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The prospective role of cognitive appraisals and social support in predicting children's posttraumatic stress

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6th May 2015

Dear Dr Tompson,

Thank you for accepting 'The prospective role of cognitive appraisals and social support in predicting children's posttraumatic stress' for publication in Abnormal Child Psychology. We are pleased to report that we have made all suggested revisions, which are addressed point-by-point below. We hope that you find the manuscript improved and able to be published.

Page 1, line 6, do not indent abstract.
Indent has been removed.

Page 2, line 1, begin the paper with the title on the first line.
The title has been inserted into the first line of page 1.

Page 2, line 44, citations of 3-5 authors should list all the first time cited.
'Meiser-Stedman and colleagues' has been changed to 'Meiser-Stedman, Dalgleish, Smith, Yule, and Glucksman'.

Page 4, line 27, use double quotation marks for directly quoted material.
This sentence is an example we generated ourselves, rather than a quotation. Quotation marks have therefore been removed to read (e.g., I will get over this)

Page 5, line 27, references say "Health Care and"; please correct as appropriate.
The correct title is National Institute for Health and Care Excellence. We have changed the reference list to reflect this.

Page 5, line 52, remove highlighting throughout.
All highlighting has been removed.

Page 7, line 10, italicize scale anchors.
Anchors have been italicised.

Page 8, line 3, this citation is not in the reference list; please add.
This reference has been added to the reference list.

Hasan, N., & Power, T. G. (2004). Children's appraisal of major life events. *American Journal of Orthopsychiatry, 74*, 26-32. doi: 10.1037/0002-9432.74.1.26

Page 8, line 25, use italics not quotation marks for scale anchor points.
Quotation marks have been removed and italics have been used. The sentence now reads

The final 21 items are scored on a 4- point scale (1 = *don't agree at all*, 4 = *agree a lot*).

Page 8, line 42, numbers less than 10 should be written in words.
9 has been changed to nine.

Page 12, lines 1-21, please remove dotted lines.
No dotted lines are present.

Page 12, line 44, multiple citations in the same parentheses should be in the same order as in the reference list.
(e.g., Ehlers & Clark, 2000; Brewin et al., 1996) has been changed to (e.g., Brewin et al., 1996; Ehlers & Clark, 2000).

Page 12, line 44, the Brewin citation is not in the reference list.
This reference has been added to the reference list.

Brewin, C. R., Dalgleish, T., & Joseph, S. (1996). A dual representation theory of posttraumatic stress disorder. *Psychological Review, 103*, 670-686. doi: 10.1037/0033-295X.103.4.670

Page 17, line 27, capitalize the first word in titles and subtitles.
The first word of the subtitle has been italicised to now read

Benight, C. C., & Bandura, A. (2004). Social cognitive theory of posttraumatic recovery: The role of perceived self-efficacy. *Behaviour Research and Therapy, 42*, 1129-1148. doi: http://dx.doi.org/10.1016/j.brat.2003.08.008

Page 19, line 1, Kovacs citation should be on the next line.
The Kovacs reference has been moved to the next line.

Title Page w/ ALL Author Contact Information

Running Head: SOCIAL SUPPORT, APPRAISALS AND CHILD PTSD

The prospective role of cognitive appraisals and social support in predicting children's posttraumatic stress

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Abstract

Although both social support and cognitive appraisals are strong predictors of children's posttraumatic adjustment, understanding of the interplay between these factors is limited. We assessed whether cognitive appraisals mediated the relationship between social support and symptom development, as predicted by cognitive models of posttraumatic stress disorder (PTSD). Ninety seven children (Mean age = 12.08 years) were assessed at one month and six months following a single incident trauma. We administered self-report measures of cognitive appraisals, social support, and a diagnostic interview for PTSD. Results indicated that cognitive appraisals at one month post-trauma mediated the relationship between social support at one month post-trauma, and PTSD severity at follow-up. Differences in this relationship were observed between child-reported social support and parent-rated ability to provide support. Firm evidence was provided for the application of cognitive models of PTSD to children.

Keywords: PTSD; children; cognitive appraisals; social support

The prospective role of cognitive appraisals and social support in predicting children's posttraumatic stress

Childhood trauma exposure can have a debilitating impact on emotional health. Previous research demonstrates that the development of acute and posttraumatic stress following childhood trauma exposure is influenced by trauma type, along with characteristics of the child at the time of the trauma (for review see Alisic, Jongmans, van Wesel, & Kleber, 2011). However, post-event factors, particularly acute reactions, also have a significant impact on prognosis (Alisic et al., 2011; Trickey, Siddaway, Meiser-Stedman, Serpell, & Field, 2012). A recent meta-analysis indicated that two of the largest post-event predictors of outcome were the appraisals a child makes of the event (e.g., blaming others), and the support they receive from others (Trickey et al., 2012).

Cognitive models of posttraumatic stress disorder (PTSD) propose that appraisals of the traumatic event are critical influences in posttraumatic responses (Ehlers & Clark, 2000). In particular, negative appraisals about the traumatic event, and about one's posttraumatic symptoms and the reaction of others following the trauma are paramount in explaining the development and maintenance of PTSD. This may be due to negative appraisals fostering avoidance and hindering reprocessing of the trauma, and maintaining a negative sense of self. Evidence in adults for the role of negative appraisals in predicting PTSD is well developed (Dalgleish, Meiser-Stedman, & Smith, 2005). An increasing number of studies in children demonstrate the detrimental impact of negative appraisals on emotional health following trauma. Meiser-Stedman, Dalgleish, Smith, Yule, and Glucksman (2007) demonstrated a strong relationship between maladaptive appraisals and acute posttraumatic stress in 10-16 year old motor vehicle accident/assault victims. Similarly, Salmon, Sinclair, and Bryant (2007) reported that negative appraisals of personal vulnerability and future harm accounted for unique variance in posttraumatic stress in the acute phase following trauma. Further,

Stallard and Smith (2007) reported that negative appraisals of symptoms, a sense of injustice, and belief of permanent change for the worse were also cross-sectionally associated with symptoms at eight months post-trauma.

Stronger support is provided by prospective studies. An initial study by Ehlers, Mayou, and Bryant (2003) indicated that negative interpretation of intrusions measured at three months predicted PTSD symptoms at six months post-trauma. More comprehensively, Bryant and colleagues (2007) examined the predictive power of appraisals immediately following trauma on longer-term outcomes for children admitted to hospital following a traumatic injury. Their results demonstrated that negative appraisals of vulnerability in the first month following trauma, indexed using the Child Posttraumatic Cognitions Inventory (CPTCI; Meiser-Stedman et al., 2009[1]), uniquely predicted posttraumatic stress at six months post-trauma. This effect was found to be independent from, and of greater predictive power than, child age, acute posttraumatic stress symptoms, injury severity score, and parental posttraumatic stress. This finding was replicated and extended by Meiser-Stedman et al. (2009). The authors measured negative appraisals at 2-4 weeks, and then again six months post-trauma using the CPTCI. Results demonstrated that negative appraisals in the acute phase, namely the Permanent and Disturbing Change subscale of the CPTCI, mediated the relationship between acute stress symptoms and PTSD symptoms at six month follow-up, even after controlling for symptoms at the acute stage. This finding was consistent with Ehlers and Clark's (2000) model, which proposed that negative interpretations of one's reaction to the trauma are central in the development of posttraumatic stress symptoms. In sum, negative appraisals in the weeks following trauma are a robust predictor of later adjustment.

[1] At the time of Bryant et al.'s (2007) paper, the CPTCI was an unpublished measure. A validation of the CPTCI was published in 2009.

Although negative appraisals are consistently implicated in emotional wellbeing following trauma, there is less investigation of the possible protective function of adaptive appraisals. In considering the risk factors discussed above, it is reasonable to hypothesise that adaptive appraisals may positively influence prognosis. Adaptive appraisals are not simply the absence of negative appraisals, but particular thoughts and beliefs that, by their presence, may protect against psychopathology. Adaptive appraisals after trauma may include the belief that everything will be alright, acceptance (rather than avoidance) of the traumatic event, or the belief that posttraumatic stress symptoms are acceptable following a trauma. Given that appraisals are integral in the development of PTSD, and negative appraisals are associated with poorer outcome, it is important to determine whether adaptive appraisals impact prognosis. For example, as negative beliefs regarding self-efficacy (i.e., personal weakness) are related to heightened symptoms (Benight & Bandura, 2004), adaptive appraisals of self-efficacy (e.g., I will get over this) may protect against symptoms. There is currently no direct research on the impact of adaptive appraisals following trauma. In anxiety research more broadly, adaptive self-statements (e.g., I am brave) are related to better emotional functioning (Ronan et al., 1994), as are ratings of one's self-efficacy (Rudy, David, & Matthews, 2012) and perceived self-competence (Uhrlass, Schofield, Coles, & Gibb, 2009). When considering the role of appraisals in PTSD development, examination of trauma-specific adaptive appraisals is clearly warranted as directly encouraging adaptive appraisals in the first months following trauma may significantly impact longer term prognosis.

Given the important role of appraisals in predicting PTSD, elaboration of appraisal development also has critical clinical implications. One potential influence on posttraumatic appraisals is social support (Ehlers & Clark, 2000). There is minimal direct research that simultaneously examines social support and posttraumatic appraisals (whether negative or adaptive), however it is likely that social support immediately post-trauma may impact later

symptoms through such appraisals. Discussion with others, or hearing adults' appraisals of the event, may provide a means of reappraising the event and correcting any misinterpretations. Indeed, it has been previously demonstrated that parents are important in helping children to appraise an event in a helpful way. If the parent does not appraise the event in a helpful way themselves, or is unavailable to provide this support, there may be an increased risk of the child developing posttraumatic stress (Meiser-Stedman, 2002). Similarly, parent response is crucial in minimising posttraumatic stress following children's disclosure of sexual abuse, arguably through influencing appraisals (Spaccarelli, 1994). Children may receive social support from a variety of sources. It is therefore worthwhile to assess social support from a range of people in addition to assessing support from parents specifically. Given the importance placed on social support in the aftermath of trauma (National Institute for Health Care and Excellence, 2005) and the proposed conceptual link between social support and appraisals (and subsequently symptoms), it is somewhat surprising that there is a dearth of research assessing these variables simultaneously.

We prospectively assessed predictors of childhood PTSD, with a particular focus on the role of negative and adaptive appraisals of the trauma, and whether these appraisals mediated the relationship between social support in the month following trauma and later symptomatology. We have previously published a cross-sectional examination of whether negative appraisals mediated the impact of social support on acute stress symptoms in the first month following trauma (Ellis, Nixon, & Williamson, 2009). In that paper, Baron and Kenny's (1986) prerequisites for mediation were not met; thus the mediation analysis was not completed. In cases when the independent variable does not uniquely predict the outcome variable (as occurred in Ellis et al., 2009), an indirect effect may be erroneously rejected under the prerequisites outlined by Baron and Kenny (Preacher & Hayes, 2004; Hayes, 2013). Explicit assessment of an indirect relationship using recent analytical techniques (e.g.,

Process; Preacher & Hayes, 2004) reduces such Type II error, and will more accurately assess mediation than a series of separate significance tests (Hayes, 2009; Hayes & Scharkow, 2013; Preacher & Hayes, 2004). Advancement in statistical methods therefore indicate that re-evaluation of the proposed mediation is warranted.

Our key aim was to extend our current knowledge of this topic by examining whether appraisals mediated the impact of acute social support on posttraumatic stress six months later. We also provide a preliminary examination of the relationship between adaptive appraisals and prognosis. In doing so, we answer two key questions. First, do cognitive appraisals mediate the effect of social support on both short and longer term functioning? Second, do adaptive appraisals uniquely influence post-traumatic adjustment, separate from the effect of negative appraisals? We hypothesised that the effect of social support on PTSD symptoms would be mediated by cognitive appraisals. We also hypothesised that both acute negative and adaptive appraisals would uniquely influence PTSD symptoms at six months post-trauma, such that negative appraisals would predict elevated symptoms and adaptive appraisals would predict fewer symptoms.

Method

Participants

Young people aged 7-17 years were recruited from two metropolitan hospitals, where they were treated following a single incident trauma (e.g., road traffic accident, see Table 1 for participant characteristics). Exclusion criteria included non-Criterion A trauma (e.g., minor fall), lack of English fluency, traumatic brain injury, ongoing treatment that was potentially traumatic in nature (e.g., burns treatment), or ongoing trauma (e.g., domestic violence). A total of 325 families were identified, of which 175 met exclusion criteria, predominately due to young age. Of the 148 children remaining, 51 declined participation. The final sample therefore consisted of 97 children.

Materials

Trauma interview. Parents reported demographic information, child's prior trauma history, previous psychological or pharmacological treatment for emotional problems, and family history of psychological problems. Length of hospitalisation was also recorded, along with parental rating of injury severity on a 4-point scale where 0 = *no injury*, 1= *minor injuries (e.g., bruises/abrasions)*, 2 = *moderate injuries (e.g., broken bones)* and 3 = *severe injuries (e.g., multiple fractures, internal injuries)*. Parents also identified whether their child had received medication or psychological treatment following the trauma.

Symptom measures. The Clinician Administered PTSD Scale for Children (CAPS; Nader, Blake, Kriegler, & Pynoos, 1994) is the gold-standard diagnostic tool for PTSD in children. In addition to diagnostic status, the scale yields a score for symptom severity, which considers the frequency and intensity of symptoms. Inter-rater reliability of 15% of assessments was completed by an independent rater, resulting in 100% agreement on diagnostic status. Children also completed the Child Posttraumatic Stress Scale (CPSS; Foa, Johnson, Feeny, & Treadwell, 2001), and the Child Depression Inventory (CDI; Kovacs, 1992). Internal consistency was high for both measures (α = .88 and α =.92, respectively).

Negative appraisals. The Child Posttraumatic Cognitions Inventory (CPTCI: Meiser-Stedman et al., 2009) is a 25- item self-report measure of children's negative appraisals about the trauma and its consequences. Items are separated into two subscales; Disturbing and Permanent Change, and Feeble Person in a Scary World. The total score for the combined subscales was used in all analyses. Internal consistency was high, α = .95.

Adaptive appraisals. In the absence of an established measure of adaptive cognitive appraisals that children may have following a traumatic event, a specific scale was developed. The Adaptive Appraisals Questionnaire (AAQ) consists of 21 self-report items, with items derived from theory (Ehlers & Clark, 2000), therapy guidelines (Perrin et al.,

2004) and previous research (Ehlers, Mayou, & Bryant, 2003). Questions were designed to assess a child's appraisals of wellness (Hasan & Power, 2004); positive change following the event (Linley & Joseph, 2004); current threat (Ehlers & Clark, 2000); omen formation (Meiser-Stedman et al., 2009); appraisals about the trauma and symptoms following the trauma, other people's responses to the trauma (Ehlers & Clark, 2000); self-blame (Cohen et al., 2004) and appraisals of the usefulness of talking about the event (Meiser-Stedman, 2002). Initially, 103 items were generated, following which items similar to the CPTCI were deleted. Subsequently, expert opinion was sought from four clinical psychologists with experience working with children, and 2 developmental psychologists. Confusing or repetitive items were deleted and the remaining questions were trialled with eight children and adolescents. The final 21 items are scored on a 4- point scale (1 = *don't agree at all*, 4 = *agree a lot*). Internal consistency was satisfactory, $a = .80$. A moderate correlation with the CPTCI indicated that the AAQ was not simply an inverse measure of negative appraisals, although there was overlap in variance between the measures, $r\ (96) = -.57$, $p < .001$. The final measure is available in the online supplementary materials.

Social support. Parents' perceptions of how well they supported their child were measured using two subscales of the Parent-Child Relationship Inventory (PCRI: Gerard, 1994). The PCRI-Support and PCRI-Communicate subscales consist of nine items each, which were summed to provide an overall measure of parent availability to provide support to their child. A higher score denotes a higher level of parent availability to provide support. In the present sample internal consistency for the combined subscales was satisfactory, $\alpha = .75$.

The child's perception of social support was measured using the Multidimensional Scale of Perceived Social Support (MSPSS; Zimet et al., 1988). The scale consists of 12 items reflecting perceived support from three areas: family, a special person, and friends. To increase its utility for younger children, we added clarification in parentheses to some items.

For example: 'I have friends with whom I can share my joys and sorrows (happy and sad things)'. Scores were summed and a higher score reflected greater social support. The MSPSS has demonstrated reliability and validity (Canty-Mitchell & Zimet, 2000). In the present study internal consistency was high, $\alpha = .90$.

Procedure

This study was approved by hospital ethics committees. Children were considered for eligibility, following which a researcher either approached the family while they were at the hospital, or telephoned following discharge. Informed consent was obtained from all individual participants included in the study. Parents and children then completed assessments either in a face-to-face interview or by telephone and post (for those already discharged). Interviews were conducted by trained clinical staff under the supervision of R.D.V. Nixon. Participants received a cinema ticket or $10 shopping voucher. In the acute phase (within one month of trauma; T1), the trauma interview and self-report measures were completed. At six months post-trauma (T2), the CAPS and self-report measures were completed.

Results

Sample characteristics

Sample characteristics are presented in Table 1, as are symptom scores at T1 and T2. Attrition saw that at follow-up, 90 children completed diagnostic interviews and 84 completed the self-report measures. Child-reported posttraumatic stress symptoms at T1 (indexed on the CPSS) was related to both child-reported symptoms at T2, $r = .41$, $n = 78$, $p < .001$, and clinician-rated symptoms at T2 (indexed by total severity score on the CAPS), $r = .27$, $n = 87$, $p = .01$.

Hypothesis testing

Indirect effects were assessed using the Process statistical package, creating 10,000 bootstrapped samples for each analysis. Process allowed us to determine the direct effect of the independent variable (IV) on the dependent variable (DV), and an indirect effect of the IV on the DV through one or more proposed mediators. The indirect effect represents the multiplication of the unstandardised effect of the IV on the M, with the effect of the M on the DV. We determined the significance of an indirect effect using 95% bias-corrected confidence intervals. The unstandardised regression coefficient for the indirect effect (i.e, the *b* coefficient) is considered significant if the associated confidence interval does not span zero. Standard error is presented for each coefficient (*SEb*). Model statistics for significant indirect effects are presented in Table 2.

First we determined whether cognitive appraisals mediated the relationship between social support and posttraumatic stress (measured using the CPSS) at one month post-trauma. We began with perceived social support and determined whether scores on the CPTCI mediated the relationship between MSPSS at T1 and CPSS at T1 (see Model 1 in Table 2). A significant indirect effect supported our hypothesis. That is, negative appraisals mediated the relationship between perceived social support (child report) and posttraumatic stress in the acute phase following trauma.[2] When this model was repeated with parent-reported support as the predicting variable, no indirect effect was evident, b = -.17, *SEb* = .10, [-.37, .01].

The above analyses were repeated with AAQ as the mediator to examine whether adaptive appraisals also mediated the relationship (Model 2). Again, a significant indirect effect was observed. Consistent with our hypothesis, adaptive appraisals mediated the

[2] This relationship was not analysed initially by Ellis et al. (2009), as Baron and Kenny's (1986) perquisites for mediation were not met. The observed mediation in the current analysis reflects the implications of new conceptual understanding and practical applications of mediation testing (Hayes, 2013).

relationship between perceived social support and posttraumatic stress. This relationship was not observed for parent-reported support, *b* = -.13, *SEb* = .13, [-.43, .09].

To determine whether the effect of adaptive appraisals was independent from negative appraisals, we next completed a parallel mediation model, with AAQ and CPTCI entered as simultaneous mediators (Model 3). The model demonstrated that CPTCI remained a significant mediator of the impact of perceived social support on symptoms one month post-trauma, however, the AAQ did not. Neither of the appraisal measures mediated the effect of parent-reported support, AAQ *b* = -.04, *SEb* = .05, [-.19, .02]; CPTCI *b* = -.16, *SEb* = .10, [-.39, .02].

Next we examined the prospective data to determine whether appraisals at T1 mediated the impact of perceived social support at T1 on PTSD symptoms six months later. CAPS severity score (measured at T2) was entered as the dependent variable, MSPSS at T1 was entered as the independent variable, and the appraisals measure was entered as the mediator. Negative appraisals did significantly mediate the effect of perceived social support on later PTSD (Model 4). In a separate model, no evidence was found for AAQ as a mediator (Model 5). That is, negative appraisals mediated the impact of perceived social support on longer term functioning, but adaptive appraisals did not.

The above models were repeated with parent-reported support as the predicting variable. Replicating the relationship observed at T1, no mediation was observed through AAQ, *b* = -.07, *SEb* = .09, [-.37, .04], or CPCTI, *b* = -.10, *SEb* = .08, [-.36, .01].

We also hypothesised that appraisals in the acute phase would independently predict later posttraumatic stress. This hypothesis was assessed by examining the unique effect of appraisals (i.e., the mediator) on symptom severity (i.e., the dependent variable) in the mediation analyses completed above. Replicating previous research, negative appraisals at T1 significantly predicted later PTSD severity (see Model 4). However, adaptive appraisals did

not account for unique variance in later symptom severity (see Model 5). It is possible that adaptive appraisals predicted symptoms at T1 but not at T2 due to use of self-reported symptoms (i.e., CPSS) as the outcome at T1 and use of clinician-rated symptoms (i.e., CAPS severity score) as the outcome at T2. We therefore repeated analyses with CPSS at T2 as the outcome. Consistent with results for clinician-rated symptoms, negative appraisals significantly predicted self-report symptoms, b = .15, *SEb* = .05, [.04, .26], but adaptive appraisals did not, b = -.06, *SEb* = .12, [-.30, .18]. There was also no direct effect of perceived social support on self-report symptoms, b = -.04, *SEb* = .07, [.04, .26].

Discussion

This study demonstrated that perceived social support and negative appraisals in the acute phase following trauma will have a significant impact on longer term functioning following a childhood trauma that has resulted in hospital attendance. Specifically, negative appraisals mediated the relationship between perceived social support and posttraumatic stress at both one month and six months post-trauma. These results extend understanding of how support from important people in the child's life can influence psychological wellbeing post-trauma, and also replicate previous findings of the importance of negative appraisals in the development of PTSD. Importantly, given that cognitive models of PTSD were developed to explain adult psychopathology, we have provided additional support for the application of cognitive models of PTSD to children (e.g., Brewin et al., 1996; Ehlers & Clark, 2000).

Cognitive models of PTSD define negative appraisals as integral in the aetiology of PTSD. Our results supported this proposition, replicating previous support for the role of acute negative appraisals in symptom development (Bryant et al., 2007; Meiser-Stedman et al., 2009). We have also expanded understanding of cognitive models by exploring how social support contributes to the development of appraisals. Ehlers and Clark (2000) asserted that interpretations regarding the support of others will impact appraisal development. For

example, when people avoid talking about the event so as not to upset the individual with PTSD, this may lead the individual to perceive that others think the trauma is their own fault. Our findings were consistent with interpretations of support impacting appraisal development. Our measure of perceived social support indexed whether the child felt they could discuss the trauma with significant others, and consistent with the cognitive model's proposition, this was negatively related to negative appraisals. In turn, this related to fewer PTSD symptoms at follow-up, as predicted by the model. Our findings therefore provide firm support for the cognitive model of PTSD in children.

Our findings also extend understanding of how social support influences symptom development. Interestingly, social support had a moderate impact on symptoms in the acute phase post-trauma, but only indirectly impacted longer term adjustment through influencing negative appraisals. This finding emphasises the complex relationship between social support and child wellbeing, and highlights the need to explore mechanisms through which social support will impact posttraumatic adjustment. Our results also suggest that the child's perception of social support will play a larger role in symptom development than the parent's report of support for their child. This raises two key issues; that it is important to consider the child's perception of support, rather than relying on parent report, and that the wider system of support around the child, including friends and significant persons, may be important determinants of a child's wellbeing post-trauma. The MSPSS asks whether the child can discuss their difficulties with their friends, and important people (e.g., siblings, grandparents) in their life, rather than focussing exclusively on the parent-child relationship as indexed by the PCRI. The larger effect of the MSPSS and mediation via negative appraisals may suggest that wider social support, and/or the child's perception, rather than parental belief in their ability to provide support, are particularly important in symptom development. This point was emphasised in recent meta-analysis (Alisic et al., 2011). Our results support the

consideration of the wider support system around the child. In particular, early clarification of children's perception of social support may assist such that if there was little perceived support, early intervention in a systems approach to engage available supports may be beneficial. Assessment with objective measures of social support (e.g., coding of observed interactions) may improve understanding of these relationships.

Regarding appraisals more specifically, we examined whether early adaptive appraisals post-trauma impacted wellbeing both cross-sectionally and prospectively. Our findings demonstrated that adaptive appraisals were inversely related to acute symptoms, but did not predict longer term functioning. However, the effect of adaptive appraisals on acute symptoms was no longer present once variance explained by negative appraisals was removed. This may suggest that adaptive appraisals are non-distinct from negative appraisals in a clinical sample. The ability to draw such a conclusion from the current data is limited, as the AAQ we developed in the absence of a published measure of adaptive appraisals may have contributed to overlap between adaptive and negative appraisals. Alternatively, it is possible that the two are indeed separate constructs, but in the case of posttraumatic adjustment, negative rather than adaptive appraisals are more influential. Consistent with the weakest link hypothesis, maladaptive cognitions may outweigh the protective benefit of adaptive appraisals (Abela & Sarin, 2002). In turn, adaptive appraisals may predict posttraumatic growth (which we did not measure), while negative appraisals predict posttraumatic stress. Theories of PTSD aetiology have focussed on the role of negative appraisals, and as a result, exploration of adaptive appraisals in symptom development is currently limited. Given the clinical emphasis on encouraging adaptive appraisals in treatment of psychopathology (e.g., through cognitive restructuring) and the importance of considering positive factors post-trauma (Alisic et al., 2011) further exploration of adaptive appraisals is warranted. In particular, future research to develop and validate measures of

adaptive appraisals may improve understanding of the interrelationship between adaptive and negative cognitions. Further exploration of the relative impact of appraisals, both adaptive and negative, in samples with more chronic trauma exposure such as childhood abuse may clarify these issues.

Finally, our results offer implications for the treatment of childhood PTSD. First, the prospective effects of perceived social support (and not parent-reported support) in the short-term following trauma indicates that it would be beneficial to encourage supportive relationships not only between the child and parent, but also within the child's wider system. Given the hypothesised role of significant others in appraisals of the traumatic event, it may also be beneficial for therapy to involve significant people in the child's life. This does occur in some treatments of child PTSD (e.g., trauma-focussed cognitive behavioural therapy), but in particular, it may be helpful to discuss with the child's 'special person' how they may assist the child to appraise the event in a non-catastrophising manner. When completing cognitive restructuring with trauma-exposed children, exploration of how beliefs are impacted by others is also likely to be beneficial. Indeed, previous examination of parental appraisal of the trauma has indicated a key role in child appraisals of the event (Morris, Lee, & Delahanty, 2013). Based on our findings, we encourage the consideration of those identified by the child as providing support, in addition to the child's parents.

In conclusion, this study has filled a noticeable gap in the literature regarding how social support relates to the development of appraisals and subsequent PTSD symptoms in children. Our findings highlight that both social support and negative appraisals in the acute phase following trauma influence longer term functioning, and suggest that further exploration of adaptive appraisals may be warranted. The need for interventions enhancing adaptive appraisals has been emphasised (Bryant et al., 2007), however, we suggest that any

differential impact of adaptive and negative appraisals on PTSD symptoms must first be established.

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Table 1

Sample characteristics (N=97)

Variable	*Mean*	*SD*	*Min*	*Max*
Child age in years	12.08	2.80	7	17
Gender	63% M (*n*=61)			
Length of hospitalisation (days)	6.69	14.09	0	120
Injury severity	1.82	0.92	0	3
Type of trauma				
Road traffic accident	47% (*n*=46)			
Significant fall	12% (*n*=12)			
Serious accidental injury	13% (*n*=13)			
Other(assault/medical emergency/house fire)	27% (*n*=26)			
Prior trauma exposure [a]	42% (*n*=41)			
Prior psychological treatment [a]	24% (*n*=23)			
Prior pharmacological treatment	1% (*n*=1)			
Child psychological treatment since trauma	6.2% (*n*=6)			
Family history of psychological problems [a]	18% (*n*=17)			
Child Posttraumatic Stress Scale at one month	11.16	9.87	0	42
CAPS symptom severity at follow-up	13.22	13.15	0	59
Child Depression Inventory at one month	7.96	6.64	0	30
Child Depression Inventory at follow-up	5.28	6.53	0	41

[a] Variable coded dichotomously; M = Male; CAPS= Clinician Administered PTSD Scale (Nader et al., 1994).

Table 2

Unstandardised regression coefficients (standard error) for mediation models

Model	Independent variable (IV)	Mediator (M)	Dependent variable (DV)	Effect of IV on M	Effect of M on DV	Indirect Effect	Total Effects	Direct Effect of IV on DV
1.	Perceived social support	Negative appraisals	Acute PTS	-.29 (.13)*	.48 (05)**	-.14 (.06)[a]	-.23 (.08)*	-.09 (.06)
2.	Perceived social support	Adaptive appraisals	Acute PTS	.43 (.08)**	-.58 (.13)**	-.25 (.08)[a]	-.27 (.09)*	-.03 (.11)
3.	Perceived social support	Negative appraisals	Acute PTS	-.37 (.15)*	.44 (.06)**	-.16 (.07)[a]	-.27 (.09)*	-.06 (.07)
	Perceived social support	Adaptive appraisals	Acute PTS	.43 (.08)**	-.13 (.11)	-.05 (.04)		
4.	Perceived social support	Negative Appraisals	PTSD severity at follow-up	-.40 (.14)*	.31 (.09)**	-.12 (.08)[a]	-.10 (.12)	.02 (.12)
5.	Perceived social support	Adaptive appraisals	PTSD severity at follow-up	.47 (.08)**	.-.32 (19)	-.01 (.01)	-.13 (.13)	.02 (.16)

[a] 95% bias corrected confidence interval does not span zero. PTS = posttraumatic stress, measured using the Child Posttraumatic Stress Scale (Foa et al., 2001); PTSD = Posttraumatic stress disorder. PTSD severity measured using the Clinician Administered PTSD Scale (Nader et al., 1994).

*$p < .05$; ** $p < .001$.

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AAQ

		Don't agree at all	Don't agree a bit	Agree a bit	Agree a lot
The next questions are about what <u>YOU</u> think other people are thinking since the accident.					
1.	Other people think I'm getting better	[ ]	[ ]	[ ]	[ ]
2.	Other people think it is my fault	[ ]	[ ]	[ ]	[ ]
3.	People around me would be OK if I wanted to talk about what happened	[ ]	[ ]	[ ]	[ ]
4.	Other people think I am brave	[ ]	[ ]	[ ]	[ ]
5.	Other people care about what happened to me	[ ]	[ ]	[ ]	[ ]
6.	I think people will get upset if I talk about what happened	[ ]	[ ]	[ ]	[ ]
7.	People still love me	[ ]	[ ]	[ ]	[ ]
8.	Other people understand what I went through	[ ]	[ ]	[ ]	[ ]
9.	Other people think its good to talk about what happened	[ ]	[ ]	[ ]	[ ]
10.	People don't want to know about what happened	[ ]	[ ]	[ ]	[ ]
The next questions are about what YOU think yourself, there are no right or wrong answers, so please answer how YOU feel and think since the accident:					
11.	I have always been woried about/afraid of dying	[ ]	[ ]	[ ]	[ ]
12.	I have someone I can talk to about my feelings about what happened	[ ]	[ ]	[ ]	[ ]
13.	I just knew something bad would happen that day	[ ]	[ ]	[ ]	[ ]
14.	I feel protected	[ ]	[ ]	[ ]	[ ]
15.	I will be able to put the event behind me	[ ]	[ ]	[ ]	[ ]
16.	The event upset me but now I'm over it	[ ]	[ ]	[ ]	[ ]
17.	The event will/has made me stronger	[ ]	[ ]	[ ]	[ ]
18.	I have put the event in the past	[ ]	[ ]	[ ]	[ ]
19.	I think something good will happen as a result of this event	[ ]	[ ]	[ ]	[ ]
20.	I feel like the event is finished/over	[ ]	[ ]	[ ]	[ ]
21.	Getting over the event will make/has made me better at coping	[ ]	[ ]	[ ]	[ ]