lets me down.
3. I am a coward.
4. My reactions since the frightening event mean I have changed for the worse.
5. I don't trust people.
6. My reactions since the frightening event mean something is seriously wrong with me.
7. I am no good.
8. Not being able to get over all my fears means that I am a failure.
9. Small things upset me.
10. I can't cope when things get tough.
11. I can't stop bad things from happening to me.
12. I have to watch out for danger all the time.

CPTCI

13. My reactions since the frightening event mean I will never get over it.
14. I used to be a happy person but now I am always sad.
15. Bad things always happen.
16. I will never be able to have normal feelings again.
17. I'm scared that I'll get so angry that I'll break something or hurt someone.
18. Life is not fair.
19. My life has been destroyed by the frightening event.
20. I feel like I am a different person since the frightening event.
21. My reactions since the frightening event show that I must be going crazy.
22. Nothing good can happen to me anymore.
23. Something terrible will happen if I do not try to control my thoughts about the frightening event.
24. The frightening event has changed me forever.
25. I have to be really careful because something bad could happen.

Notes:

Items belonging to the "permanent and disturbing change" sub-scale: 4, 6, 8, 13, 14, 16, 17, 19, 20, 21, 22, 23, 24.

Items belonging to the "fragile person in a scary world" sub-scale: 1, 2, 3, 5, 7, 9, 10, 11, 12, 15, 18, 25.

An electronic version of this measure is available from the first author.

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- Beck, J. G., Coffey, S. F., Palyo, S. A., Gudmundsdottir, B., Miller, L. M., & Colder, C. R. (2004). Psychometric properties of the Posttraumatic Cognitions Inventory (PTCI): A replication with motor vehicle accident survivors. *Psychological Assessment, 16*, 289-298.
- Birleson, P. (1981). The validity of depressive disorder in childhood and the development of a self-rating scale: a research report. *Journal of Child Psychology and Psychiatry, 22*, 73-88.
- Brewin, C. R., Dalgleish, T., & Joseph, S. (1996). A dual representation theory of posttraumatic stress disorder. *Psychological Review, 103*, 670-686.
- Bryant, R. A. & Guthrie, R. M. (2005). Maladaptive appraisals as a risk factor for posttraumatic stress: a study of trainee firefighters. *Psychological Science, 16*, 749-752.
- Bryant, R. A. & Guthrie, R. M. (2007). Maladaptive self-appraisals before trauma exposure predict posttraumatic stress disorder. *Journal of Consulting and Clinical Psychology, 75*, 812-815.
- Bryant, R. A., Salmon, K., Sinclair, E., & Davidson, P. (2007). A prospective study of appraisals in childhood posttraumatic stress disorder. *Behaviour Research and Therapy, 45*, 2502-2507.
- Dalgleish, T. (2004). Cognitive approaches to posttraumatic stress disorder: the evolution of multirepresentational theorizing. *Psychological Bulletin, 130*, 228-260.
- Dalgleish, T., Meiser-Stedman, R., Kassam-Adams, N., Ehlers, A., Winston, F., Smith, P. et al. (2008). Predictive validity of acute stress disorder in children and adolescents. *British Journal of Psychiatry, 192*, 392-393.

CPTCI

- 1
2
3 Dyregrov, A. & Yule, W. (1995). Screening measures: The development of the UNICEF
4 battery. In *Proceedings of the Fourth European Conference on Traumatic Stress*.
5
6
7 Ehlers, A. & Clark, D. M. (2000). A cognitive model of posttraumatic stress disorder.
8
9
10 *Behaviour Research and Therapy*, 38, 319-345.
11
12 Ehlers, A., Mayou, R. A., & Bryant, B. (2003). Cognitive predictors of posttraumatic stress
13 disorder in children: results of a prospective longitudinal study. *Behaviour Research*
14
15 *and Therapy*, 41, 1-10.
16
17 Foa, E. B., Ehlers, A., Clark, D. M., Tolin, D. F., & Orsillo, S. M. (1999). The Posttraumatic
18
19 Cognitions Inventory (PTCI): Development and validation. *Psychological Assessment*,
20
21
22
23
24
25
26
27 Foa, E. B., Johnson, K. M., Feeny, N. C., & Treadwell, K. R. (2001). The child PTSD
28
29 Symptom Scale: a preliminary examination of its psychometric properties. *Journal of*
30
31
32
33
34 Foa, E. B. & Rauch, S. A. (2004). Cognitive changes during prolonged exposure versus
35
36 prolonged exposure plus cognitive restructuring in female assault survivors with
37
38 posttraumatic stress disorder. *Journal of Consulting and Clinical Psychology*, 72, 879-
39
40
41
42 884.
43
44 Foa, E. B. & Rothbaum, B. O. (1998). *Treating the trauma of rape: Cognitive-behavioral*
45
46
47
48
49 Giannopoulou, I., Smith, P., Ecker, C., Strouthos, M., Dikaiakou, A., & Yule, W. (2006).
50
51 Factor structure of the Children's Revised Impact of Event Scale (CRIES) with
52
53 children exposed to earthquake. *Personality and Individual Differences*, 40, 1027-
54
55
56
57 1037.
58
59 Harvey, A. G. & Bryant, R. A. (2002). Acute stress disorder: a synthesis and critique.
60
Psychological Bulletin, 128, 886-902.

CPTCI

- 1
2
3 Kassam-Adams, N. (2006). The Acute Stress Checklist for Children (ASC-Kids):
4
5 development of a child self-report measure. *J.Trauma Stress, 19*, 129-139.
6
7
8 Laposa, J. M. & Alden, L. E. (2003). Posttraumatic stress disorder in the emergency room:
9
10 exploration of a cognitive model. *Behaviour Research and Therapy, 41*, 49-65.
11
12
13 MacCallum, R. C., Widaman, K. F., Zhang, S., & Hong, S. (1999). Sample size in factor
14
15 analysis. *Psychological Methods, 4*, 89-99.
16
17
18 Mannarino, A. P. & Cohen, J. A. (1996). Abuse-related attributions and perceptions, general
19
20 attributions, and locus of control in sexually abused girls. *Journal of Interpersonal*
21
22 *Violence, 11*, 162-180.
23
24
25 Mannarino, A. P., Cohen, J. A., & Berman, S. R. (1994). The Childrens Attributions and
26
27 Perceptions Scale - A New Measure of Sexual Abuse-Related Factors. *Journal of*
28
29 *Clinical Child Psychology, 23*, 204-211.
30
31
32 Meiser-Stedman, R. (2002). Towards a cognitive-behavioral model of PTSD in children and
33
34 adolescents. *Clinical Child and Family Psychology Review, 5*, 217-232.
35
36
37 Meiser-Stedman, R., Dalgleish, T., Smith, P., Yule, W., & Glucksman, E. (2007). Diagnostic,
38
39 demographic, memory quality, and cognitive variables associated with acute stress
40
41 disorder in children and adolescents. *Journal of Abnormal Psychology, 116*, 65-79.
42
43
44 Meiser-Stedman, R., Yule, W., Smith, P., Glucksman, E., & Dalgleish, T. (2005). Acute stress
45
46 disorder and posttraumatic stress disorder in children and adolescents involved in
47
48 assaults and motor vehicle accidents. *American Journal of Psychiatry, 162*, 1381-
49
50 1383.
51
52
53 Muris, P., Meesters, C., & Gobel, M. (2001). Reliability, validity, and normative data of the
54
55 Penn State Worry Questionnaire in 8-12-yr-old children. *Journal of Behavior Therapy*
56
57 *and Experimental Psychiatry, 32*, 63-72.
58
59
60

CPTCI

- 1
2
3 Muris, P., Meesters, C., Mayer, B., Bogie, N., Lijten, M., Gebelen, E. et al. (2003). The
4
5 Koala Fear Questionnaire: a standardized self-report scale for assessing fears and
6
7 fearfulness in pre-school and primary school children. *Behaviour Research and*
8
9 *Therapy, 41*, 597-617.
- 10
11
12 Nixon, R. D. V. & Bryant, R. A. (2005). Are Negative Cognitions Associated With Severe
13
14 Acute Trauma Responses? *Behaviour Change, 22*, 22-28.
- 15
16
17 Perrin, S., Meiser-Stedman, R., & Smith, P. (2005). The Children's Revised Impact of Event
18
19 Scale (CRIES): Validity as a screening instrument for PTSD. *Behavioural and*
20
21 *Cognitive Psychotherapy, 33*, 487-498.
- 22
23
24 Salmon, K., Sinclair, E., & Bryant, R. A. (2007). The role of maladaptive appraisals in child
25
26 acute stress reactions. *British Journal of Clinical Psychology, 46*, 203-210.
- 27
28
29 Silverman, W. K. & Albano, A. M. (1996). *Anxiety Disorder Interview Schedule for DSM-IV:*
30
31 *Child and Parent Interview Schedule*. San Antonio, TX: The Psychological
32
33 Corporation.
- 34
35
36 Silverman, W. K., Ginsburg, G. S., & Goedhart, A. W. (1999). Factor structure of the
37
38 childhood anxiety sensitivity index. *Behaviour Research and Therapy, 37*, 903-917.
- 39
40
41 Smith, P., Yule, W., Perrin, S., Tranah, T., Dalgleish, T., & Clark, D. M. (2007). Cognitive-
42
43 behavioral therapy for PTSD in children and adolescents: a preliminary randomized
44
45 controlled trial. *Journal of the American Academy of Child and Adolescent Psychiatry,*
46
47 *46*, 1051-1061.
- 48
49
50 Smith, P., Perrin, S., Dyregrov, A., & Yule, W. (2003). Principal components analysis of the
51
52 Impact of Event Scale with children in war. *Personality & Individual Differences, 32*,
53
54 315-322.
- 55
56
57 Spaccarelli, S. (1995). Measuring abuse stress and negative cognitive appraisals in child
58
59 sexual abuse: validity data on two new scales. *J Abnorm. Child Psychol., 23*, 703-727.
- 60

CPTCI

1
2
3 Stallard, P. & Smith, E. (2007). Appraisals and cognitive coping styles associated with
4
5 chronic post-traumatic symptoms in child road traffic accident survivors. *Journal of*
6
7 *Child Psychology and Psychiatry and Allied Disciplines*, 48, 194-201.
8
9

10 Steil, R. & Ehlers, A. (2000). Dysfunctional meaning of posttraumatic intrusions in chronic
11
12 PTSD. *Behaviour Research and Therapy*, 38, 537-558.
13
14

15 Winston, F. K., Kassam-Adams, N., Vivarelli-O'Neill, C., Ford, J., Newman, E., Baxt, C. et al.
16
17 (2002). Acute stress disorder symptoms in children and their parents after pediatric
18
19 traffic injury. *Pediatrics*, 109, e90.
20
21
22
23
24
25
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