European Journal of Trauma & Dissociation 3 (2019) 125–133

Available online at
ScienceDirect
www.sciencedirect.com

Elsevier Masson France
EM|consulte
www.em-consulte.com

Research Paper

Exploration of relationship between parental distress, family functioning and post-traumatic symptoms in children

A. Gallo *, C. Wertz, S. Kairis, A. Blavier

ULiège, Centre d'expertise en psychotraumatismes et psychologie légale, quartier Agora, place des Orateurs 1, 4000 Liège, Belgium

ARTICLE INFO

Article history:
Received 13 February 2018
Received in revised form 31 May 2018
Accepted 3 June 2018

Keywords:
Children
Family functioning
Parental distress
PTSD
Primary care

ABSTRACT

We investigated the links between peritraumatic distress in children and in their parents following a potentially traumatic event, focusing specifically on the role that parents and family functioning can play in the development and maintenance of post-traumatic disorders in children. To this end, we examined a population of 41 children (aged 8 and above), and their parents, who had been admitted to the emergency room of a pediatric hospital due to an accident. The design included a two-step assessment: immediate reactions (in the hours following the event) and delayed reactions (5–8 weeks after the event). We used six questionnaires to assess reactions. The results indicated a statistically significant positive correlation between the intensity of the peri-traumatic distress of the parents and the level of post-traumatic symptoms observed later (5 to 8 weeks after the event) in the questionnaires administered to the children. Regarding educational practices, differences appear to be linked to maternal education practice and to the severity of child's symptomatology. Finally, a link has been established between changes within the family dynamic after a potentially traumatic event and the severity of child's posttraumatic symptoms. This study showed the extent to which the parents' initial reactions can be decisive in the outcome for a child who has experienced a potentially traumatic event. The study highlights the importance of assessing parental responses as well as paying attention to the children when they arrive in a pediatric emergency room. The results are relevant for prevention and treatment of PTSD in children, as the integration of this parental dimension early on in the process may lead to improved identification of which young patients are at risk of developing post-traumatic symptomatology.

1. Introduction

A traumatic event can lead children to engage in a disorganised pattern of behaviour (APA, 2000). A traumatic event is described as an exceptional event, according to DSM-V (APA, 2013), but it may also refer to any potential stressor event that deals a blow to physical and psychological integrity. This type of event can impact both the victim and the family environment (Camisasca, 2011). Different types of reactions (immediate, post-immediate and chronic) can usually be distinguished. Immediate reactions are auto-protective and last a few hours before disappearing (Olliac, 2012). These reactions are adaptive and initiate a heightened alertness that leads to an attitude of caution (Chidiac & Crocq, 2010). However, children do not always have the resources necessary to react properly (Josse, 2011). In fact, Chidiac and Crocq (2010) described four immediate reactions that are characterized as useless: sideration, agitation, flight, and automatic activity. These reactions can lead to distress, which increases the probability of developing PTSD (Brewin et al., 2002; Ford, 2009). Post-immediate reactions are considered as acute stress and consist in intrusive distressing recollection, avoidance (people, places, events. . .), increased arousal (difficulty sleeping and concentrating, irritation) (DSM-V, 2013). These reactions are adaptive at the beginning but when they become to be chronic they are considered as D PTSD itself, which is no adaptive anymore. Le Brocque, Hendrikz and Kenardy (2009) have distinguished four trajectories of evolution in children following a traumatic event: 1) no symptom; 2) symptoms that will disappear spontaneously; 3) a few symptoms at the beginning that will get worse; and 4) chronicization of symptoms. Symptoms of PTSD are characterized as reliving, avoidance and neurovegetative hyperactivity (Meiser-Stedman, Dalgeish, Smith, Yule, & Glucksman, 2007).

* Corresponding author.
E-mail addresses: Alicia.Gallo@uliege.be (A. Gallo), Celine.Wertz@uliege.be (C. Wertz), Sophie.Kairis100@gmail.com (S. Kairis), Adelaide.Blavier@uliege.be (A. Blavier).

https://doi.org/10.1016/j.ejtd.2018.06.001
2468-7499/

The prevalence of children developing PTSD is variable according of different studies, and various factors are involved in this process. Age and development play an important role in the perception of the threat and danger posed by a situation (Josse, 2011; Bailly, 2001). Moreover, research has identified other risk and protective factors, such as sex or environment. Indeed, young girls are more likely than boys to develop PTSD (Nugent, Ostrowski, Christopher, & Delahanty, 2006). Children's reactions are difficult for parents to evaluate (Zuber and Sadlier, 2008): either children hide their sufferings or parents do not see them because of their own suffering. In this context, it is necessary to observe both parents and children. Parents might overestimate children's symptoms if they are themselves experiencing distress, or they may underestimate a child's symptoms if the child is hiding his/her symptoms (Kassam-Adams et al., 2006). Tareen, Garralda and Hodes (2007) showed the importance of secondary traumatisation of parents after a traumatic event experienced by the child.

Banyard, Englund and Rozelle (2001) showed that family context is a significant mediator between the potentially traumatic event and the negative effect of this event on children. Taïeb et al. (2003) refined this research and showed that within the family context, it is necessary to pay attention to "parents" reactions, their receptiveness, their psychological functioning, their psychopathological antecedents and the quality of their interactions between family members. Morris (2010) showed that parental warm was an important predictor regarding children's symptoms: few parental warm was associated with more symptoms for children. Valentino, Berkowitz and Stover (2010) tested this theory and showed that hostile parents lead to more difficulties in children's adjustment following a potentially traumatic event. Family environment is thus a main factor in the way the child is going to use his/her resources and to adopt an adaptive reaction after a potentially traumatic event (Punamäki, Qouta and El-Sarraj, 2001). Indeed, parents' reactions have an impact on the post-traumatic environment. If parents are present during the event with the child, they can protect him/her (Josse, 2011), and parental reaction will emphasize or diminish the risk of developing difficulties. If the parent is reassuring, the child will feel more confident and look into his/her own resources. On the contrary, if the parents feel helpless, the child can be disturbed. Moreover, if parents' reactions and parental distress are excessive during a potentially traumatic event (Bailly, 2001; Josse, 2011; Pynoos, Steinberg and Piacentini, 1999), this increases anxiety and the potential for PTSD to the child.

Studies on the relationship between the symptoms of parents and children have nonetheless produced varying results. Some studies showed that there was no link (Winston et al., 2002). By contrast, other studies showed that after an injury there was a link between the symptoms of parents and children (Kassam-Adams, Fleisher, & Winston, 2009). Ostrowski, Ciesla, Lee, Irish, Christopher and Delahanty (2011) showed that at two weeks after the event family posttraumatic stress symptoms (PTSS) was a predictor of a child's PTSS 6 within the six weeks that followed. However, with respect to PTSD, studies show a more significant link. Nugent et al. (2006) showed that parents' initial reaction after a potentially traumatic event was a predictor of PTSD in children. Moreover, children tend to judge the severity of the event by observing their parent's reaction. Ehlers, Mayou and Bryant (2003) showed the importance of cognitive strategies that children can adopt after a potentially traumatic event with respect to the parental reaction. These include thought suppression, avoidance, rumination, and dissociation. These strategies allow the child to control the sense of the threat but also contribute to maintenance of the problem. Moreover, not talking about the event due to fear of causing damage to other members of the family leads to a vicious cycle for the child because this keeps them in a state of avoidance of the situation (Smith, Perrin, Yule, & Rabe-Hesketh, 2001). Children fear burdening their parents by exposing their feelings (Zuber and Sadlier, 2008). Other research has described the link between anxiety in children and family relations (control and warmth). The "affectionless control" for example is a parental style composed of overprotection and no affection, a style that contributes to the maintenance of a child's anxiety and distress (Meiser-Stedman et al., 2005; McFarlane (1987a, b).

Scherringa and Zeanah (2001) suggested that relational PTSD may explain the link between the symptoms of parents and children during a traumatic event. They explained that parents and children can have either different or similar perceptions of the event. Three educational practices have emerged as a result of this concept:

- withdrawal, parents who were not available due to the difficulties they had after the potentially traumatic event;
- overprotection of the child because they feared a second trauma (guilt from not being able to protect the child);
- an over-anxious state as a result of the event which leads them to become a type of "inspector" who questions the child over and over again about the event. Each of these practices comes with drawbacks and advantages.

Within this theoretical framework, this study had two main objectives. The first was to investigate the links between children and their parents' peritraumatic distress after a potentially traumatic event, with a focus on the role that parent and family functioning can play in the development and maintenance of child's post-traumatic symptoms. The second objective was to explore the role of family functioning in the appearance of a child's PTSD. It is important to emphasize that we sought to assess children and parent's distress. For some, we can observe traumatic symptoms but not trauma. As we use these terms, we mean "distress".

We tested six hypotheses during this study. The first two hypotheses aim to answer to the first objective. The first hypothesis concerned the level of peritraumatic distress expressed by the parent: the more the parent expresses peritraumatic distress, the more the child's peritraumatic distress will be elevated in the hours following the potentially traumatic event; but also the likelihood that child's symptomology appear within 5 to 8 weeks increase. Moreover, we expected to observe a positive association between the PTSS of the parent and the child 5 to 8 weeks after the event. The second hypothesis referred to the child's own distress after the event: the more the child expresses peritraumatic distress, the more the PTSS will be elevated 5 to 8 weeks later. The same should be observed in the parents' case. The following hypotheses regard the second objective. The third hypothesis focused on the family dynamic evaluated by the child. We hypothesized that when the child reports negative educational practices or difficulties in the general functioning of the family, he or she will present a more severe symptomatology of PTSD 5 to 8 weeks after the event. On the contrary, when the practices are positive, the child's adaptation will be easier. In the end, we sought to observe a link between the parental practices perceived by the child, the overall family functioning, and peritraumatic distress. The fourth hypothesis was that parents' "irritable distress", "implication" and "overprotection" would be associated with increased symptoms of PTSD in the child 5 to 8 weeks later. These three variables would also be linked to increased symptomology in the parents' case 5 to 8 weeks later. Finally, we tested through theses hypotheses the link between the two objectives. The fifth hypothesis concerned the observation of differences between the child's level of symptomatology and all the variables of our study regarding the child (PDI, FAD, PEPPE and FFQ). Finally, the sixth hypothesis was explorative and asked which variables predict PTSD symptoms in a child?

2. Method

We used a longitudinal design to test our hypotheses. Meetings were held with participants in 2 sessions during which we evaluated the evolution of the child's and the parent's reactions to the potentially traumatic event as well as the role of familial variables. One original feature of this study was the evaluation of the peritraumatic distress immediately after exposure to the potentially traumatic event.

Participants were children, along with their parents, who were admitted to a pediatric emergency department in Liège, Belgium. They came to the hospital because of an accident or due to high levels of somatic pain. The children were born between 1999 and 2005. Children were mostly victims of accidents during which parents were not present and the child's injuries are not life threatening. Moreover, the accidents were not serious, and only a few children presented PTSD. Younger children were excluded from the study because they were too young according to the type of questionnaires used for this study, and older children were directed to the adult emergency department. The researcher was present all day from 5 am to 8 pm on the week days, and from 2 pm to 8 pm on Saturdays and Sundays for a period of 2 months. Our initial population was composed of 64 children, each with one parent. However, 23 participants (child/parent dyad) have not responded to the second stage of the study (36% of the initial sample). These participants either did not want to be part of the next evaluation or the researcher could not reach them, or they cancelled all their appointments.

2.1. Procedure

When a child was admitted, the researcher approached them and their family and presented the research with an informative letter to the parent and the child. We obtained written consent from the parent and verbal consent from the child.

Even minor accidents were included because a pediatric emergency department is considered to be a particularly anxious environment (noise, excitement, anguish) (Duverger, Chocard, Malka, & Ninus, 2011). Indeed, authors (Rouvière & Bailly, 2005) insist on the fact that hospitals and care remain potentially traumatic for children.

When the consent was given, a ten-minute interview was conducted to collect anamnestic information including age, reason for hospitalization, and the way the parent was informed about the accident. Following this, participants completed the Peri-Traumatic Distress Inventory (PDI).

Five to eight weeks after their visit to the pediatric emergency department, parents were contacted by phone to schedule a second interview at home. This duration of the time elapsed between the 2 sessions was established because a period of 4 weeks constitutes a necessary criteria for considering a diagnosis of PTSD. During this second meeting, the parents and their child filled in different questionnaires (Child Post-Traumatic Stress Reaction Index; *Pratiques éducatives parentales perçues par les enfants* [Parental Educational Practices as Perceived by Child]; Post-Traumatic Stress Disorder Checklist-Specific (PCL-S); Family Assessment Device (FAD); Family Functioning Questionnaire) in separate rooms: the experimenter remained with the child to help them and to avoid any influence or any restriction imposed on their responses. The final part of this meeting consisted of a ten-minute interview to go into further detail with respect to some information and to collect participants' opinions.

2.1.1. The Peri-Traumatic Distress Inventory (PDI)

This self-report, 13-item questionnaire was created by Brunet et al. (2001) to evaluate the level of distress felt during and directly after a potentially traumatic event. The alpha value is 0,76 for the control group. Each item is coded on a Likert-scale of 5 points (0: "not true at all" to 4: "extremely true"). The total score ranges from 0 to 52. A higher score indicates a higher level of distress. The difference between the child version of this form and adult version is that in the child version items are written in language that is age appropriate and readily understandable.

2.1.2. Child Post-Traumatic Stress Reaction Index (CPTS-RI)

This scale allows the child's post traumatic stress reactions to be assessed after a potentially traumatic event. We used the French version translated by Robaey and Leroux (2001), whose alpha value is 0,87. It was administered as a semi-structured interview during which the researcher read each item to the child to ensure correct understanding. It consists of a 20-item questionnaire to which the child responds using a 5-point Likert-scale (0: "never" to 4: "almost of the time"). Reverse scoring is required for items 7, 12 and 15. The total score ranges from 0 to 80 (Bui et al., 2010). Frederick (1985b) established 5 categories of the scoring to characterize the symptomatology: from 0 to 11 (unlikely), from 12 to 24 (mild), from 25 to 39 (moderate), from 40 to 59 (severe) and from 60 to 80 (very severe).

2.1.3. Post-Traumatic Stress Disorder Checklist-Specific (PCL-S)

This questionnaire is only for parents, and the evaluation focuses on PTSD symptoms (Weathers, Litz, Herman, Husak, & Keane, 1993). It is a self-report questionnaire that measures the three symptoms of PTSD: repetition, avoidance and neurovegetative hyperactivity (Ventureyra, Yao, Cottraux, Note, & De Mey-Guillarda, 2001). It includes 17 items coding on a scale from 1 to 5 (1: "not at all", 2: "a little", 3: "sometimes", 4: "often", 5: "very often"). Scores vary from 17 to 85: higher scores indicate higher PTSD symptoms. A score of 44 or above requires specific medical attention.

2.1.4. Family Assessment Device (FAD): scale of general functioning

This self-report scale was developed by Epstein, Baldwin and Bishop in 1983. It takes into account 7 aspects of family functioning. It's alpha value is 0.78. We used only the general-functioning scale that consisted of 12 items focusing on communication, support, affective expression, strain, leadership, problem solving and affective investment. When any item receives a higher score, it means the family is experiencing difficulties in that area (Miller et al., 2000).

2.1.5. Family Functioning Questionnaire (McFarlane)

Designed by Alexander C. McFarlane, this questionnaire measures the role of family functioning in the maintenance of PTSD symptoms in children (Meiser-Stedman, Yule, Dalgleish, Smith, & Glucksman, 2005). It's alpha value is 0,76 for the "irritable distress" and 0,78 for "involvement". It consists of an 11-item questionnaire coded on a 3-point Likert scale (0: "not at all", 1: "a little", 2: "a lot"). Three syndromes are represented: greater cohesion and re-evaluation of goals; withdrawal, disinvestment and breakup in relation to the family; distress and avoidance of traumatic stimuli. A fourth syndrome has been added, that of overprotection. Using statistical analyses, the author identified three factors: "irritable distress", "implication", "overprotection" (McFarlane, 1987a). Irritable distress is characterized by conflict, irritability, withdrawal, and decreased pleasure linked to familial activities. Implication means that families have a more precise view of their own goals, are closer than before, and talk more when problems occur. Overprotection refers to the parent exaggerating the protection over their children carrying anguish about what could happen to the child.

2.1.6. Pratiques éducatives parentales perçues par les enfants (PEPPE)

This questionnaire was created by Hazzard et al. in 1983. It is an instrument for measuring children's evaluation of their parents.

Nine items refer to positive behaviors (support, affection, reward or autonomy) and nine to negative behaviors (punishment, control). Children have to evaluate on a 5-point Likert-scale how often these behaviours occur (0: "never" to 4: "very often") (Durning and Fortin, 2000).

2.2. Statistics analysis

We carried out a statistical analysis using STATISTICA 10.0. First, we checked the normality of the data with the W of Shapiro-Wilk. As the normality was not respected due to the small size of our sample, we used non-parametric statistics. We added a multiple regression even though the condition of homoscedasticity was not included; for this reason, some results have to be analysed with caution.

Descriptive statistics were used to provide a precise description of our sample. Correlations (R of Spearman) were used to emphasize some links between variables. Then we used variance analysis with Mann-Whitney U test when we compared two independent samples (e.g. in order to compare boys and girls). We also used Mann-Whitney test in order to differentiate children with several PTSD symptoms (light *vs* moderate to high) from children with fewer PTSD symptoms. We also conducted Kruskal-Wallis analyses in order when we compared more than two independent samples (e.g. family type). Finally, we conducted a multiple regression to analyse variables predictive of the severity of symptoms.

A probability of 0.05 was used as a significance threshold but we also considered $P < 0.10$ in order to discuss trend towards significance.

3. Results

3.1. Descriptive analysis

We would like to emphasize the rate of participants who drop out of the study between T1 and T2. In fact, we lost 36% of our sample between the time of two of our studies. This fact can be explain because participants decide not to continue the phase 2 or we were not able to contact them to make an appointment or they cancelled it. Maybe, they do not see the point to continue this research because they do not feel the need to.

We focused on the sample composed of 41 participants who completed the entire study (and the 2 sessions, as shown in Table 1). Among them, 61% were girls and 39% were boys. The children's average age was 10.73 (± 2.11) years. We listed 7 types of accidents: horse-back riding, fall, skiing or skateboarding or bike, domestic accident, sports, school and other type. The most frequent type was "other" (19.5%) followed by "domestic accident" (17.1), then "sports" (14.6) and all other categories came in last at 12.2%. 13 children (31.7%) were hospitalized after they arrived at the pediatric emergency department, and 28 children were allowed to return home directly after the medical exam at the pediatric emergency department (68.3%). With respect to family type, 75.6% of children were in a nuclear family, 14 6% in a blended family, and 9.8% in a single-parent family.

The parent sample was composed of 41 parents: 37 mothers (90%), 3 fathers (7%) and 1 sister (2.5%) with an average age of 40.05 (± 5.43) years. With respect to their education, 31.7% of them finished high school, while 2.4% only completed primary school.

The mean Peri-Traumatic Distress Inventory (PDI) score for children was 13.76 (± 8.13) and the mean score for parents on this scale was 8.32 (± 6.93). Above 14, the score is considered to represent significant distress. 37% of children (n = 15) and 17% of parents (n = 7) were in a state of significant distress. These results suggest that children presented a peritraumatic distress level that was significantly higher than the level experienced by their parents.

Table 1
Demographic information.

	T2 Group n = 41			T1 Group n = 64		
	Mean	E-T	Medium	Mean	E-T	Medium
Age	10.73	2.11	11	10.55	2.04	11
			n	%	n	%
Sex						
Girl			25	61	38	59.4
Boy			16	39	26	40.6
Hospitalization						
Yes			13	31.7	18	28.1
No			28	68.3	46	71.9
Accident						
Horse riding			5	12.2	7	10.9
Fall			5	12.2	6	9.4
Ski, bike			5	12.2	8	12.5
Domestic accident			7	17.1	13	20.3
Sports			6	14.6	11	17.2
School			5	12.2	7	10.9
Other			8	19.5	12	18.7
Family configuration						
Nuclear			31	75.5	–	
Blended			6	14.6	–	
Single-parent			4	9.8	–	

Five to eight weeks later, the mean score on the Child Post-Traumatic Stress Reaction Index was 16.34 (± 10,47). In our sample, 32% of the children obtained a score indicating a slight probability of PTSD (n = 14), 46% presented a slight level of PTSD (n = 19), 15% (n = 6) a moderate level of PTSD, and 5% (n = 2) a severe level PTSD.

For parents, the score on the Post-Traumatic Stress Disorder Checklist-Specific (PCL-S) was 22.80 (± 8.91). This score is low. Only 7% of parents were high on this scale, indicating the presence of PTSD (n = 3).

Concerning the Family Assessment Device (FAD), the mean score was 20.46 (± 4.96). For the "Pratiques Educatives Parentales Perçues par les Enfants" (PEPPE), the children's average scores have been presented in Table 2. For maternal practices, they scored of 27.7 (n = 40; ± 5.14) for positive practices and 10.02 (n = 40, ± 4.63) for negative practices. Where fathers were concerned, children scored a mean of 23.03 (n = 37, ± 7.20) for positive practices and 10.68 for negative practices (n = 37, ± 5.31).

Finally, the scores from the Family Functioning Questionnaire (FFQ) were as follows for the different subscales: 0.41 (± 0.97) for irritable distress, 2.37 (± 1.73) for engagement, and 1.80 (± 1.42) for overprotection. As the maximum scores on these scales were 12.8 and 4 respectively, our results showed that participants had low scores, especially with respect to irritable distress.

3.2. Analysis of variables linked to PTSD in children

3.2.1. Difference between mothers and fathers

There was a significant difference on the level of PTSD symptoms parents but not on peritraumatic distress. Fathers (n = 3) experienced less PTSD symptoms than mothers (n = 37, see Table 4). Given the small number of fathers in the sample, care should be taken not to over-interpret this result.

3.2.2. Age

Spearman's correlations showed no significant relationship between the child's age and the peritraumatic distress of the child or the parent; that child's age does not appear to have an effect on either the child's PTSD symptoms or the parent's PTSD symptoms.

Table 2
Descriptive data for children and parents for all questionnaires.

	n	Mean	E-T	Medium
PDI-children	41	13.76	8.13	12
	64	12.97	9.95	12
CPTS-RI	41	16.34	10.48	14
PEPPE-mother				
Positives	40	27.17	5.14	28
Negatives	40	10.02	4.63	9
PEPPE-father				
Positives	37	23.03	7.2	24
Negatives	37	10.68	5.31	11
PDI-parents				
	41	8.32	6.93	7
	64	8.52	6.92	7
PCL-S				
Total	41	22.8	8.91	20
Repetition	41	7.61	3.87	6
Avoidance	41	8.19	1.99	7
Hyperactivity	41	7	4.01	5
FAD	41	20.46	4.96	21
FFQ				
Irritable distress	41	0.41	0.97	0
Implication	41	2.37	1.73	2
Overprotection	41	1.8	1.42	1

When we split children in two groups (less than 12 years-old and 12 years of age or older) to see if there was an effect of the child's age, no significant differences could be observed (Table 3).

3.2.3. Hospitalization

The hospitalization of the child, as opposed to allowing the child to go home after the medical exam, had considerable impact on the PTSD symptoms in children ($P = 0.010$) but not on parents ($P = 0.793$). Scores on the Child Post-Traumatic Stress Reaction Index were significantly higher (mean row = 27.96, $n = 13$) for children who were hospitalized compared to children not hospitalized (mean row = 17.77, $n = 28$, see Table 3).

3.3. Results regarding the first hypothesis

We sought to observe a positive correlation between parents' and children's peritraumatic distress at T1. We used Spearman correlations, and this hypothesis was confirmed ($r = 0.31$; $P = 0.014$). Therefore, the more the parental distress was elevated directly after the event, the more the child's distress was also elevated. However, at T2, this correlation was no longer significant ($r = 0.25$; $P = 0.108$). Nevertheless, we noted a somewhat significant correlation between children's total score of PTSD and the parents' neurovegetative hyperactivity ($r = 0.29$; $P = 0.064$).

We also used Goodman and Kruskal's gamma because our sample contained a lot of identical scores for parents' PTSD. With these analyses, we showed a significant correlation between children's PTSD symptoms and parents' neurovegetative hyperactivity ($\gamma = 0.31$; $P = 0.028$). The more the parent manifested symptoms of neurovegetative hyperactivity, the more the child manifested a high number of PTSD symptoms 5 to 8 weeks after the event. Moreover, with this test, we highlighted a nearly significant association between child and parent PTSD ($\gamma = 0.21$; $P = 0.076$). It seemed that the more parents manifested PTSD symptoms 5 to 8 weeks after the event, the more children also showed PTSD symptoms (Table 4).

3.4. Results regarding the second hypothesis

We expected to observe a link between the intensity of peritraumatic distress at T1 and the intensity of PTSD at T2 both in children and parents. Results showed a positive link between a parent's peritraumatic distress and the number of PTSD symptoms in the child ($r = 0.31$; $P = 0.046$). This means that the more the parent manifested symptoms during the first few hours following the event, the more the child presented PTSD symptoms 5 to 8 weeks after. The presence of these symptoms directly after the event were also significantly linked to the parent's PTSD symptoms ($r = 0.42$; $P = 0.006$). More specifically, the more the parent manifested severe distress in the pediatric emergency department, the more the child presented avoidance behaviors and neurovegetative hyperactivity 5 to 8 weeks afterwards (Table 5).

3.5. Results regarding the third hypothesis

We hypothesized that educational practices and family functioning would be linked to children's PTSD at T2. Correlations between educational practices perceived by children, the score on

Table 3
Results of U Mann-Whitney and Kruskal-Wallis regarding sociodemographic data.

	n (%)	Mean rank			
		PDI-children	PDI-parent	PTSD-children	PTSD-parent
Children's sex					
Girl	25 (61)	20.24	19.9	20.2	21.86
Boy	16 (39)	22.18	22.72	22.25	19.66
U (*P*)		181 (0.62)	172.5 (0.47)	180 (0.61)	178.5 (0.57)
Age category of children					
Children (< 12 years old)	27 (66)	21.85	20.93	21.65	22.93
Adolescent (> = 12 years old)	14 (34)	19.36	21.14	19.75	17.29
U (*P*)		166 (−0.54)	187 (−0.97)	171.5 (−0.63)	137 (−0.16)
Parenthood link					
Mother	37 (90.2)	–	20.73	–	21.68
Father	3 (7.3)	–	17.67	–	6
U (*P*)		–	47 (−0.7)	–	12 (0.02)**
Hospitalization					
Yes	13 (31.7)	22.35	24.69	27.96	21.73
No	28 (68.3)	20.37	19.29	17.77	20.66
U (*P*)		164.5 (−0.62)	134 (−0.19)	91.5 (0.01)**	172.5 (−0.79)
Family type					
Nuclear	31 (75.6)	21.52	21.32	21.56	20.94
Blended	6 (14.6)	21.17	25.17	22.5	23.67
Single-parent	4 (9.8)	16.75	12.25	14.37	17.5
H (*P*)		0.56 (−0.75)	2.9 (−0.23)	1.4 (−0.5)	0.65 (−0.72)

** $P < 0.05$.

Table 4
Spearman correlations, Goodman and Kruskal's Gamma between PSTD scores in children and parents.

	r (P)	Gamma (P)
Child-PTSD & Parent-PTSD total	0.25 (0.11)	0.21 (0.08)*
Child-PTSD & Parent-PTSD repetition	0.22 (0.17)	0.20 (0.12)
Child-PTSD & Parent-PTSD avoidance	0.21 (0.19)	0.21 (0.12)
Child-PTSD & Parent-PTSD neurovegetative hyperactivity	0.29 (0.06)*	0.31 (0.03)**

$n = 41$.
* $P < 0.1$.
** $P < 0.05$.

Table 5
Spearman correlations, Goodman and Kruskal's gamma between PSTD score and peritraumatic distress score.

	PDI children		PDI parent	
	r (P)	γ (P)	r (P)	γ (P)
PTSD children	0.21 (0.185)	0.16 (0.152)	0.31 (0.046)**	0.24 (0.03)**
PTSD parent	−0.03 (0.854)	−0.02 (0.837)	0.42 (0.006)***	0.35 (0.003)***
PSTD repetition	0.07 (0.668)	0.06 (0.636)	0.48 (0.002)***	0.46 (< 0.001)***
PTSD avoidance	−0.20 (0.214)	−0.19 (0.155)	0.20 (0.215)	0.18 (0.174)
PTSD hyperactivity	−0.12 (0.473)	−0.10 (0.475)	0.29 (0.065)*	0.30 (0.035)**

$n = 41$.
* $P < 0.1$.
** $P < 0.05$.
*** $P < 0.01$.

Table 6
Spearman correlations and Goodman Gamma between FFQ's scores and children's PTSD.

	PTSD children		
	n	r (P)	γ (P)
	FFQ		
Irritable distress	41	0.32 (0.042)**	0.41 (0.017)**
Implication	41	0.26 (0.095)*	0.023 (0.063)*
Overprotection	41	−0.06 (0.732)	−0.05 (0.680)

* $P < 0.1$.
** $P < 0.05$.

Table 7
Spearman correlations and Goodman and Kruskal's Gamma between FFQ scores and parents' PTSD.

	PTSD parent		
	n	r (P)	γ (P)
	FFQ		
Irritable distress	41	0.26 (0.089)*	0.37 (0.033)**
Implication	41	0.63 (< 0.001)***	0.57 (< 0.001)***
Overprotection	41	0.52 (< 0.001)***	0.48 (<0.001)***

* $P < 0.1$.
** $P < 0.05$.
*** $P < 0.01$.

the FAD (family assessment device), and the children's PTSD scores were not significant. However, the relationship between the children's PTSD symptoms and those educational practices of the mothers which are seen as negative led to significant results ($r = 0.27$; $P = 0.086$).

We also sought to evaluate whether educational practices and family functioning had an impact on peritraumatic distress. No correlation was significant.

3.6. Results regarding the fourth hypothesis

For this hypothesis, we expected to show that higher scores of "irritable distress", "implication" and "overprotection" in family functioning after a traumatic event would be linked with symptoms of PTSD in children at T2. Spearman correlation showed a significant and positive correlation between children's PTSD and "irritable distress" ($r = 0.32$; $P = 0.042$). The more "irritable distress" was manifested the more PTSD symptoms were severe for children. There was also a correlation that is closed to significance between children's PTSD and "implication" ($r = 0.26$; $P = 0.095$). Closeness and involvement after a potentially traumatic event trigger more post-traumatic symptoms for the child (Table 6).

We also expected to observe a positive link between parents' PTSD symptoms and the FFQ's scores. Spearman correlations showed a positive link between parents' PTSD and "implication" ($r = 0.63$; $P < 0.001$) and "overprotection" ($r = 0.52$; $P = 0.001$). It revealed that when parents felt a high level of PTSD symptoms, the family engaged in more "implication", so everyone was involved in each other's life and parents overprotected their children. Moreover, there was a slightly positive significance between "irritable distress" and parents' PTSD symptoms ($r = 0.27$: $P = 0.089$). More precisely, Goodman and Kruskal's gamma showed a significant link ($\gamma = 0.37$; $P = .033$, see Table 7).

3.7. Results regarding the fifth hypothesis

Significant differences were sought between groups of children divide according to the severity of PTSD symptoms (less probable, slight, moderate to severe) and all of variables of the study. Mann-Whitney U test revealed only one difference among 3 groups of children with respect to their scores on the CPTS-RI. In our sample, three groups appeared: 34% present no PTSD, 46% present a slight PTSD, and 20% a moderate to high PTSD.

We observed a significant difference between the "no PTSD" group and the "moderate to high PTSD" group ($P = 0.035$) with respect to the perceived negative and maternal parental education. The more negative educational practices the children perceived, the more they presented PTSD symptoms. Moreover, the difference between the two groups is close to significant ($P = 0.05$) with respect to the parents' peritraumatic distress. When a parent presented more peritraumatic distress following the event, children presented more PTSD symptoms. This difference tended to also be significant between "no PTSD" and "slight PTSD" groups ($P = 0.065$). Parents of children who presented slight PTSD symptoms were more distressed after the event than parents whose child had no PTSD symptoms. Between these two groups, we noted differences close to significant regarding parent's PTSD ($P = 0.098$) and neurovegetative hyperactivity ($P = 0.065$). Finally, between "slight PTSD" and "moderate to severe PTSD" groups, a difference close to significant was seen ($P = 0.066$) for "overprotection". However, in contrast to our hypothesis, this difference went in the direction of fewer children presenting PTSD symptoms the more parents overprotected.

4. Discussion

The main goal of this study was to analyse the effect of different factors that could play a role in a child's adaptation following a potentially traumatic event. We focused on the evaluation of peritraumatic distress in children and their parents after their admission to a pediatric emergency department, but also on how family functioning influenced the development of PTSD for the child.

Regarding the first objective, our results showed a positive correlation between peritraumatic distress scores in children and parents. However, our results only showed an association trending

towards significance between PTSD symptoms of children and parents after 5 to 8 weeks following the event. Our hypothesis was partially confirmed. To our knowledge, this study was the only one to empirically evaluate this link. Furthermore, our results were congruent with the literature; children tend to observe and evaluate the gravity of a situation through the reaction of their parents (Josse, 2011). Thus, it suggests that parental distress as perceived by the child can impact the child and even become traumatising (Bailly, 2001). In the same way, Pynoos et al. (1999) specified that if parents overreact, children can become more anxious. Nevertheless, even if we observed a positive association between these two variables, our results do not allow us to draw any conclusion that could apply causality. In fact, some other factors could be the cause of this association (e.g. the type of traumatic event but also the child's personality and other life events).

On the other hand, we found no link between chronic symptoms (5 to 8 weeks after the event) in parents and children, but this correlation tended to be statistically significant. Some previous studies did not find a positive link between symptoms of children and parents (Landolt et al., 2003; McDermott & Cvitanovich, 2000), but these studies used a short interval after the event. Indeed, Koplewicz et al. (2002) showed that the degree of association of these two variables grows with time. Other authors found a positive link; but in their studies, the child's PTSD was evaluated based on the parent's response, parents who may have been traumatized themselves (deVries et al., 1999). We could hypothesize that in our sample, a parent's perception of gravity was different from the child's perception. Indeed, Landolt et al. (2003) showed that children presented more PTSD after an accident, while parents were more impacted after the announcement of a disease. In our sample, children were mostly victims of accidents during which parents were not present and the child's injuries are not life threatening. Moreover, the accidents were not serious, and only a few children presented PTSD. It would be interesting to evaluate the perception and the impact of the perception of gravity on the development of symptoms. In fact, if parents perceive the event as "ordinary," we can hypothesize that in these situations, parents might be less available for the child and his or her distress symptoms.

We found no association between peritraumatic distress in children and PTSD 5 to 8 weeks after the event, while this link was significant for parents. This link partially confirmed data in the literature even if such data is scarce. Indeed, recent studies found a link between initial distress, including fear and the threat experienced during and directly after the event, and chronic symptoms in adults and children (Bui, 2000; Trickey et al., 2011). Our results may have been produced by our methodology. In fact, parents and children answered the PDI in the same room, with some children reading along the questions and their answers with the parent who was answering silently the questionnaires. In this setting, we could hypothesize that children did not report their exact feelings in order not to disturb or make anxious their parent, or because of a feeling of guilt. According to Kédia (2008), children are used to masking their feelings.

We observed a link between parents' distress at T1 and children's PTSD symptoms at T2. According to the literature, our study confirmed that parental distress in the face of a potentially traumatic event is linked to children's PTSD in the long term. All these results tend to confirm that the initial parental reaction is important and could be used by children to evaluate the severity of the event (Nugent et al., 2006). Our results were close to those of Daviss et al. (2000), who showed that initial parental distress is associated with PTSD symptoms in children one month after a physical injury. It would be interesting to replicate this study with a larger sample in order to get a better understanding of the mechanisms through which parental distress has an impact on children's symptoms.

Regarding the second objective, we expected that family functioning and parental practices would be important factors of protection or risk in the development of PTSD at T2 for children. Our results infirmed these hypotheses. Only the link between maternal practices perceived as negative and children's PTSD tended to be statistically significant, especially for children presenting a high level of PTSD symptoms. These results indicated that maternal negative practices tended to be a risk factor in the development of PTSD in children. Future research with a larger sample is necessary in order to analyse which negative parental practices have a significant impact on children's PTSD symptoms and by which mechanisms. Hudson (2013) indicated that parents who criticized and minimized children's emotions could impair regulation of emotions and vulnerability to anxiety. Pynoos et al. (1999) added that numerous characteristics in parent–child relationships (overprotection, control, critics) are factors that could develop anxiety troubles and PTSD after a potentially traumatic event. This dimension seems to be an asset in this type of research. In fact, Siqueland, Kendall and Steinberg (1996) showed that evaluation of parental practices by children was the best predictor of anxiety disorder in children in contrast to an evaluation by the parents themselves.

Furthermore, we sought to observe that elevated scores of irritable distress, implication and overprotection in family functioning after a potentially traumatic event would be linked to more PTSD symptoms in children after 5 to 8 weeks following the event. Our results showed a significant positive correlation between children's PTSD and irritable distress, and another positive correlation that tended to be significant between PTSD symptoms and implication. These results concorded with our hypotheses and previous studies (McFarlane, 1987a; Meiser-Stedman et al., 2005). Indeed, previous studies showed that conflicts in the family and less support after a potentially traumatic event were predictors of PTSD in children (Bokszczanin, 2008). Even if our results showed that there was a link between irritable distress and children's PTSD symptoms, the underlying mechanisms remain unexplained. According to McFarlane (1987b), the most powerful pattern that could predict difficulties in children's adjustment after a potentially traumatic event is the association between a high score for irritable distress and implication. Results of his study showed that familial interaction with implication exacerbated conflicts, and familial distress exacerbated a child's behaviour and emotional state. Once again, the time spent between the event and the T2 should have been more important. In fact, McFarlane (1987a) showed that after 26 months, implication and PTSD symptoms were linked. On the contrary, this phenomenon induced closeness between family members after the potentially traumatic event, which is positive and beneficial for a while because family ties are strengthened. Ostrowski et al. (2011) showed that PTSS was more persistent for children when parents used avoidance mechanisms, leading to relapse in children.

We observed more overprotection for children with moderate to severe PTSD than with slight PTSD. According to Bokszczanin (2008), adolescents who have survived a natural catastrophe and whose parents were overprotective present more PTSD symptoms. Again, McFarlane (1987b) showed that after 26 months, overprotection had a negative effect on children's emotional state. In our study, this pattern could have been interpreted as protective and supportive behaviour in the first month following the event. Negative effects might have been noted over a longer term. It would have been interesting to have also measured this pattern at T2 in order to evaluate the permanence of this behaviour over time. Once again, this pattern should be measured through the eyes of

the child. Finally, a more precise questionnaire should be used to measure this pattern.

Our study suggested that parents' PTSD symptoms can impair familial relationships, and the adaptation of other family members as shown by several previous studies (Brown, Madan-Swain, & Lambert, 2003; Kazak et al., 1997; McFarlane, 1987a).

This study was notable for the way in which it carried out a longitudinal design. It made it possible to measure the evolution of children's and parents' reactions and the impact of diverse variables on this evolution. It avoided the possible bias produced by the recall of a potentially traumatic event. In fact, previous studies have shown the people exhibit difficulties recalling what they felt during the event. According to Bui (2010), retrospective measurements could artificially emphasize the association between peritraumatic distress and PTSD symptoms. In fact, the emotional state at the time of the measurement can impact memories of what they felt after the event. Our procedure allows to directly assess the peritraumatic distress of the child and the parent. It would be interesting to adapt and repeat this method (correcting some methodological aspects, e.g., parents and children being in the same room to complete questionnaires) with a larger sample.

We used minor events, unlike some other studies that used more serious events (car accident, brain injury…). It is important to remember that it is the perception of the gravity that matters. No event should be neglected. Finally, our study emphasized the importance of using the perception of the child regarding family functioning. To our knowledge, this methodology is not often used.

This work had some limitations. First of all, the small sample is a considerable limitation regarding interpretations that could be made on the basis of obtained results. Even though our procedure was extremely time consuming, it should be used again. On the one hand, it made it possible to measure peritraumatic distress as soon as possible and, on the other hand, subjects were more willing to participate when they were given the opportunity to interact directly with the researcher rather than being contacted by phone or email. Furthermore, we do not take into account the severity of the accident for which children were admitted to the emergency department. In fact, we can assume that the severity could impact differently the peritraumatic distress of the child and its parent. It should have been also measured if any potential traumatic event have already impact this family in order to discriminate more the results. Taking into account the type of event people who do not continue the study would have been useful to formulate some hypotheses as they do not continue because they do not feel anymore symptoms. We used self-report questionnaires, which have been subjected to social desirability review. In the future, it would be interesting to complete this process by doing a clinical interview to increase precision and finesse of results. However, this research presented results in congruence with the literature and suggested clinical reflection about the impact of parents, family functioning, and peritraumatic distress on children's adaptation after the potentially traumatic event.

5. Conclusion and perspective

This research focused on children's psychotrauma, and more precisely on links between peritraumatic distress and familial variables regarding the functioning and the development of a PTSD symptomatology in children. Using the pediatric emergency, it added a potentially traumatic dimension. In fact, a lot of children present PTSD. So it is important to consider this aspect in further studies. Our goal was to measure the impact of the peritraumatic distress of children who have experienced a potentially traumatic event and that of their parents on the development of PTSD in children. Then, we sought to observe the impact of family functioning in the development of PTSD. We showed an association between the peritraumatic distress of children and parents and between peritraumatic distress and PTSD symptoms in the child 5 to 8 weeks later. The initial reaction of parents influenced initial and long-term reactions of children, although this was not necessarily a causal relationship. In the clinical practice, this result suggests that it is important to be more attentive to children whose parents present a severe reaction. Our results also suggest that it would be clinically interesting to use peritraumatic distress as an indicator of risk to develop PTSD. Regarding familial variables, children presenting more severe symptoms reported more negative maternal educational practices. Moreover, we also showed a significant link between changes in family functioning (more irritability and implication) consecutive to the potentially traumatic event and the severity PTSD symptoms. These changes were linked to the PTSD symptoms of parents. This predictor role should be evaluated in other studies. Our research brings to light the importance of taking the family context into account. However, in this type of study, it would be interesting to also look for positive and protective factors in family functioning to encourage supportive behaviour and to not just point out risk factors. Finally, this research confirmed the necessity of being accurate while observing immediate reactions and children's symptoms over a longer term. Moreover, parents should be also evaluated, as our study showed the impact of their symptoms on children's resilience.

Disclosure of interest

The authors have not supplied their declaration of competing interest.

Uncited references

APA (1994), DiBartolo and Helt (2007), and Olliac et al. (2014).

References

American Psychiatric Association (1994). *DSM-IV: Diagnostic and Statistical manual of mental Disorders* (4th ed.). Washington, DC: Author.

American Psychiatric Association (2000). *DSM-IV-TR: Diagnostic and Statistical manual of mental Disorders: Texte revision* (4th ed.). Washington, DC: Author.

American Psychiatric Association (2013). *DSM-V: Diagnostic and statistical manual of mental disorders* (5th ed.). Washington, DC: Author.

Bailly, L. (2001). Syndromes psycho-traumatiques chez l'enfant. In M. de Clercq & F. Lebigot (Eds.), *Les traumatismes psychiques* (pp. 137–147). Paris, France: Masson.

Banyard, V. L., Englund, D. W., & Rozelle, D. (2001). Parenting the traumatized child: attending to the needs of nonoffending cargivers of traumatized children. *Psychotherapy, 38*(1), 74–87.

Bokszczanin, A. (2008). Parental support, family conflict, and overprotectiveness: predicting PTSD symptom levels of adolescents 28 months after a natural disaster. *ng, 21*, 325–335. http://dx.doi.org/10.1080/10615800801950584

Brewin, C. R., Rose, S., Andrews, B., Green, J., Tata, P., McEvedy, C., et al. (2002). Brief screening instrument for post-traumatic stress disorder. *The British Journal of Psychiatry, 181*, 158–162. http://dx.doi.org/10.1192/bjp.181.2.15

Brunet, A., Weiss, A., Metzler, T. J., Best, S. R., Neylan, T. C., Rogers, C., et al. (2001). The peritraumatic distress inventory: a proposed measure of PTSD Criterion A2. *American Journal of Psychiatry, 158*, 1480–1485.

Brown, R. T., Madan-Swain, A., & Lambert, R. (2003). Posttraumatic stress symptoms in adolescent survivors of childhood cancer and their mothers. *Journal of Traumatic Stress, 16*, 309–318.

Bui, E., Brunet, A., Olliac, B., Very, E., Allenou, C., Raynaud, J.-P., et al. (2010). Validation of peritraumatic dissociative experiences questionnaire and peritraumatic distress inventory in school-aged victims of road traffic accidents. *European Psychiatry, 26*, 108–111. http://dx.doi.org/10.1016/j.eurpsy.2010.09.007

Bui, T.-H.E. (2010). Facteurs de risqué péritraumatiques psychologiques d'un trouble de stress post-traumatique (Thèse de doctorat en neurosciences non publiée). Toulouse, France: Université de Toulouse III–Paul Sabatier Retrieved from http://thesesups.ups-tlse.fr/993/

Camisasca, E. (2011). Post-traumatic stress related to pediatric illness and injury. In V. Ardino (Ed.), *Post-traumatic syndromes in childhood and adolescence: A handbook of research and practice* (pp. 91–110). Chichester, UK: John Wiley & Sons.

Chidiac, N., & Crocq, L. (2010). Le psychotrauma II : la réaction immédiate et la période post-immédiate. *Annales Médico-Psychologiques, 168*, 639–644.

Daviss, W. B., Mooney, D., Racusin, R., Ford, J. D., Fleischer, A., & McHugo, G. J. (2000). Predicting posttraumatic stress after hospitalization for pediatric injury. *Journal of the American Academy of Child and Adolescent Psychiatry, 39* http://dx.doi.org/10.1097/00004583-200005000-0001

DiBartolo, P. M., & Helt, M. (2007). Theoretical models of affectionate versus affectionless control in anxious families: a critical examination based on observations of parent–child interactions. *Clinical Child and Family Psychology, 10*, 253–274. http://dx.doi.org/10.1007/s10567-007-0017-5

Durning, P., & Fortin, A. (2000). Les pratiques éducatives parentales vues par les enfants. *Enfance, 53*, 375–391.

Duverger, P., Chocard, A.-S., Malka, J., & Ninus, A. (2011). *Psychopathologie en service de pédiatrie : Pédopsychiatrie de liaison*. Issy-les-Moulineaux, France: Elsevier Masson.

Ehlers, A., Mayou, R. A., & Bryant, B. (2003). Cognitive predictors of posttraumatic stress disorder in children: results of a prospective longitudinal study. *Behaviour Research and Therapy, 41*, 1–10.

Epstein, N. B., Baldwin, L. M., & Bishop, D. S. (1983). The McMaster Family Assessment Device. *Journal of Marital and Family Therapy, 9*, 171–180. http://dx.doi.org/10.1111/j.1752-0606.1983.tb01497.x

Ford, J. D. (2009). *Posttraumatic stress disorder: Scientific and professional dimensions*. Burlington, MA: Academic Press.

Hudson, J. (2013). La relation parent-enfant pendant la petite enfance et le développement de l'anxiété et de la dépression. In R. E. Tremblay, M. Boivin, & R. D. Peters (Eds.), *Encyclopédie sur le développement des jeunes enfants*. Montréal, Québec: Centre d'excellence pour le développement des jeunes enfants et Réseau stratégique de connaissances sur le développement des jeunes enfants Retrieved from http://www.enfant-encyclopedie.com/pages/PDF/HudsonFRxp1.pdf

Josse, E. (2011). *Le traumatisme psychique : Chez le nourrisson, l'enfant et l'adolescent*. Bruxelles, Belgique: De Boeck.

Kassam-Adams, N., Fleisher, C. L., & Winston, F. K. (2009). Acute stress disorder and posttraumatic stress disorder in parents of injured children. *Journal of Traumatic Stress, 22*, 294–302. http://dx.doi.org/10.1002/jts.20424

Kassam-Adams, N., García-España, J. F., Miller, V. A., & Winston, F. (2006). Parent-child agreement regarding children's acute stress: the role of parent acute stress reactions. *Journal of the American Academy of Child and Adolescent Psychiatry, 45*, 1485–1493. http://dx.doi.org/10.1097/01.chi.0000237703.97518.12

Kazak, A. E., Barakat, L. P., Meeske, K., Christakis, D., Meadows, A. T., Casey, R., et al. (1997). Posttraumatic stress, family functioning, and social support in survivors of childhood leukemia and their mothers and fathers. *Journal of consulting and clinical psychology, 65*(1), 120–129.

Kédia, M. (2008). Prédicteurs de développement d'un ESPT. In M. Kédia & A. Sabouraud-Séguin (Eds.), *Psychotraumatologie: l'aide-mémoire* (pp. 47–52). Paris, France: Dunod.

Koplewicz, H. S., Vogel, J. M., Solanto, M. V., Morrissey, R. F., Alonso, C. M., Abikoff, H., et al. (2002). Child and parent response to the 1993 World Trade Center bombing. *Journal of Traumatic Stress, 15*, 77–85.

Landolt, M. A., Vollrath, M., Ribi, K., Gnehm, H. E., & Sennhauser, F. H. (2003). Incidence and associations of parental and child posttraumatic stress symptoms in pediatric patients. *Journal of Child Psychology and Psychiatry, 44*, 1199–1207.

Le Brocque, R. M., Hendrikz, J., & Kenardy, J. A. (2009). The course of posttraumatic stress in children: examination of recovery trajectories following traumatic injury. *Journal of Pediatric Psychology, 35*, 637–645. http://dx.doi.org/10.1093/jpepsy/jsp050

McDermott, B. M., & Cvitanovich, A. (2000). Posttraumatic stress disorder and emotional problems in children following motor vehicle accidents: an extended case series. *Australian & New Zealand Journal of Psychiatry, 34*, 446–452.

McFarlane, A. C. (1987a). Family functioning and overprotection following a natural disaster: the longitudinal effects of post-traumatic morbidity. *Australian & New Zealand Journal of Psychiatry, 21*, 210–218.

McFarlane, A. C. (1987b). The relationship between patterns of family interaction and psychiatric disorder in children. *Australian and New Zealand Journal of Psychiatry, 21*, 383–390.

Meiser-Stedman, R., Dalgleish, T., Smith, P., Yule, W., & Glucksman, E. (2007). Diagnostic, demographic, memory quality, and cognitive variables associated with acute stress disorder in children and adolescents. *Journal of Abnormal Psychology, 116*(1), 65–79. http://dx.doi.org/10.1037/0021-843X.116.1.65

Meiser-Stedman, R. A., Yule, W., Dalgleish, T., Smith, P., & Glucksman, E. (2005). The role of the family in child and adolescent posttraumatic stress following attendance at an emergency department. *Journal of Pediatric Psychology, 31*, 397–402. http://dx.doi.org/10.1093/jpepsy/jsj005

Miller, I. W., Ryan, C. E., Keitner, G. I., Bishop, D. S., & Epstein, N. B. (2000). The McMaster approach to families: theory, assessment, treatment and research. *Journal of Family Therapy, 22*, 168–189.

Nugent, N. R., Ostrowski, S., Christopher, N. C., & Delahanty, D. L. (2006). Parental posttraumatic stress symptoms as a moderator of child's acute biological response and subsequent posttraumatic stress symptoms in pediatric injury patients. *Journal of Pediatric Psychology, 32*, 309–318. http://dx.doi.org/10.1093/jpepsy/jsl005

Olliac, B. (2012). Spécificités du psychotraumatisme chez l'enfant et l'adolescent. *Neuropsychiatrie de l'enfance et de l'adolescence, 60*, 307–314.

Olliac, B., Birmes, P., Bui, E., Allenou, C., Brunet, A., et al. (2014). Validation of the French Version of the Child Post-Traumatic Stress Reaction Index: psychometric properties in French speaking school-aged children. *PLoS One, 9*(12), e112603. http://dx.doi.org/10.1371/journal.pone.0112603

Ostrowski, S.-A., Ciesla, J. A., Lee, T. J., Irish, L., Christopher, N. C., & Delahanty, D. L. (2011). The impact of caregiver distress on the longitudinal development of child acute post-traumatic stress disorder symptoms in pediatric injury victims. *Journal of Pediatric Psychology, 36*(7), 806–815. http://dx.doi.org/10.1093/jpepsy/jsq113

Punamäki, R.-L., Qouta, S., & El-Sarraj, E. (2001). Resiliency factors predicting psychological adjustment after political violence among Palestinian children. *International Journal of Behavioral Development, 25*, 256–267. http://dx.doi.org/10.1080/01650250042000294

Pynoos, R. S., Steinberg, A. M., & Piacentini, J. C. (1999). A developmental psychopathology model of childhood traumatic stress and intersection with anxiety disorders. *Society of Biological Psychiatry, 46*, 1542–1554.

Rouvière, N., & Bailly, D. (2005). État de stress post-traumatique en pédiatrie. In D. Bailly (Ed.), *Pédopsychiatrie de liaison : Vers une collaboration entre pédiatres et psychiatres* (pp. 83–104). Doin: Reuil-Malmaison, France.

Scheeringa, M. S., & Zeanah, C. H. (2001). A relational perspective on PTSD in early childhood. *Journal of Traumatic Stress, 14*(4), 799–815.

Siqueland, L., Kendall, P. C., & Steinberg, L. (1996). Anxiety in children: Perceived environments and observed family interaction. *Journal of Clinical Child Psychology, 25*, 225–237.

Smith, P., Perrin, S., Yule, W., & Rabe-Hesketh, S. (2001). War exposure and maternal reactions in the psychological adjustment of children from Bosnia-Hercegovina. *Journal of Child Psychology and Psychiatry, 42*, 395–404.

Taïeb, O., Baubet, T., Pradère, J., Lévy, K., Revah-Lévy, A., Serre, G., et al. (2003). Traumatismes psychiques chez l'enfant et l'adolescent. *EMC-Psychiatrie, 1*, 23–32. http://dx.doi.org/10.1016/S1762-5718(03)00004-X

Tareen, A., Garralda, M. E., & Hodes, M. (2007). Post-traumatic stress disorder in childhood. *Archives of Disease in Childhood Education and Practice, 92*, 1–6. http://dx.doi.org/10.1136/adc.2006.100305

Trickey, D., Siddaway, A. P., Meiser-Stedman, R., Serpell, L., & Field, A. P. (2011). A meta-analysis of risk factors for post-traumatic stress disorder in children and adolescents. *Clinical Psychology Review, 32*, 122–138. http://dx.doi.org/10.1016/j.cpr.2011.12.001

Valentino, K., Berkowitz, S., & Stover, C. S. (2010). Parenting behaviors and posttraumatic symptoms in relation to children's symptomatology following a traumatic event. *Journal of Trauma and Stress, 23*, 403–407. http://dx.doi.org/10.1002/jts.20525

Ventureyra, V. A., Yao, S.-.N., Cottraux, J., Note, I., & De Mey-Guillarda, C. (2001). The validation of the posttraumatic stress disorder checklist scale in posttraumatic stress disorder and nonclinical subjects. *Psychotherapy and Psychosomatics, 71*, 47–53.

deVries, A. P. J., Kassam-Adams, N., Cnaan, A., Sherman-Slate, E., Gallagher, P. R., & Winston, F. K. (1999). Looking beyond the physical injury: posttraumatic stress disorder in children and parents after pediatric traffic injury. *Pediatrics, 104*, 1293–1299.

Weathers, F., Litz, B., Herman, D., Huska, J., & Keane, T. (1993). *The PTSD checklist (PCL): Reliability, validity and diagnostic utility*.

Winston, F. K., Kassam-Adams, N., Vivarelli-O'Neill, C., Ford, J., Newman, E., Baxt, C., et al. (2002). Acute stress disorder symptoms in children and their parents after pediatric traffic injury. *Pediatrics, 109*(90), 1–7. http://dx.doi.org/10.1542/peds.109.6.e90

Zuber, A., & Sadlier, K. (2008). État de stress post-traumatique chez l'enfant. In M. Kédia & A. Sabouraud-Séguin (Eds.), *Psychotraumatologie : l'aide-mémoire* (pp. 27–35). Dunod: Paris, France.