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ORIGINAL ARTICLE

Children's Knowledge about Parental Exposure to Trauma

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Abstract The study aims to determine children's knowledge about their parents' exposure to traumatic events and factors associated with such knowledge. Children (ages 9–16) and their parents with a range of exposures to trauma, including the 9/11 attack, answered questions about parental exposure to life threatening events. A child's accurate knowledge about parental exposure was defined as an agreement between parent and child on lifetime presence or absence of traumatic events. The present study findings suggest that children were often unaware about their parents' exposures to life threatening events. Knowledge about fathers' exposure was more accurate when the child was older, fathers had direct exposure to 9/11, or had been a first responder. Children of mothers with depression were less likely to have accurate knowledge about their mothers' exposure compared to children of non-depressed mothers. Overall, findings indicated that children are generally unaware of parental (particularly maternal) exposure to traumatic events. The next step is to determine how knowledge about parental trauma exposure impacts children.

Keywords Trauma exposure · Children · Adolescents · Mental health · Public health

A national study found that 89.7% of adults have been exposed to a traumatic event in their lifetime (Kilpatrick et al. 2013). Many of these adults have children who may not know that the lives of their parents were threatened in very extreme ways. The decision about what to tell children following extreme circumstances is a daily challenge encountered by parents, especially those who face chronic life threatening situations, such as first responders or military personnel. Parents exposed to a mass-disaster or a single traumatic event may also face a similar challenge at some point in their lives.

After a traumatic experience, a parent may not have the choice of whether or not to share the traumatic experience with their children. The parental traumatic experience may have also been witnessed by the child or the impact of trauma on a parent's functioning may have been so severe that the child may have become aware that their parent's life was endangered, regardless of what the initial parental intentions were regarding disclosure. In other circumstances, parents have the option to avoid informing their children about severe threats to their lives. Sometimes, children may also falsely believe that their parents endured traumatic experiences that did not actually happen, particularly after a mass-disaster or if their parents experience constant danger as a result of their occupation. In sum, for different reasons, children may have accurate or inaccurate knowledge about parental traumatic experiences.

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Knowing if children have accurate or inaccurate knowledge about their parents' exposure is relevant because there is evidence that parental exposure to life threatening situations impacts children's psychopathology (van Ee et al. 2016; Zerach et al. 2016). However, it is unknown if any parental exposure would have a negative effect on child psychopathology or if those experiences, when not openly shared with the children, would be related to worse consequences. Ascertaining how much children know about their parent's traumatic experiences requires comparing information between parents and children on the same set of events. This type of information is rarely available. Studies of parents exposed to several life-threatening events offer an opportunity to determine how often their children had accurate knowledge about their traumatic experiences. One would expect, due to the intensity of most life-threatening experiences, that most of the time children would be aware of their parents' exposures, despite parents' attempts to hide such events. However, we also know that when reporting about psychiatric symptoms, parents and children seldom agree. We assessed families likely to have been exposed to mass trauma – first responders and World Trade Center (WTC) evacuees – with children and parents answering a similar set of questions about parental exposure to specific, potentially traumatic, situations (restricted to work-related events).

Methods

Sample

The sample (Hoven et al. 2009) included 556 children (ages 9–16) of first responders (Police Officers, EMTs, Fire Fighters, n = 284; 49 mothers and 235 fathers), of parents who participated in 9/11 rescue and relief activities even without being first responders (n = 411; 81 mothers and 330 fathers), of WTC evacuees and those in the immediate WTC area during the attack (n = 184; 108 mothers and 252 fathers), and of residential evacuees (n = 73 mothers and 55 fathers). Some mothers and fathers were in more than one of the above exposure categories, and 91 of the children in the sample had two exposed parents.

Procedure

All families were recruited through the World Trade Center Health Registry (WTCHR), created by the New York City Department of Health and Mental Hygiene and the U.S. Department of Health and Human Services, which included about 71,000 individuals enrolled in 2003–2004. If the family had more than one child in the eligible age range, a Kish table was used to randomly identify only one child. All participants had to be living within a 100-mile radius of Ground Zero when they were interviewed. Interviews were conducted at families' homes, privately, with both parents and one child in 78.1% of the families, while in the rest of the families only one parent (exposed to 9/11), in addition to the child, was interviewed.

Measures

Life Threatening Parental Work-Related Traumatic Events The Critical Incident History Questionnaire (CIHQ; Brunet et al. 1998) asks parents about multiple dimensions of work-related critical incidents. This questionnaire was adapted for our study to ascertain children's knowledge (CIHQ-C) about their parents' exposure to life threatening events experienced as part of their work, including, but not limited to, natural disasters, sexual assault, and life threatening diseases. Eleven items of the CIHQ, representing clearly life threatening exposures, were matched with ten items of the CIHQ-C and used in this analysis. Parents reviewed the CIHQ-C before it was administered to their child and were instructed to cross out any questions they would not want their child to be asked. The maximum percentage of parental refusal for any of the 10 items considered here was 6.8%.

Adult Exposure to September 11, 2001 Parents were classified as being or not being in one of the two WTC Towers, any other World Financial Center building, or in the WTC area (South Chambers Street) on September 11, 2001, if they indicated that they were in a WTC building or in the WTC area at any time from when the first plane struck until the second tower collapsed.

Child Psychopathology (Anxiety and Depression) Presence of Major Depressive Disorder (MDD), Posttraumatic Stress Disorder (PTSD), or other anxiety disorders (Separation Anxiety, Generalized Anxiety, Panic, Agoraphobia) was ascertained with the Diagnostic Interview Schedule for Children (DISC; Shaffer et al. 2000), a structured diagnostic instrument based on criteria of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) criteria.

Parental PTSD The PTSD Checklist (PCL) (Weathers et al. 1993), a 17-item self-report measure of the 17 Diagnostic and Statistical Manual of Mental Disorders, 4th Edition (DSM-IV) symptoms of PTSD in the past month, was used to inquire about parental PTSD associated with any work-related traumatic experience assessed by the CIHQ.

Parental Psychopathology (Depression and Alcohol Abuse) Presence of major depressive disorder was ascertained based on the Beck Depression Inventory. Presence of alcohol abuse disorder was ascertained based on the Composite International Diagnostic Interview (Wittchen 1994).

Statistical Analysis

Kappa statistics were used to quantify parent-child agreement related to maternal and paternal experiences separately for ten work-related life threatening events. Situations in which both the parent and child agreed that any traumatic event had happened were classified as the child having accurate knowledge, while the report of an event by the parent only was categorized as inaccurate child knowledge. Instances in which only the child reported a parental exposure without a parental report (n = 3, 1.66% of mothers and n = 5, 1.21% of fathers) were excluded from further analysis. Chi-square test was used to determine if children's accurate knowledge of parental exposure differed according to child age, gender, parental exposure to 9/11, as well as parent or child psychopathology. Multiple logistic regression models were examined for mothers and fathers separately to determine associations between the factors of interest and children's accurate knowledge of parental exposure to traumatic events.

Results

Children rarely knew about their parents' exposure to specific life threatening events (Table 1). For example, while 8.1% of the mothers reported having been beaten or injured, none of their children knew their mother had such an experience. A type of event children frequently knew about were disasters caused by other people, the category under which their parents' work-related exposure to 9/11 was often reported. It is noteworthy that in rare instances (never more than 5.4%), inaccurate knowledge of parental exposure included children attributing to parents specific experiences that they did not have. Lack of child knowledge about parental experience is reflected by very low agreement between parent and child reports, with kappa values never exceeding 0.36.

In Table 2, percentages of child accurate knowledge of any parental exposure are presented. Child gender, child psychopathology (anxiety and depression) and parental PTSD or alcohol abuse/dependence were not related to child's accurate knowledge about parental (neither maternal nor paternal) exposure to life threatening events. Maternal depression was related to child's inaccurate knowledge about maternal exposure to trauma (AOR = 0.42; 95%CI = 0.19–0.94). Factors related to a child's accurate knowledge about paternal exposure to life threatening events include having been in one of the WTC buildings on 9/11 (AOR = 2.14; 95%CI = 1.26; 3.64), older child age (AOR = 2.41; 95%CI = 1.58; 3.68), and father being a first responder (AOR = 1.65; 95%CI = 1.07–2.57).

Discussion

We systematically assessed children's knowledge about parental exposure to life threatening events by comparing child (9–16 years old) and parental reports, among families with different types of exposure to trauma. In addition to exposure to 9/11, parents and children were asked about parental exposure to other traumatic work-related events such as natural disasters, sexual assault, and life threatening diseases. First, we found that children's knowledge about their parents' exposure to a life-threatening event was most often inaccurate. Second, maternal depression was related to inaccurate child knowledge about maternal exposure. Third, children's accurate knowledge about paternal exposure was related to high paternal exposure to 9/11, and the father being a first responder. Fourth, older children had more accurate knowledge of

Table 1 Frequency and Agreement of Parent and Child Reports About Parental Exposure to Work-related Traumatic Events (N = 556 families)

Type of Work-Related Exposure (%)	Parental Refusal %	Reports of Parental Exposure to Work-related Events							
		Maternal Exposure Reported				Paternal Exposure Reported			Agreement (Kappa)
		Maternal Only %	Child Only %	Both %	Agreement (Kappa)	Paternal Only %	Child Only %	Both %	
Beaten/injured by someone else	4.5	8.09	0	0.58	0.1154	22.22	0.51	1.01	0.0547
Seriously injured accidentally	3.0	23.3	1.7	3.98	0.1626	47	1.75	10.75	0.1265
Taken hostage	4.6	1.17	0	0		1.78	0.25	0	−0.0045
Threatened with weapon	4.5	12.12	1.21	3.03	0.2637	39.63	0.79	5.25	0.1116
Exposed to AIDS/ disease	6.8	23.95	0	1.8	0.1002	52.27	1.07	3.47	0.0341
Aggressive/ dangerous animal	2.2	10.23	0	0.57	0.0902	31.27	0.5	1.24	0.0408
Life threatening/poisonous subst.	2.1	22.29	0.57	0.57	0.0264	42.86	3.64	6.49	0.0604
Disaster caused by other people	1.8	21.05	5.26	14.62	0.3639	37.5	5.36	30.61	0.2219
Natural disaster	1.8	10.29	1.14	0	−0.021	15.62	3.27	1.76	0.0859
Any positive		41.99	1.66	23.76	0.2441	48.54	1.21	43.2	0.0897

Table 2 Factors Associated with Child Accurate Knowledge (%) of Parental Exposure to Work-related Life-threatening events ($N = 556$)

Parental and Child Factors		Child Knowledge of Maternal Exposure				Child Knowledge of Paternal Exposure			
		% Accurate Knowledge	p**	AOR	95% CI	% Accurate Knowledge	p**	AOR	95% CI
Child Age	14 to 17	58.8		0.96	(0.50, 1.82)	64.0	**<.0001**	**2.41**	**(1.57, 3.68)**
	9 to 13 (ref)	56.1	0.7244			42.3			
Child gender	Girls	64.4	0.0624	1.75	(0.91, 3.36)	53.4	0.2982	0.74	(0.49, 1.12)
	Boys (ref)	50.6				48.3			
Parental Exposure to 9/11									
In the building		71.1	0.1406	1.91	(0.74, 4.90)	44.9	0.0568	**2.14**	**(1.26, 3.64)**
In the area		56.9		0.98	(0.47, 2.06)	52.8		1.43	(0.86 2.39)
Not in the area (ref)		51.9				58.9			
Parent ever been FR	Yes	46.9	0.0849	0.61	(0.29, 1.29)	54.2	0.1314	**1.66**	**(1.07, 2.57)**
	No	61.2				46.7			
Any child anxiety	Yes	57.8	0.9407	1.14	(0.52, 2.52)	53.1	0.6543	1.27	(0.75, 2.14)
	No	57.1				50.3			
Any child depression	Yes	57.1	0.9965	0.98	(0.17, 5.56)	60.0	0.6808	1.40	(0.22, 8.95)
	No	57.1				50.8			
Parental depression	Yes	43.6	0.0501	**0.42**	**(0.19, 0.94)**	53.3	0.6352	1.17	(0.68, 2.02)
	No	61.2				50.3			
Parental PTSD	Yes	58.6	0.8754	1.14	(0.45 2.89)	54.7	0.4653	0.98	(0.56, 1.70)
	No	57.1				50.0			
Parental alcohol abuse or dependence	Yes	48.7	0.22	0.70	(0.33, 1.51)	51.7	0.8052	1.02	(0.67, 1.57)
	No	59.7				50.4			

Bold entries indicate that the p-value <.05

Ref = Reference group

**Chi-Square test p-values

their fathers' exposure, while child knowledge of maternal exposure did not vary by age.

Overall, children did not report that their parents had been exposed to a life-threatening event. In a few instances, children believed that their parents had undergone experiences that they did not. The level of accurate child knowledge about a specific event was very low, but improved when the ten events were grouped and we ascertained child knowledge of any event. This suggests that children's awareness about parental exposure may not include details about such experiences. In the absence of other studies contrasting parental and child reports of parental exposure to life threatening events, the literature on children's knowledge about parental fatal diseases is our main source of comparison. This literature is controversial about whether inaccurate knowledge concerning parental illnesses (e.g., HIV) is related (Brackis-Cott et al. 2007; Lee et al. 2002) or unrelated (Rochat et al. 2017; Tercyak et al. 2013) to worse child outcomes.

In our study, factors related to accurate knowledge about parental exposure to life threatening situations included a high level of parental exposure to a mass traumatic event (9/11), and a father being a first responder. However, maternal depression was related to less accurate child perceptions of parental exposure. These findings could indicate that children's accurate knowledge of paternal exposure is mostly a result of the intensity of the exposure, which may prevent parents from hiding their experience. For mothers, withdrawal symptoms related to depression may prevent them from sharing painful experiences with their children. Of note, child psychopathology (anxiety and depression) was not related to accurate knowledge, indicating that parents are not selectively choosing to tell 'healthy' children about their exposure.

As expected, older children indicated more accurate knowledge of paternal exposure to a life-threatening event compared to younger children. This pattern was not observed in relation to maternal exposure, which could perhaps reflect mothers being more active in preventing their children from knowing about their exposure, regardless of their age.

These findings should be considered in light of our study's limitations. For example, we used our adaptation of an adult instrument (CIHQ) to measure child exposure to parent work-related life threatening events. Even though this adapted questionnaire was well accepted by parents and children alike, the description of life threatening events may be too abstract for children. In addition, by allowing parents to cross out items

they did not want their children to be asked about, we may be missing invaluable information, since it is possible that the parents who crossed out items may be the ones trying to hide their traumatic experiences from their children.

To our knowledge, this is the first report on children's knowledge of parental exposure to life threatening events. Based on similar information collected for parents and children from families with high levels of exposure, we ascertained that most children were unaware whether their mother or their father was exposed to a life-threatening situation. Future studies should determine the impact that a lack of accurate knowledge about parental exposure to life threatening events might have on children's lives and development.

Our findings can provide guidance to parents who are exposed to life threatening situations, either by the nature of their occupation or due to exposure to mass-trauma. In an era when exposures to mass-disasters have become part of the lives of families worldwide, understanding the implications of parents sharing the painful experiences they may go through with their children is of the highest relevance to guide clinicians as well as policy related to post-disaster contexts.

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Children of First Responder and WTC Evacuee Study (5R01 HD046786 PI: CW Hoven)

Compliance with Ethical Standards

Disclosure of Interest The authors declare that they have no conflict of interest.

Ethical Standards and Informed Consent The study was approved by the Institutional Review Boards of the New York State Psychiatric Institute and of the NYC Department of Health and Mental Hygiene. "All procedures followed were in accordance with the ethical standards of the Helsinki Declaration of 1975, as revised in 2000. Informed consent (or assent for children) was obtained from all participants included in the study.

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