

The role of the family in child and adolescent posttraumatic stress following attendance at an
emergency department

Key words: PTSD, children, parents.

Running Head: FAMILY INFLUENCES ON CHILD PTSD

Abstract

Objective: This study was conducted with the aim of evaluating 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 semi-structured interviews relating to their psychopathology and cognitive styles at 2-4 weeks and 6 months posttrauma. 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.

Introduction

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), while 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 non-medical 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 (McFarlane, 1987; Green, et al., 1991).

In the present study our team investigated family factors prospectively in child and adolescent ED attendees who were seen for 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. Since 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.

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, 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, 2004). 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 decided therefore 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: 1) Parental depression and family functioning would be correlated with child PTSS in an ED population, as observed in previous studies of non-medical populations; and 2) The relationship between parental depression and child PTSS would be mediated by maladaptive maternal cognitive styles.

Method

Participants

Participants consisted of 10-16 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 due to inaccurate or incomplete records at the ED, 116 (33.8%) did not wish to participate, two (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 non-participants (i.e. those children who could not be contacted or did not consent to participate in the study) in terms of 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 non-participants (mean 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 two 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 post-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 semi-structured interview at the 6-month time point that examined posttraumatic stress disorder (PTSD) diagnostic status.

Of the 66 families who completed the 2-4 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 terms of 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 2-4 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 (BDI). The 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 sub-scale; RSQ). The 22-item rumination sub-scale 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 (ASI). The 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 sub-scale; MCQ). The positive beliefs sub-scale of the MCQ was used to assess parents' positive views about the usefulness of worrying. The MCQ was devised by Cartwright-Hatton and Wells (1997) in order to measure beliefs about worry and intrusive thoughts. The 19-item positive beliefs about worry sub-scale was found to have good internal consistency (Cronbach's alpha = .87).

Family Functioning Questionnaire (FFQ). The 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 sub-scale, 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 (RIES-C). The 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 semi-structured 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 1. Parent depression at the 2-4 week assessment was a significant correlate of child PTSS at the initial and follow-up assessments, while 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, while 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, while 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, i.e. that parent depression and family functioning would be related to child PTSS.

Role of parental cognitive styles and coping in mediating relationship between parent depression and child psychopathology

In order 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 i) parental endorsement of worry was related to child PTSS even when parent depression was controlled for, and as ii) 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, since parental endorsement of 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 (McFarlane, 1987; Green, et al., 1991). 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 2-4 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, trauma reminders etc). 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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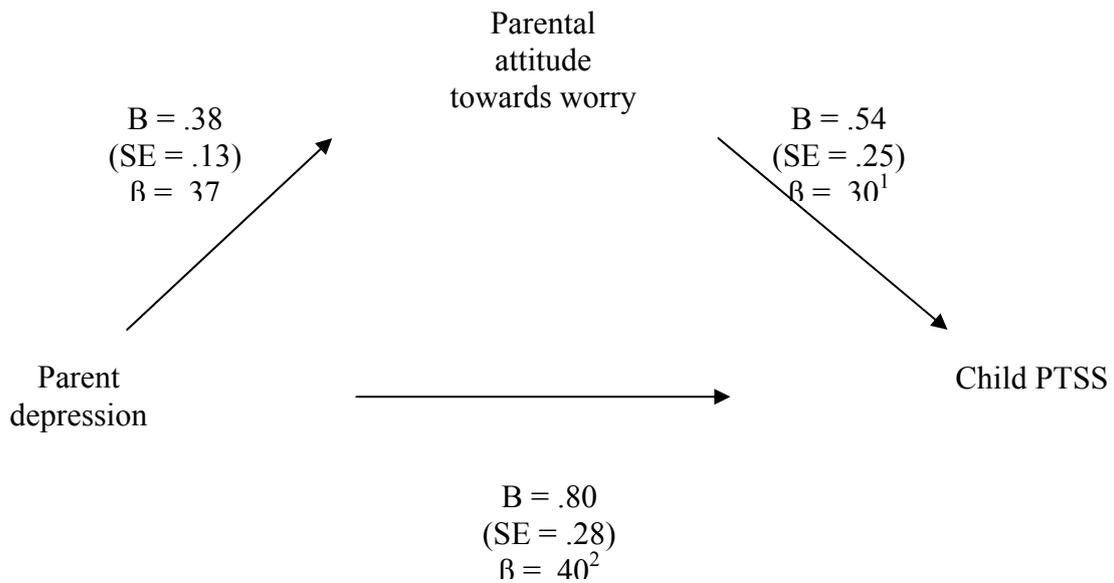
Table 1. Correlations between family factors and child PTSS

Family Variable	Child PTSS		
	2-4 weeks	6 months	
	RIES-C	RIES-C	PTSD diagnosis
2-4 week variables:	(n=55)	(n=39)	(n=39)
Parent BDI	.40 ^{***}	.40 [*]	.22
RSQ	.23	.15	-.01
ASI	.19	-.06	-.04
MCQ	.36 ^{**}	.39 ^{**}	.14
6 month variables:	-	(n=33)	(n=33)
Parent BDI	-	.44 ^{**}	.23
FFQ – irritable distress	-	.43 [*]	.30
FFQ – involvement	-	.32	.19
Maternal overprotection	-	.31	.38 [*]

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

* = <.05, ** = <.01, ***=<.001

Figure 1. The presumed mediational role of parental attitude towards worry in the relationship between parental depression and child PTSS.



Note. 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.

PTSS = Posttraumatic Stress Symptomatology.

All coefficients are significant at $p < .05$.