

The Role of the Family in Child and Adolescent Posttraumatic Stress Following Attendance at an Emergency Department

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Objective To evaluate the role of family factors in posttraumatic stress symptomatology (PTSS) in children and adolescents who have attended an emergency department following assaults or motor vehicle accident. **Methods** Children and their parents completed self-report questionnaires and semistructured interviews relating to their psychopathology and cognitive styles at 2–4 weeks and 6 months after trauma. **Results** Parental depression was correlated with child PTSS at each assessment point. Less consistent findings were observed for family functioning. Parental endorsement of worry was a correlate of child PTSS at each assessment and a mediator between parental depression and child PTSS. **Conclusions** A role for family factors, in particular parental depression and parental endorsement of worry, in the development of child PTSS is supported. Weaknesses of the study are discussed, and suggestions for future research are given.

Key words children; parents; PTSD.

There is a pressing need to understand why a significant minority of children who attend emergency departments (EDs) following events such as motor vehicle accidents (MVAs) develop high levels of posttraumatic stress symptomatology (PTSS), whereas the majority of children experience only transitory difficulties or distress (Bryant, Mayou, Wiggs, Ehlers, & Stores, 2004; Kassam-Adams & Winston, 2004; Meiser-Stedman, Yule, Smith, Glucksman, & Dalgleish, in press; Stallard, Velleman, & Baldwin, 1998). In nonmedical settings, aspects of a child's family environment have been shown to be related to child PTSS. These include maternal depression (Smith, Perrin, Yule, & Rabe-Hesketh, 2001; Wolmer, Laor, Gershon, Mayes, & Cohen, 2000) and general family functioning (Green et al., 1991; McFarlane, 1987).

In this study, our team investigated family factors prospectively in child and adolescent ED attendees who were seen for an MVA or assault. MVAs are a common cause of presentation at an ED and of subsequent PTSS,

and given their discrete nature, the survivors of such accidents have easily lent themselves to being the subject of empirical investigation. Assaults also warrant investigation as they are a common form of trauma that results in attendance at ED (Zun & Rosen, 2003).

An additional issue that merits investigation is how parental depression impacts on child PTSS in medical populations (Meiser-Stedman, 2002). In discussing their own findings, Smith et al. (2001) suggest that the relationship between parental and child posttraumatic psychopathology might be the result of shared living conditions (particularly in the context of war), exposure to the same reminders of the trauma, an interaction between child and parental distress, and similar learned coping styles. Because ED attendees are unlikely to have been involved in large-scale trauma where there would be significant widespread disruption, this population offers the opportunity to focus on investigating the role of psychological mediators between child and parental distress.

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One group of such psychological mediators was thought to be maladaptive cognitive styles and coping. It has been shown that children can derive fearful beliefs from parental influences (Field, Argyris, & Knowles, 2001). Whether children can model more cognitively sophisticated information or styles, such as rumination (Nolen-Hoeksema & Morrow, 1991), anxiety sensitivity (Reiss, Peterson, Gursky, & McNally, 1986), and endorsing worry as a positive strategy (Cartwright-Hatton & Wells, 1997), has yet to be considered. There is preliminary evidence that these or analogous processes play a role in the maintenance of pediatric PTSS (Meiser-Stedman, Dalgleish, Glucksman, Yule, & Smith, 2005). It was considered plausible that depressed parents would make greater use of maladaptive cognitive styles, which are in turn modeled by their children when attempting to cope with an assault or MVA. We therefore decided to examine whether parental use of such maladaptive cognitive styles might mediate the relationship between parental depression and child PTSS.

In summary, the following hypotheses were proposed: (a) Parental depression and family functioning would be correlated with child PTSS in an ED population, as observed in previous studies of nonmedical populations; and (b) The relationship between parental depression and child PTSS would be mediated by maladaptive maternal cognitive styles.

Method

Participants

Participants consisted of 10- to 16-year-old survivors of assaults or MVAs, who were consecutive attendees at an ED in South London, England. The following exclusion criteria were used: existing brain disease or severe learning disability; social services investigation of family; inability to speak English; and exposure to a sexual assault (as the primary investigator was male and no female interviewer was available).

During the period of recruitment, 343 children and adolescents met criteria for the study. Of these 119 (34.7%) were not contactable because of inaccurate or incomplete records at the ED, 116 (33.8%) did not wish to participate, 2 (0.6%) were immediately referred for treatment for the effects of prior trauma, and 106 (30.9%) agreed to participate. However, in only 66 (19.2%) cases did a child's parent also take part in the study. This was either because the child's parent did not speak English ($n = 4$) or did not have the time to participate in the study ($n = 36$). In 64 (97.0%) cases the

child's mother participated, in 1 case (1.5%) a child's father participated in the study, and in 1 case (1.5%) a child's adult sibling participated in the study. In 6 of these cases (9.1%), the parent also was present during the trauma that his/her child experienced.

The mean age of the 66 children and adolescents who made up the study sample was 13.8 years ($SD = 1.9$). Twenty-six (39.4%) children were female. Thirty-eight (57.6%) had been involved in assaults, and 28 (42.4%) had been involved in MVAs. Participants did not differ from nonparticipants (i.e., those children who could not be contacted or did not consent to participate in the study) in gender, the type of trauma experienced, or triage category (i.e., how urgently treatment was required upon attendance at the ED), but they were significantly younger than nonparticipants (M age = 14.8, $SD = 1.9$; $t = 3.54$, $df = 340$, $p < .001$).

Procedure

Participating families were initially contacted by letter and then by telephone in the 2 weeks following their attendance at the ED. The informed consent of both the child or adolescent and their main caregiver (primarily their mother) was required for the family to participate in the study. Participating families completed assessments at 2–4 weeks and 6 months after trauma. At each assessment, parents and children completed self-report questionnaires relating to their post-trauma psychological responses. In addition, children and adolescents completed a semistructured interview at the 6-month time point that examined posttraumatic stress disorder (PTSD) diagnostic status.

Of the 66 families who completed the 2- to 4-week questionnaires, only 46 children (69.7%) and 36 parents (54.5%) completed the 6-month questionnaires. No significant differences were found between children who did and did not complete the follow-up assessment with regard to extent of initial PTSS, but children who completed the follow-up assessment did receive a more serious triage rating, $t(98.76) = 2.18$, $p < .04$. Likewise, parents who did and did not complete the follow-up assessment did not differ in initial depression, but those parents who completed the follow-up assessment did have children who had received higher triage ratings, $t(75.65) = 2.70$, $p < .01$.

Measures

Parent Measures

Parents completed a measure pertaining to their own depression symptoms at both assessments. They completed three scales examining cognitive styles and coping at the

initial 2- to 4-week assessment, as well as a measure of family functioning at the 6-month assessment. Each of these measures are described here.

Beck Depression Inventory. The Beck Depression Inventory (BDI) is a 21-item inventory that measures depression symptoms in adults. The inventory has good internal consistency, with a Cronbach's alpha of .81 (Beck, Steer, & Garbin, 1988).

Response Styles Questionnaire (Rumination). The 22-item rumination subscale Response Styles Questionnaire (RSQ) of the RSQ is a measure of how much adults focus on their depressive symptoms and ruminate on the causes and implications of these symptoms. In a study of depression and coping in young adults after an earthquake (Nolen-Hoeksema & Morrow, 1991) the measure was found to have good internal consistency (Cronbach's alpha = .89).

Anxiety Sensitivity Inventory. The Anxiety Sensitivity Inventory ASI (ASI, Reiss et al., 1986) is a 16-item measure of an individual's negative beliefs about the experience of anxiety and anxious symptoms. The measure has good test-retest reliability (Pearson product-moment correlation = .75).

Meta-Cognitions Questionnaire (Positive Beliefs About Worry Subscale). The positive beliefs subscale of the Meta-Cognitions Questionnaire (MCQ) was used to assess parents' positive views about the usefulness of worrying. The MCQ was devised by Cartwright-Hatton and Wells (1997) to measure beliefs about worry and intrusive thoughts. The 19-item positive beliefs about worry subscale was found to have good internal consistency (Cronbach's alpha = .87).

Family Functioning Questionnaire. The Family Functioning Questionnaire (FFQ) is a 12-item questionnaire developed by McFarlane (1987) to assess the role of family functioning in the maintenance of PTSS in children following a bush-fire. When distributed to a large sample of families exposed to the disaster, the questionnaire was found to comprise two factors, titled "irritable distress" (e.g., "We fight more with each other") and "involvement" (e.g., "We worry about putting strain on each other"). These factors were found to have good internal consistency (Cronbach's alpha coefficients of .76 and .78, respectively). A further two items were included within the measure to assess maternal overprotection (e.g., "Since the disaster, do you worry more about your children coming to harm?"). McFarlane (1987) did not report the internal consistency for this subscale, but using the present sample we found this to be good (Cronbach's alpha = .85).

Child Measures

Children completed a questionnaire examining their own PTSS at each assessment point. A structured interview assessing for diagnosis of PTSD also was completed at the 6-month assessment. Both of these measures are described here.

Revised Impact of Event Scale, Child Version. The Revised Impact of Event Scale, child version (RIES-C) is a 13-item self-report measure of PTSS for use with children (Dyregrov & Yule, 1995). The overall scale has been shown to have good internal consistency (Cronbach's alpha = .80; Smith, Perrin, Dyregrov, & Yule, 2003).

Anxiety Disorders Interview Schedule for DSM-IV: Child and Parent Versions (ADIS-C/P)–PTSD Schedule. The ADIS-C/P is a semistructured interview schedule devised by Silverman and Albano (1996) for the assessment of anxiety disorders in children and adolescents, based on the diagnostic criteria laid out in DSM-IV. Diagnoses are normally derived using both child and parent responses, but given the maturity of the child and adolescent participants it was decided to rely solely on child report. Only the results of the PTSD schedule are reported here. The ADIS-C/P uses the time frame of the previous month, and includes an assessment of interference with functioning.

Results

Correlations Between Family Factors and Child PTSS

Correlations between child psychopathology and family factors are displayed in Table I. Parent depression at the 2- to 4-week assessment was a significant correlate of child PTSS at the initial and follow-up assessments, whereas 6-month parent depression was correlated with concurrent child PTSS.

Parent rumination and anxiety sensitivity were not significantly associated with child PTSS at either assessment, whereas parental endorsement of worry as a positive strategy was a significant correlate of child PTSS at both 2–4 weeks and 6 months. At the 6-month assessment, family "irritable distress," as reported by parents, was a significant correlate of concurrent child PTSS, whereas maternal overprotection was a significant correlate of concurrent child PTSD diagnosis but not PTSS. Family "involvement" was not significantly related to child PTSS.

These data only provide partial support for hypothesis 1, that is, that parent depression and family functioning would be related to child PTSS.

Table 1. Correlations Between Family Factors and Child Posttraumatic Stress Symptomatology (PTSS)

Family variable	Child PTSS		
	2-4 weeks	6 months	
	RIES-C (n = 55)	RIES-C (n = 39)	PTSD diagnosis (n = 39)
2- to 4-week variables			
Parent BDI	.40***	.40*	.22
RSQ	.23	.15	-.01
ASI	.19	-.06	-.04
MCQ	.36**	.39**	.14
6-month variables			
Parent BDI	—	.44**	.23
FFQ—irritable distress	—	.43*	.30
FFQ—involvement	—	.32	.19
Maternal overprotection	—	.31	.38*

ASI, Anxiety Sensitivity Inventory; BDI, Beck Depression Inventory; FFQ, Family Functioning Questionnaire; MCQ, Meta-Cognitions Questionnaire, positive beliefs about worry subscale; RIES-C, Revised Impact of Event Scale, child version; RSQ, Response Styles Questionnaire, rumination subscale.

* $p < .05$. ** $p < .01$. *** $p < .001$.

Role of Parental Cognitive Styles and Coping in Mediating Relationship Between Parent Depression and Child Psychopathology

To assess whether any of the parental cognitive styles assessed acted as a mediator between parental depression and child PTSS, a series of regression models was performed, according to the criteria of Baron and Kenny (1986). The first criterion, that the independent variable (in this case, parental depression) affects the presumed mediator (the various measures of parental cognitive style), was met by each parental cognitive style variable. The second criterion, that the presumed mediator affects the dependent variable (child PTSS), was met only by parental endorsement of worry. The third criterion, that there be an indirect effect of the independent variable on the dependent variable via the mediator, was met as (a) parental endorsement of worry was related to child PTSS even when parent depression was controlled for, and as (b) the relationship between parent depression and child PTSS decreased when parental endorsement of worry was accounted for (i.e., the β coefficient decreased from .40 to .37). The Sobel (1982) test for indirect effects was also used. Regardless of whether child PTSS at the 2–4 week or 6-month assessment was used as the dependent variable in this test, the one-tailed z scores were significant ($z = 1.76$, $p < .05$, and $z = 1.65$, $p < .05$, respectively). However, because parental endorsement of

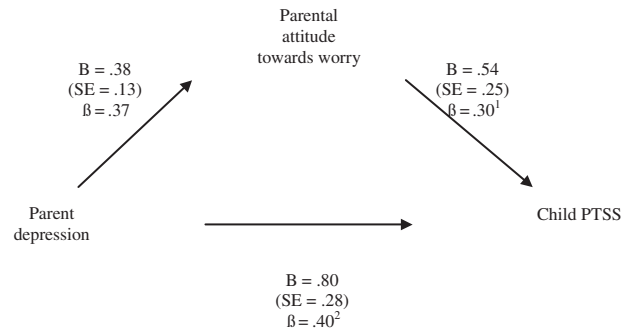


Figure 1. The presumed mediational role of parental attitude towards worry in the relationship between parental depression and child PTSS. PTSS = Posttraumatic Stress Symptomatology. All coefficients are significant at $p < .05$. ¹This coefficient represents the relationship between parental attitude towards worry and child PTSS after parent depression has been accounted for. ²When entered into a regression model of child PTSS at the same time as parental endorsement of worry, this B decreased to .73 ($SE = .28$; $\beta = .37$), but remained significant.

worry only reduced the size of the relationship between parent depression and child PTSS, but did not eliminate it, this suggests that parental endorsement of worry acted as a partial mediator. The final mediational model (with child PTSS at 6 months as the dependent variable) is represented in Figure 1.

These data partially support hypothesis 2, that cognitive styles would mediate the relationship between parent depression and child PTSS.

Discussion

This prospective study investigated the role of family factors in PTSS in child and adolescent ED attendees. The data presented replicated within a mixed sample of MVA and assault survivors the relationship between parent depression and child PTSS (Smith et al., 2001; Wolmer et al., 2000). A less conclusive picture emerged of the relationship between family functioning and child PTSS (Green et al., 1991; McFarlane, 1987). Parental endorsement of worry (but no other parental cognitive style) was found to explain partially the relationship between parental depression and child PTSS.

The major limitation of this study was the relatively low number of parents who participated, allied to the high attrition rate at the follow-up assessment. This may have resulted in a lack of statistical power in testing some of the relationships between variables. Indeed, the power of the one-tailed correlational analyses to detect medium size effects only ranged from .60 for the 6-month variables to .76 for the 2- to 4-week variables. Greater numbers of participating families may therefore have

resulted in a more consistent pattern of results (e.g., regarding family functioning and PTSD diagnosis).

A further limitation concerns the failure (because of time pressures) to ask parents to complete the FFQ at the initial assessment to examine whether this measure had a predictive role. In future, larger studies it is recommended that the role of family functioning relative to parental depression be examined, e.g., it is possible that the variance that these variables account for may be shared.

The role of parental endorsement of worry as a partial mediator between parental depression and child PTSS is noteworthy, given the limitations noted above. Worrisome parents may encourage avoidance and hypervigilance in their children, and serve as an additional reminder of the trauma and its consequences. Parental rumination and anxiety sensitivity may not have been significantly correlated with later child PTSS as they relate to internal processes that may not be expressed openly and thereby may not be modeled by the child.

The findings that initial parental depression was correlated with later child PTSS, and that parental worry partially mediated the relationship between parental depression and child PTSS, provide clear targets for psychological treatments. However, other plausible mediators and moderators have yet to be examined (e.g., genetics, living conditions, and trauma reminders). Given the limitations noted above, more research is needed to replicate these findings, and understand the relationship between family factors and child PTSS.

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References

- Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology, 51*, 1173–1182.
- Beck, A. T., Steer, R. A., & Garbin, M. G. (1988). Psychometric properties of the BDI: 25 years of research. *Clinical Psychology Review, 8*, 77–100.
- Bryant, B., Mayou, R., Wiggs, L., Ehlers, A., & Stores, G. (2004). Psychological consequences of road traffic accidents for children and their mothers. *Psychological Medicine, 34*, 335–346.
- Cartwright-Hatton, S., & Wells, A. (1997). Beliefs about worry and intrusions: The Meta-Cognitions Questionnaire and its correlates. *Journal of Anxiety Disorders, 11*, 279–296.
- Dyregrov, A., & Yule, W. (1995, May). *Screening measures: The development of the UNICEF battery*. Paper presented at the Fourth European Conference on Traumatic Stress, Paris.
- Field, A. P., Argyris, N. G., & Knowles, K. A. (2001). Who's afraid of the big bad wolf: A prospective paradigm to test Rachman's indirect pathways in children. *Behaviour Research and Therapy, 39*, 1259–1276.
- Green, B. L., Korol, M., Grace, M. C., Vary, M. G., Leonard, A. C., Gleser, G. C., et al. (1991). Children and disaster: Age, gender, and parental effects in PTSD symptoms. *Journal of the American Academy of Child Adolescent Psychiatry, 30*, 945–951.
- Kassam-Adams, N., & Winston, F. K. (2004). Predicting child PTSD: The relationship between acute stress disorder and PTSD in injured children. *Journal of American Academy Child and Adolescent Psychiatry, 43*, 403–411.
- McFarlane, A. C. (1987). Family functioning and overprotection following a natural disaster: The longitudinal effects of post-traumatic morbidity. *Australian and New Zealand Journal of Psychiatry, 21*, 210–218.
- Meiser-Stedman, R. (2002). Towards a Cognitive-Behavioral Model of PTSD in Children and Adolescents. *Clinical Child and Family Psychology Review, 5*, 217–232.
- Meiser-Stedman, R., Dalgleish, T., Glucksman, E., Yule, W., & Smith, P. (2005). *Cognitive processes and posttraumatic stress symptomatology in children and adolescents: A prospective study of assault and motor vehicle accident survivors*. Manuscript submitted for publication.
- Meiser-Stedman, R., Yule, W., Smith, P., Glucksman, E., & Dalgleish, T. (in press). Acute stress disorder and posttraumatic stress disorder in children and adolescents involved in assaults and motor vehicle accidents. *American Journal of Psychiatry*.
- Nolen-Hoeksema, S., & Morrow, J. (1991). A prospective study of depression and distress following a natural disaster: The 1989 Loma Prieta earthquake. *Journal of Personality and Social Psychology, 61*, 115–121.
- Reiss, S., Peterson, R. A., Gursky, D. A., & McNally, R. J. (1986). Anxiety sensitivity, anxiety frequency, and the prediction of fearfulness. *Behaviour Research and Therapy, 24*, 1–8.
- Silverman, W. K., & Albano, A. M. (1996). *Anxiety disorder interview schedule for DSM-IV: Child and parent*

- interview schedule*. San Antonio, TX: The Psychological Corporation.
- Smith, P., Perrin, S., Dyregrov, A., & Yule, W. (2003). Principal components analysis of the impact of event scale with children in war. *Personality and Individual Differences*, *34*, 315–322.
- Smith, P., Perrin, S., Yule, W., & Rabe-Hesketh, S. (2001). War exposure and maternal reactions in the psychological adjustment of children from Bosnia-Herzegovina. *Journal of Child Psychology and Psychiatry*, *42*, 395–404.
- Sobel, M. E. (1982). Asymptotic confidence intervals for indirect effects in structural equations models. In S. Leinhardt (Ed.), *Sociological methodology 1982* (pp. 290–312). San Francisco: Jossey-Bass.
- Stallard, P., Velleman, R., & Baldwin, S. (1998). Prospective study of post-traumatic stress disorder in children involved in road traffic accidents. *British Medical Journal*, *317*, 1619–1623.
- Wolmer, L., Laor, N., Gershon, A., Mayes, L. C., & Cohen, D. J. (2000). The mother-child dyad facing trauma: A developmental outlook. *Journal of Nervous and Mental Disease*, *188*, 409–415.
- Zun, L. S., & Rosen, J. M. (2003). Psychosocial needs of young persons who are victims of interpersonal violence. *Pediatric Emergency Care*, *19*, 15–19.