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Development and Evaluation of the Thinking About Recovery Scale: Measure of Parent Posttraumatic Cognitions Following Children's Exposure to Trauma

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Researchers have recently suggested that parent posttraumatic appraisals potentially contribute to the development of posttraumatic stress in both parents and children following children's exposure to trauma. However, a single-instrument, multidimensional measure of parent posttraumatic cognitions as they relate to their child's recovery has yet to be operationalized. This study described the development and evaluation of a parent-report questionnaire of parent posttraumatic cognitions, designed to be used after a child's exposure to trauma. We generated an initial pool of items in reference to existing theories and subjected this list to an iterative process of item writing and revision. Items were subjected to expert review to maximize construct validity. The 33-item Thinking About Recovery Scale (TARS), which measures three domains (My child has been permanently damaged; The world is dangerous for my child; Parents should always promote avoidance) demonstrated good internal consistency (Cronbach's $\alpha = .74-88$) and convergent validity (r^2 range = $.08-.40$) when piloted in a sample of 116 parents of children who had been exposed to a serious accidental injury. The TARS augments the available literature by providing a brief measure of parent posttraumatic cognitions, an area which is currently understudied in childhood posttraumatic stress and could have broad clinical and research use.

A parent-report questionnaire aimed at assessing parent posttraumatic cognitions following their children's exposure to trauma could have broad clinical and research use. Trauma exposure in youth is common, with reports that up to 67% of children experience a traumatic event before the age of 16 years (Copeland, Keeler, Angold, & Costello, 2007). Children differ in their responses to traumatic events, and although most children are resilient to the impact, a substantial minority go on to develop posttraumatic stress symptoms, posttraumatic stress disorder (PTSD; Alisic et al., 2014), or other emotional and/or behavioral difficulties (Bolton, O'Ryan, Udwin, Boyle, & Yule, 2000; Pine & Cohen, 2002). A recent meta-analysis estimated that approximately one in six children and adolescents (16%) develop PTSD after exposure to Diagnostic and Statistical Manual of Mental Disorders (5th ed. (DSM-5; American Psychiatric Association., 2013) trauma (Alisic et al., 2014). The effects of trauma can be long-lasting (Yule et al., 2000), and can impact a child's well-being, as well as his or her emotional, social, and physical development (Fairbank & Fairbank, 2009) and quality of life (Landolt, Buehlmann, Maag, & Schiestl, 2009). The substantial prevalence and potentially significant consequences of trauma exposure highlight the need to improve knowledge of the ways to best prevent and treat adverse outcomes for young people.

The way in which a child's parents respond to their children's trauma has been implicated as a critical factor in children's posttrauma adjustment (Alisic, Jongmans, van Wesel, & Kleber, 2011; Williamson et al., 2017). Low levels of social support and parent psychological problems have medium to large effect sizes as risk factors for the development of PTSD in children and adolescents (Trickey, Siddaway, Meiser-Stedman, Serpell, & Field, 2012). There is a consistent association between co-occurring parent and child PTSD symptoms after a child's exposure to a traumatic event (Furr, Comer, Edmunds, & Kendall, 2010; Leen-Feldner et al., 2013; Morris, Gabert-Quillen, & Delahanty, 2012). Researchers who have conducted studies of parent-child interactions following disasters report that the length, content, and nature of interactions after trauma are associated with child posttraumatic stress (Cobham, McDermott, Haslam, & Sanders, 2016), and it is acknowledged that parents are integral in treating PTSD in children (Kenardy, Cobham, Nixon, McDermott, & March, 2010). A recent meta-analytic review by Williamson and colleagues (2017) found a modest association between parenting behaviors and childhood posttraumatic stress. The existing evidence base has focused on general parenting domains and provides little information about the processes by which parenting could influence child outcomes (Williamson et al., 2017).

Many hypotheses have been proposed to explain possible mechanisms by which parent functioning may be linked to children's recovery from trauma. These hypotheses include parents' compromised ability to address their children's needs (Appleyard & Osofsky, 2003), discouragement of discussion of the trauma (Kiliç, Kiliç, & Aydin, 2011), repeated and frequent discussions with children about the traumatic event (Scheeringa & Zeanah, 2001), overprotectiveness leading to withdrawal of children from usual social activities (Dyb, Jensen, & Nygaard, 2011; Scheeringa & Zeanah, 2001), disruptions to family relationships (Dyb et al., 2011), and compromised parenting practices and discipline (Scaramella, Sohr-Preston, Callahan, & Mirabile, 2008). It is critical that further research elucidates the pathways by which parents may impact their children's posttraumatic adjustment in order to identify factors that may be amenable to change.

Cognitive models of PTSD propose that appraisals of the traumatic event, and appraisals about one's posttraumatic symptoms and about the reactions of others following an event, are critical to explaining the development and maintenance of PTSD (Brewin & Holmes, 2003; Ehlers & Clark, 2000). Negative posttraumatic appraisals are known to drive and maintain posttrauma symptomatology by maintaining a sense of threat and promoting thought control strategies that discourage processing of traumatic memories (Brewin & Holmes, 2003; Ehlers & Clark, 2000). There is good evidence that these cognitive models are implicated in adult PTSD (Brewin & Holmes, 2003), and emerging data suggest these cognitions are also important determinants of posttrauma maladjustment in children (Joseph, Brewin, Yule, & Williams, 1993; Marsac et al., 2017; Meiser-Stedman et al., 2009; Mitchell, Brennan, Curran, Hanna, & Dyer, 2017). Two key cognitive domains that have been implicated in childhood PTSD are (a) appraisals that one has been permanently damaged from the traumatic event, and (b) the extent to which a child appraises he or she is vulnerable to future harm (Meiser-Stedman et al., 2009). Parental appraisal of these constructs has not previously been measured. Parents' cognitive appraisals about their child's recovery could play an important role in the development of posttraumatic outcomes in children, potentially explaining why parents' responses are critical to their children's outcomes. Parents' cognitions could influence children's outcomes, either directly by influencing how a parent helps their child appraise the traumatic experience in conversation or indirectly by how they influence a parent's mental health and compromised parenting practices.

Limited empirical attention has been given to posttraumatic appraisals in parents of trauma-exposed children. A recent study by Tutus and Goldbeck (2016) found that parental dysfunctional thoughts (negative cognitions about self, world, and self-blame) following their children's trauma were significantly associated with symptoms of anxiety, depression, and posttraumatic stress in the parent. A study by Morris, Lee, and Delahanty (2013) examined the association between event-related appraisals and the development of child posttraumatic stress symptoms following children's unintentional injury. They found that parent event-related appraisals were associated with parents' own posttraumatic stress symptoms. Furthermore, a number of parent appraisal domains (alienation and permanent change) were indirectly related to their children's responses to the traumatic event. Many appraisal domains in their study were measured using a single item (e.g., alienation from other people: "Do you feel that people don't really understand what you have been through?"). There is a need to expand item pools to allow for a more refined assessment of multidimensional posttraumatic cognition. To advance the literature in this field, it would be valuable to operationalize and measure parent posttraumatic appraisals with a single instrument.

The aim of the current study was to develop and psychometrically evaluate a parent-report questionnaire aimed at assessing specific posttraumatic cognitions that a parent may have about their child's recovery from a traumatic event. The Thinking About Recovery Scale (TARS) was developed to: (1) contribute to the current understanding of parent cognitive variables associated with childhood posttraumatic stress, and (2) identify potential targets of treatment for families of children presenting after child trauma. We hypothesized that the TARS would (a) demonstrate sound face validity and internal consistency, and (b) converge with a theoretically comparable measure of adult posttraumatic cognitions.

Phase 1: Expert Review of the Items

Method

We generated an initial pool of items for the TARS using the theoretical-rational method of scale development, where items are generated in reference to existing theories, subjected to an iterative process of item writing and revision, and followed by a conceptual and psychometric analysis (Loevinger, 1957). The TARS items were designed to measure parents' appraisal of the key cognitions implicated in childhood PTSD: (a) permanent damage from the traumatic event, and (b) vulnerability to future harm (Meiser-Stedman et al., 2009). Items were intended to assess parents' appraisal of the usefulness of avoidance, as theoretically parents' avoidance may play a role in increasing their children's tendencies to avoid negative internal experiences and their posttraumatic distress (Polusny et al., 2011; Scheeringa & Zeanah, 2001). The final items included in the TARS were a combination of new items generated from theory and items that were rewritten from existing measures; several measures of posttraumatic cognitions were identified and then rewritten to assess parent posttraumatic cognitions, including items from the Child Post-Traumatic Cognitions Inventory (CPTCI; Meiser-Stedman et al., 2009), the Post-Traumatic Cognitions Inventory (PTCI; Foa, Ehlers, Clark, Tolin, & Orsillo, 1999), and items developed for a study by Stallard and Smith (2007).

An initial pool of 51 items that measure three subscales was generated through this process. The TARS was developed to assess three domains, namely: (1) appraisals that a child has been permanently damaged as a result of the traumatic event; (2) appraisals that a child is vulnerable to harm (physical, emotional or interpersonal) as a result of the traumatic event; and (3) appraisals about promoting children's avoidance of thoughts, feelings, or other stimuli associated with the traumatic event. The majority of the items were written in the negative form (e.g., "The event has damaged my child forever"), with a few items written in the positive form to be reverse-coded. The TARS was designed as neutral to the type of trauma experienced so that it could apply to a range of single-event traumas. The items refer specifically to the child who had experienced the traumatic event, as parents may employ different patterns of interaction with other children. The questionnaire was designed in a Likert scale format, to allow parents to indicate varying degrees of endorsement of the statements. There were seven possible response options: 1 = totally disagree, 2 = disagree very much, 3 = disagree slightly, 4 = neutral, 5 = agree slightly, 6 = agree very much, and 7 = totally agree. Parents were provided with the following description and instructions at the start of the questionnaire:

"Listed below are some statements about thoughts and feelings related to parenting a child who has experienced a stressful event. We are interested in the kind of thoughts which you may have had since your child's stressful experience. Please read each statement carefully.

Choose the answer that indicates how much you agree with each statement. There are no right or wrong answers.”

A team of seven international experts in the field of childhood trauma reviewed the initial pool of 51 items in an effort to maximize the content validity of the scale. We provided the reviewers with an explanation of the constructs and asked them to evaluate the items' representativeness of the constructs on a four-point scale. For each item, reviewers were told, "Please rate how good this item is at representing the construct described," with four possible response options on a scale: 0 = poor, 1 = fair, 2 = good, 3 = very good. The expert reviewers were also invited to provide comments on the clarity and conciseness of items and suggestions for other ways of tapping each phenomenon of interest.

Sumscores were created for each item by summing the expert reviewer responses (Hardesty & Bearden, 2004). Items were ranked by sumscore (higher scores reflected higher ratings for construct representativeness) and the comments on each item were reviewed. Items were retained if the sumscore was above 14 (i.e., average rating of "good") and there were no reviewer comments about problems with the item. Some items scored below 14 but were retained if the reviewers commented on the usefulness of the item and suggested rewording. Items were deleted if they had low sumscores and multiple comments from reviewers about problems with the way the item was worded. This process resulted in a final pool of 33 items that comprised the TARS (see Table 1). The items were randomly ordered throughout the measure, as each subscale was equally weighted (DeVellis, 2012).

Table 1. Thinking About Recovery Scale Items

My child has been permanently damaged

1. My child will suffer for the rest of his/her life.
2. My child will be unable to get over his/her fears about the event.
3. My child will never get over what happened to him/her.
4. My child will never feel safe again.
5. My child will never trust anyone again.
6. My child will never be happy again.
7. My child's life is ruined.
8. The event has damaged my child forever.
9. My child will never recover from this.
10. My child will never have normal feelings again.
11. My child is the same person he/she was before the event. (Reverse)
12. The event has not hurt my child permanently. (Reverse)

The world is dangerous for my child

1. Bad things always happen to my child.
2. Nowhere is safe for my child.
3. My child is at risk of harm anywhere he/she goes.
4. My child should be really careful because something bad could happen to him/her.
5. My child won't be able to cope with life's challenges.
6. My child will have to be on guard all of the time.
7. My child will have to be especially careful because you never know what might happen next.
8. My child should not trust anyone.
9. Anyone could hurt my child.
10. Something bad will happen to my child again.

Parents should always promote avoidance

1. I should stop my child thinking or talking about the event.
2. It's best to pretend that the event never happened.
3. I should keep my child away from people who might remind him/her of what happened to them.
4. It's important for me to protect my child from going places that might remind him/her of the event.
5. It's best not to talk about the event.
6. I should protect my child from activities or situations that might remind him/her about what happened.
7. It's important that I don't let my child go anywhere he/she might feel afraid.
8. It's best for my child to stay away from where the event happened.
9. It's best for my child not to think about what happened to him/her.
10. I should provide opportunities for my child to talk about what happened to him/her.
(Reverse)
11. I should help my child keep up his/her normal routine, even if he/she feels scared.
(Reverse)

Results

Table 2 displays the mean, standard deviation, and range of sumscores per subscale, and a summary of the items that were retained, deleted, and retained with slight changes. No items were added to the measure, and rewording of items generally involved only minor changes (e.g., the item “My child can never recover from this” was changed to “My child will never recover from this”) that provided consistency of wording amongst the items. We changed the wording of some items because the reviewers thought that the revised wording would capture the construct better (e.g., “It's best to prevent my child from being with people who might remind him/her of what happened to them” was changed to “I should keep my child away from people who might remind him/her of what happened to them”). A final pool of 33 items was retained and piloted in Phase 2.

Table 2. Sumscore Descriptive Statistics, Summary of Items Retained, Deleted, and Changed for Each Thinking About Recovery Scale (TARS) Subscale

Subscale	Sum score Mean	SD	Range	Number of items retained	Number of items deleted	Number of items retained with slight changes
My child has been permanently damaged (18 items)	17.11	2.47	11–21	6	6	6
The world is dangerous for my child (17 items)	13.47	3.37	6–18	3	7	7
Parents should always promote avoidance (16 items)	17.31	2.52	12–21	4	5	7

Note. Sums core was calculated by summing the expert reviewers ratings of how well the item measured the construct on a scale of 0 to 3.

Phase 2: Assessment of Psychometric Properties

Method

Participants

In Phase 2 of the study, we assessed the psychometric properties of the TARS scores by enrolling a sample of parents whose children had been exposed to accidental injury. Participants were 116 parents (15 men, 101 women; mean age = 45.1 years, $SD = 5.4$) of 75 boys and 41 girls (mean age = 12.9 years, $SD = 2.2$) who had been physically injured. Parents were eligible to participate if their child was aged 8 to 16 years and had been physically injured (e.g., sporting injury, burns, motor vehicle accident) and subsequently admitted to the hospital for at least 24 hours. Parents were excluded from participating if: (a) their child's injury had been, or was suspected to have been, a result of intentional child maltreatment, child abuse or self-harm; (b) the parent's English was deemed insufficient to complete the questionnaires; or (c) their child had a diagnosed severe learning disability, organic brain disorder, or significant impairment of cognitive functioning after serious acquired brain injury.

Procedure

Participants were enrolled between December 2015 and March 2017 at The Royal Children's Hospital (RCH), Melbourne, Australia. Informed consent was sought from all participants. Ethics approval was obtained from The Royal Children's Hospital (#35140), and The University of Melbourne (#1545801), Australia. Participants were identified through The RCH Trauma Registry, which records all trauma admissions into the RCH. Recruitment and data collection occurred between 3 and 6 months postinjury. An Expression of Interest Letter was posted to families at 3 months postinjury to explain the study and provide participants with the option to opt out of the study. Parents who did not opt out were called two weeks after the distribution of the initial letter and invited to complete a questionnaire. Parents who consented to participate were sent a survey to complete on paper or online. If a parent failed to return a survey after a two-week period, they were sent a reminder with a replacement survey.

Measures

TARS development

Development of the TARS has been described in the Phase 1 section, and items are presented in Table 1. To make the scores of the three TARS subscales comparable despite the different number of items in each, subscale scores were computed as the mean item response for that subscale. A total score was calculated as a sum of the subscale scores (range: 3 to 21). A copy of the TARS and scoring instructions are provided in Supplementary File 1.

Trauma-related thoughts and beliefs

The Posttraumatic Cognitions Inventory (PTCI) is a 36-item self-report measure designed to assess trauma-related thoughts and beliefs (PTCI; Foa et al., 1999). The measure has three subscales: 21 items measuring negative cognitions about the self (Cronbach's $\alpha = .93$), 7 items measuring negative cognitions about the world (Cronbach's $\alpha = .87$), and 5 items measuring self-blame (Cronbach's $\alpha = .57$). The items are rated on a Likert-type scale ranging from 1 (totally disagree) to 7 (totally agree). It has been shown to discriminate between trauma-exposed individuals with and without PTSD (Foa et al., 1999). To assess convergent validity, we compared parents' scores on the TARS to their scores on the PCTI.

Injury severity

To assess injury severity, we used the Injury Severity Score (ISS; Baker, O'Neill, Haddon Jr, & Long, 1974), a widely used index that uses standard ratings of the three most severely injured body regions to determine overall injury severity. The ISS was obtained from medical records. The ISS has been demonstrated to be an important predictor of injury severity and mortality and includes a scale that ranges from 1 (minor injury) to 75 (mortal injury). The average ISS in our sample was 7.08 (SD = 7.46, range: 1 to 45).

Data analysis

We computed descriptive statistics in phase 2 for TARS and PTCI. Cronbach's alpha was calculated to assess the internal consistency of the TARS. Cronbach's alpha $> .70$ was used as criteria for acceptable internal consistency (Nunnally & Bernstein, 1994). Pearson correlations were calculated to examine inter-item correlations and correlations between subscales. Pearson correlations between the TARS subscales and PTCI subscales were calculated to examine convergent validity. Moderate correlations (.3 to .5) between TARS and PTCI subscales were used as criteria for acceptable convergent validity. Each variable was examined for missing data to consider if there was a problematic item. The rates of missingness on the TARS were deemed to be missing at random (Little's MCAR $\chi^2(251, N = 116) = 238.44, p = .706$); therefore we imputed data for missing data points. In cases in which an individual had less than 20% of missing responses on a subscale, data were imputed at the subscale level by substituting the individual's mean subscale response for that data point. This was done for 15 data points on the TARS. In item-level correlations, missing observations were excluded from the calculations on a listwise basis. Skewness and kurtosis tests of the distribution of scores showed that the measures were not distributed normally. There was a positive skew with most of the variables (e.g., My child has been permanently damaged = 2.36; The world is dangerous for my child = 2.0; Parents should promote avoidance = 2.01). To improve the distributions, a square root transformation was performed on the variables (TARS and PTCI subscales), and this improved the distributions. Transformed variables were used for Pearson correlations, and untransformed data was used for descriptive statistics. Analyses were conducted using Stata, Version 13.1 (Stata Corp, College Station, TX, USA). For all analyses, an alpha level of .05 was used.

Results

Sample characteristics

During the recruitment period, 497 participants were eligible for a recruitment call, and 215 (43.3%) agreed to participate in the research and were sent surveys to complete. Of the 215 parents who agreed to participate, 116 (53.9%) completed their parent survey. Participating families did not differ from nonparticipating families with regard to child age or child sex; however, participating families were from more socially advantaged areas as measured by the census-based Socioeconomic Indexes for Areas Disadvantage Index for the child's postcode of residence (Australian Bureau of Statistics, 2013). The children of participating parents had sustained injuries from transport-related accidents (motor vehicle/pedestrian; 34.5%), a fall (33.6%), a sporting or recreational activity (18.1%), or other causes (13.8%). The majority of participants had a high household income (AUS\$ per annum: 7.9% below \$30,000, 15.0% \$30,001 to 60,000, 17.7% \$60,001 to \$90,000, 59.3% above \$90,001). There was a wide range of parent education level (27.1% did not complete high school, 73.9% completed high school, 48.3% had vocational training, 52.6% had completed a university degree).

Participating parents were biological mothers (87.1%), biological fathers (12.0%), and other legal guardian (0.9%).

Psychometric data

Total scores on the TARS ranged from 3 to 17 ($M = 5.35$, $SD = 2.0$). Descriptive statistics are presented in Table 3. Internal consistency of the TARS was strong for all 33 items (Cronbach's $\alpha = .91$). Similarly, a moderate average inter-item correlation ($r = .46$) was observed, which provided an additional index of internal consistency not influenced by the number of scale items (Clark & Watson, 1995). Internal consistency within subscales was as follows: My child has been permanently damaged, Cronbach's $\alpha = .88$; The world is dangerous for my child, Cronbach's $\alpha = .84$; and Parents should always promote avoidance, Cronbach's $\alpha = .74$. Item means, variance, and intercorrelations for each item are provided by subscale in Supplementary File 2, and the percentage of endorsement for each item is provided by subscale in Supplementary File 3.

Table 3. Descriptive Statistics and Internal Consistency of the Thinking About Recovery Scale (TARS) Subscales

Subscale	Cronbach's α	Mean	SD	Range
My child has been permanently damaged	.88	1.79	0.86	1–5.6
The world is dangerous for my child	.84	1.73	0.87	1–5.6
Parents should always promote avoidance	.74	1.82	0.71	1–5.7

Injury severity was not significantly associated with scores on the TARS subscales, The world is dangerous for my child, $r = .13$, $p = .174$, and Parents should always promote avoidance, $r = -.05$, $p = .621$; however, scores on the TARS subscale, My child has been permanently damaged, were positively associated with higher injury severity scores, $r = .19$, $p = .043$. There were no differences in parent scores on the TARS subscales between mothers and fathers, boys and girls, or child age group (ages 8 to 12 compared with ages 13 to 16 years).

There were moderate positive correlations between the subscales. The TARS subscale My child has been permanently damaged was significantly associated with both The world is dangerous for my child, $r = .42$, $p < .001$, and Parents should always promote avoidance, $r = .54$, $p < .001$. The world is dangerous for my child was significantly associated with Parents should always promote avoidance, $r = .33$, $p < .001$.

Convergent validity

To examine the convergent validity of the TARS, we calculated Pearson correlations between the TARS scores and the scores of a measure of adult trauma-related cognitions, the PTCI. Higher scores on the TARS subscales were associated with higher scores on the PTCI subscales: Negative cognitions about self ($M = 1.23$, $SD = 0.52$), Negative cognitions about the world ($M = 1.84$, $SD = 1.09$), and Self-blame ($M = 1.34$, $SD = .66$). The TARS subscale My child has been permanently damaged was significantly correlated with PTCI Negative cognitions about self, $r = .62$, $p < .001$; Negative cognitions about the world, $r = .42$, $p < .001$; and Self-blame, $r = .42$, $p < .001$. The TARS subscale The world is dangerous for my child was significantly correlated with the PTCI subscales Negative cognitions about self, $r =$

.44, $p < .001$; Negative cognitions about the world, $r = .63$, $p < .001$; and Self-blame, $r = .32$, $p < .001$. The TARS subscale Parents should always promote avoidance was significantly correlated with the PTCI Negative cognitions about self, $r = .42$, $p < .001$; Negative cognitions about the world, $r = .40$, $p < .001$; and Self-blame, $r = .28$, $p = .002$.

Discussion

This study described the development and evaluation of a new measure of parent posttraumatic cognitions aimed at assessing three domains of cognitive appraisals related to their child's recovery. The results indicated that the TARS is promising as a measure of parent appraisals following children's exposure to trauma, with the final set of items selected showing high ratings on construct representativeness as judged by experts in the field of childhood trauma. The initial psychometrics showed that the TARS has sound internal consistency and convergent validity. Scores on the TARS subscales were moderately associated with the posttraumatic cognitions measured by the PTCI (negative cognitions about the self, world, and self-blame), which suggests that the TARS is measuring a similar, but distinct, construct of posttraumatic cognitions.

The TARS augments the current literature by providing a measure that assesses specific posttraumatic cognitions that a parent may have about their child's recovery from traumatic events. Parent posttraumatic cognitions may be a critical domain that has been given limited empirical attention in relation to posttrauma recovery in children. Where previous research has relied on single items to assess posttraumatic appraisal in parents (Morris et al., 2013), the TARS provides a multidimensional assessment of constructs that may be useful in assessing trauma-related appraisals that contribute to the development and maintenance of posttraumatic stress symptoms in parents and their children. Although no measure of parent posttraumatic cognitions was available at the time of this study, Williamson et al. (2016) recently developed a promising measure of parent posttraumatic cognitions that will further expand the literature in this area. The process of developing the TARS had a number of strengths. The steps taken to generate items in Phase 1 of this study combined the expertise of multiple international trauma researchers who rated the face validity of the items. The TARS was designed as neutral to the type of trauma experienced, thereby broadening its potential application to a variety of single-event traumas.

From a clinical perspective, the TARS may be useful in helping clinicians to identify targets and goals for family-based treatment of childhood posttraumatic stress. The most efficacious treatment protocol for posttraumatic stress in children, Trauma-Focused Cognitive Behavioral Therapy (TF-CBT), draws heavily on cognitive models of PTSD and involves parents in cognitive processing (i.e., helping children recognize the relationship between thoughts, feelings, and behaviors; monitoring and changing inaccurate, unhelpful thoughts) and trauma narrative development (Cohen, Mannarino, & Deblinger, 2006). A valid assessment of posttraumatic appraisals of parents could be a useful tool in helping to identify cognitions to restructure during therapy. Although it was beyond the scope of this study to assess the predictive validity of the TARS, future research should ascertain whether the TARS proves useful as a clinical tool in predicting which children develop persistent posttraumatic stress or how parents respond to cognitive restructuring during psychological interventions.

The current evaluation of the TARS has several limitations that should be addressed in future research. Although using an accidental injury sample is an appropriate method for starting to develop a measure of parent posttraumatic cognitions, the psychometric properties of the TARS scores should be evaluated in other trauma populations. Trauma can have differing

impacts on young people; for example, the interpersonal dimension of intentional trauma may lead to wider psychiatric disturbances and greater cognitive misappraisals in parents. Furthermore, within accidental injury samples, factors such as parents' involvement in the event (direct exposure, witness, or learning about the event) and their subjective appraisal of the child's injury severity may be associated with greater cognitive misappraisals and warrant further investigation. Future research should evaluate the factor structure of the TARS using factor analysis with a larger sample size, with particular attention given to the Parents should always promote avoidance subscale, which had more variability than the other two subscales. This survey was limited to considering specific posttraumatic appraisals that a parent may have about the trauma-exposed child following a trauma. Future research should expand beyond parent-related factors to consider a broader family-based approach in understanding children's posttrauma adjustment. The absence of test-retest data on the TARS also limits the extent to which the reliability of this instrument can be ascertained. It should also be noted that the majority of who participated in our study were mothers, and the sample was restricted to English-speaking participants.

The development of a parent-report measure that accurately captures key domains of parent posttraumatic cognitions is a necessary step to a better understanding of parent influences on children's recovery from trauma. The careful development of the TARS items, including expert review and piloting with a sample of parents whose children had been seriously injured, helps to establish it as a promising measure in this regard. The results of this study suggest that the TARS is an acceptable and feasible measure of parent posttraumatic cognitions that could be useful in clinical settings and in prospective research with children who have been exposed to a range of traumatic events.

Supplementary File 1

Thinking About Recovery Scale

Listed below are some statements about thoughts and feelings related to parenting a child who has experienced a stressful event. We are interested in the kind of thoughts which you may have had since your child's stressful experience. Please read each statement carefully. Choose the answer that indicates how much you agree with each statement. There are no right or wrong answers.

- 1 Totally disagree
- 2 Disagree very much
- 3 Disagree slightly
- 4 Neutral
- 5 Agree slightly
- 6 Agree very much
- 7 Totally agree

-
- 1. My child will never be happy again.
 - 2. Nowhere is safe for my child.
 - 3. It's best to pretend that the event never happened.
 - 4. My child should not trust anyone.
 - 5. It's best not to talk about the event.
 - 6. The event has damaged my child forever.
 - 7. Anyone could hurt my child.
 - 8. I should provide opportunities for my child to talk about what happened to him/her.
 - 9. My child will have to be on guard all of the time.
 - 10. My child's life is ruined.

11. It's important for me to protect my child from going places that might remind him/her of the event.
12. My child won't be able to cope with life's challenges.
13. My child will never recover from this.
14. Bad things always happen to my child.
15. My child is at risk of harm anywhere he/she goes.
16. I should stop my child thinking or talking about the event.
17. The event has not hurt my child.
18. It's best for my child to stay away from where the event happened.
19. My child will never get over what happened to him/her.
20. Something bad will happen to my child again.
21. My child will suffer for the rest of his/her life.
22. I should keep my child away from people who might remind him/her of what happened to them.
23. My child will never feel safe again.
24. I should help my child keep up his/her normal routine, even if he/she feels scared.
25. My child will never have normal feelings again.
26. I should protect my child from activities or situations that might remind him/her about what happened.
27. My child should be really careful because something bad could happen to him/her.
28. It's best for my child not to think about what happened to him/her.
29. My child will be unable to get over his/her fears about the event.
30. My child will have to be especially careful because you never know what might happen next.
31. My child will never trust anyone again.

32. It's important that I don't let my child go anywhere he/she might feel afraid.

33. My child is the same person he/she was before the event.

Scoring the TARS:

Reverse Code: Item 8, Item 17, Item 24, Item 33

My child has been permanently damaged: (Item 1 + Item 6 + Item 10 + Item 13 + Item 17 + Item 19 + Item 21 + Item 23 + Item 25 + Item 29 + Item 31 + Item 33) / 12

The world is dangerous for my child: (Item 2 + Item 4 + Item 7 + Item 9 + Item 12 + Item 14 + Item 15 + Item 20 + Item 27 + Item 30) / 10

Parents should promote avoidance: (Item 3 + Item 5 + Item 8 + Item 11 + Item 16 + Item 18 + Item 22 + Item 24 + Item 26 + Item 28 + Item 32) / 11

TARS Total Score: Permanent Damage + World Dangerous + Avoidance