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Parents' memories and appraisals after paediatric burn injury: a qualitative study

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ABSTRACT

Background: It is well established that a paediatric burn injury can lead to parental post-traumatic stress symptoms. The content of parents' memories and appraisals may reveal the traumatic experiences that need attention.

Objective: To inform clinical practice, the aim of this study was to qualitatively examine parents' (intrusive) memories and appraisals, and associated emotions, concerning the injury, the hospitalisation, and its consequences.

Method: Approximately three to six months after the burn event, semi-structured interviews were conducted with parents of 18 children (0–16 years old) that had been hospitalised for a burn injury. Thematic analysis was carried out to obtain themes.

Results: A central element in parents' memories and appraisals was a sense of external or internal threat. Intrusive memories were predominantly related to the accident and first aid (i.e. threat of the injury), whereas parents' memories about the child's suffering were emotional but not experienced as intrusive. Later appraisals of the burn injury and its consequences included negative appraisals of the child's increased vulnerability, responsibility of self or other, the child's prolonged suffering and (risk of) permanent change, as well as appraisals of positive outcome and recovery. Emotions commonly reported in the context of memories and appraisals were fear, sadness, guilt, and relief.

Conclusions: This study offers insight into the traumatic nature of paediatric burn injury from the parent's perspective and provides directions for the delivery of trauma-informed (after)care.

Recuerdos y evaluación por parte de los padres después de una lesión por quemadura pediátrica: un estudio cualitativo

Antecedentes: está bien establecido que una lesión por quemadura pediátrica puede provocar síntomas de estrés postraumático en los padres. El contenido de los recuerdos y de su evaluación por parte de los padres, puede revelar las experiencias traumáticas que necesitan atención.

Objetivo: Informar la práctica clínica, el objetivo de este estudio fue examinar cualitativamente los recuerdos (intrusivos) de los padres y sus evaluaciones, y las emociones asociadas, en relación con la lesión, la hospitalización y sus consecuencias.

Método: Aproximadamente de tres a seis meses después del evento de quemadura, se realizaron entrevistas semiestructuradas con padres de 18 niños (de 0 a 16 años de edad) que habían sido hospitalizados por una lesión por quemadura. Se realizó un análisis temático para obtener los temas.

Resultados: Un elemento central en los recuerdos y evaluaciones de los padres era una sensación de amenaza externa o interna. Los recuerdos intrusivos se relacionaban predominantemente con el accidente y los primeros auxilios (i.e. la amenaza de lesión), mientras que los recuerdos de los padres sobre el sufrimiento del niño eran emocionales, pero no experimentado como intrusivo. Las evaluaciones posteriores de la lesión por quemaduras y sus consecuencias incluyeron evaluaciones negativas del aumento en la vulnerabilidad del niño, responsabilidad de sí mismo o de otro, el sufrimiento prolongado del niño y (el riesgo de) cambio permanente, así como una evaluación de resultados positivos y recuperación. Las emociones comúnmente reportadas en el contexto de los recuerdos y las valoraciones fueron el miedo, la tristeza, la culpa y el alivio.

Conclusiones: este estudio ofrece información sobre la naturaleza traumática de la lesión por quemadura pediátrica desde la perspectiva de los padres y brinda instrucciones para brindar atención (posterior) a los traumas.

儿童烧伤后父母的记忆和评估：质性研究

背景: 小儿烧伤可导致父母的创伤后应激症状。父母的记忆和评价的内容可能揭示出需要注意的创伤经历。

目的: 本研究的目的是定性检查父母对儿童伤情，住院及其后果的（闯入性）记忆和评价，以及相关的情绪，以期指导临床实践，

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关键词

评估; 烧伤; 情绪; 父母; 创伤; 定性分析

HIGHLIGHTS

- Parents' intrusive memories after their child's burn injury were predominantly related to the burn event and not to medical procedures.
- Appraisals of the child's vulnerability, prolonged suffering and permanent change, and about responsibility for the injury were reported by parents, as well as appraisals of positive outcomes and recovery.
- In the aftermath of the injury, parents experienced emotions such as fear, sadness and guilt, but also relief.

方法：烧伤事件发生后约三至六个月，对18名因烧伤住院的儿童（0–16岁）的父母进行了半结构式访谈。我们进行了专题分析以总结访谈内容的主题。

结果：父母记忆和评估的核心要素是外部或内部威胁感。闯入性记忆主要与事故和急救（即受伤的威胁）有关，而父母对孩子痛苦的记忆是情绪化的，但没有将其看成闯入性。事后对烧伤及其后果的评估包括儿童脆弱性增加，自我或其他人的责任，儿童的长期痛苦和（永久性改变的风险）的评估，以及对积极结果和康复的评估。通常在记忆和评估的背景下报道的情绪是恐惧，悲伤，内疚和放松。

结论：本研究从父母的视角提供了对儿童烧伤创伤性质的深入了解，并为创伤（后）护理提供了指导。

1. Introduction

‘It might have scarred his skin, but it’s scarred my brain.’ As illustrated by this quote of a mother reported in a study by Mason (1993), the emotional impact of paediatric burn injury on parents has long been recognised. Parents experience a myriad of emotions and are at risk of experiencing symptoms of post-traumatic stress in response to their child’s trauma (Bakker, van der Heijden, van Son, & Van Loey, 2013; De Young, Hendrikz, Kenardy, Cobham, & Kimble, 2014; Holt, Cohen, Mannarino, & Jensen, 2014). Because parents’ reactions to the trauma may threaten their well-being and may impact their ability to support the child (Alisic, Boeije, Jongmans, & Kleber, 2012), it is relevant to know which factors comprise and maintain distress.

The integrative model of paediatric medical traumatic stress proposes that different experiences surrounding a child’s injury event and subsequent medical procedures may be traumatic and that the subjective experience of these events determines its traumatic nature (Kazak et al., 2006; Price, Kassam-Adams, Alderfer, Christofferson, & Kazak, 2016). In line with this assumption, previous studies have shown that parents describe various aspects of the child’s burn injury as stressful or traumatic, including the actual burn injury, wound care procedures, seeing the child in pain, and uncertainty (De Young et al., 2014; McGarry et al., 2015; Rimmer et al., 2015). This would indicate that these experiences may also be reflected in parents’ traumatic memories and appraisals. However, no studies have examined parents’ traumatic memories and their appraisals of the burn event and its consequences, even though these two factors are central in the influential cognitive theory of post-traumatic stress disorder (PTSD; Ehlers & Clark, 2000).

According to this model, the nature of traumatic memories and the appraisals of the event and its consequences may contribute to a sense of external threat (e.g. the world is perceived as dangerous) or internal threat (e.g. a threat to seeing oneself as a worthy person) (Ehlers & Clark, 2000). High arousal during an event is suggested to increase the accessibility of both voluntary and involuntary memory (Berntsen, 2010; Hall & Berntsen, 2008). Intrusive memories comprise disturbing involuntary memories

that include vivid and emotional reliving moments of the trauma (Berntsen, 2010), and are a typical feature of PTSD (e.g. Engelhard, McNally, & van Schie, 2019). Research has shown that the majority of intrusive memories relates to so-called ‘hotspots’. These are the worst moments that cause the highest levels of emotional distress (Grey & Holmes, 2008; Holmes, Grey, & Young, 2005). Regarding paediatric burns, there is a need to examine how different aspects of the injury, such as the injury event itself or wound care procedures, are reflected in parents’ hotspots or intrusive memories, because this may indicate where additional support is needed.

In the child trauma literature, several types of parental appraisals have been examined, including self-blame and negative appraisals about the self and the world, permanent change (i.e. the child has been lastingly damaged by the trauma), and the child’s vulnerability to future harm (Morris, Lee, & Delahanty, 2013; Schilpzand, Conroy, Anderson, & Alisic, 2018; Tutus & Goldbeck, 2016; Williamson et al., 2018). In contrast to other acute traumas, burn injuries are characterised by extensive wounds, painful and distressing daily wound care procedures, a prolonged hospital stay (e.g. Hiller et al., 2018), and (remaining) scars. This makes it valuable and relevant to conduct a more in-depth examination regarding this specific trauma type.

Both traumatic memories and appraisals are associated with negative emotions (Ehlers & Clark, 2000). Intrusive memories may evoke trauma-related emotions and hotspots have been associated with a range of emotions, such as fear, sadness and anger (Grey & Holmes, 2008; Holmes et al., 2005). For instance, appraisals concerning one’s responsibility for the trauma are connected with feelings of guilt, a parental emotion that has been regularly reported after paediatric burns (Bakker et al., 2013; McGarry et al., 2015) and that can be involved in PTSD (Kubany & Manke, 1995). In examining parents’ post-trauma memories and appraisals, it is therefore important to take the associated emotions into account.

The aim of this study was to gain more knowledge about the traumatic nature of paediatric burn injury from the parent’s perspective. To obtain this goal, we examined a) the content of parents’ memories of the child’s burn injury and subsequent hospitalisation

three to six months after the burn event, and the potentially intrusive nature of these memories, b) parents' appraisals concerning their child's burn injury, hospitalisation, and its consequences. Parents' emotions were examined in the context of their memories and appraisals.

2. Method

2.1. Participants and procedure

The current study is part of a larger project in which parents' experiences after paediatric burn injury were examined. The first part of the study was based on interviews conducted during their child's hospitalisation, with a specific focus on parents' experiences of their presence or absence during child wound care procedures (Egberts, de Jong, Hofland, Geenen, & Van Loey, 2018). The current study analyses interviews with parents three to six months after the burn event. Data were collected in the three Dutch burn centres, from December 2014 until June 2016.

Parents were eligible to participate if their child was younger than 19 years old, required hospitalisation for a burn injury, and had undergone at least one wound care procedure. A local researcher approached parents during hospitalisation, explained the purpose of the study, and provided additional written information. Purposeful sampling was used to achieve a diverse sample (e.g. in terms of child age, gender, burn severity, and burn type). All participants provided informed consent. After discharge, the interviewer contacted parents who participated in the first interview to ask whether they were willing to participate in a follow-up interview. Child- and burn characteristics were obtained from the medical file and parents completed a questionnaire about their socio-demographic background.

Three to six months after the burn event, parents of 18 children participated in the interview in their home or in the burn centre during a check-up. The original sample consisted of 22 parents who participated in the initial interview during hospitalisation. Reasons for drop-out included that families were 'too busy' to participate or could not be contacted due to changes in address or telephone number. Six interviews were conducted with both parents, 11 were conducted with just the mother, and one was conducted with just the father. Table 1 displays child- and burn- characteristics of the sample. Parents' mean age was 37 years (range: 25–54) for mothers and 41 years (range: 32–46) for fathers. Their highest obtained educational level was classified as low (elementary school, technical and vocational training until the age of 16: 21% of the parents), middle (technical and vocational training until the age of 18: 25% of the parents) or high (technical or vocational training for ages 18 and older or university: 54% of the parents). Most

parents were employed (83%) and the majority of children lived in a two-parent household (83%).

The study was conducted according to the principles of the Declaration of Helsinki (revision, Fortaleza, Brasil, 2014) and was approved by the Ethical Committee of the Faculty of Social and Behavioral Sciences of Utrecht University (FETC15-085).

2.2. Interviews

Semi-structured, face-to-face interviews were carried out by female researcher/psychologist ([ME]) who received interview training. The last author ([NvL]) monitored the content and wording of the questions by reading the transcripts. Interviews were digitally recorded and lasted, on average, 57 min (range: 41–78 min). An interview guide with open-ended questions was used to broadly structure the topics (see Table 2 for example questions).

Follow-up questions were used to further explore experiences that parents mentioned. The main topics in the interviews were parents' memories and

Table 1. Child- and burn characteristics ($n = 18$).

	<i>M</i>	<i>SD</i>	Median	Range
Age (years)	6.9	5.8	3.6	0–16
TBSA (%)	9.7	7.6	7.5	3–34
Length of hospital stay (days)	18.3	13.8	11.0	4–50
	<i>n</i>	%		
Gender child (male, female)	8, 10	44, 56		
≥ 1 surgery during initial hospitalisation	10	56		
Burn type				
Scald	12	67		
Flame/fire	5	28		
Electrical	1	5		

Note: TBSA = estimated percentage total body surface area affected by partial- or full-thickness burns.

Table 2. Questions included in interview guide.

Memories and appraisal of burn event and hospitalisation

How do you reflect on the accident that caused the burn injury/the hospitalisation period/the wound care procedures?

Which moments do you recall when you think about the burn injury/the hospitalisation period/the wound care procedures?

Which emotions do you experience when you recall these moments?

Recalling the accident and the hospitalisation, can you identify the worst part in your memory?

Have you experienced, or do you still experience intrusive memories? (e.g. vivid, involuntary memories of the events that happened, that suddenly arise. These are not the moments in which you voluntary or deliberately think about the events.

Intrusive memories may take various forms, for example visual, auditory or olfactory)

Impact of the injury

Can you describe your experience of the period after discharge?

Can you describe how the injury has impacted you?

Have you noticed changes in your child after the injury?

Have you noticed changes in the family after the injury?

To what extent do you avoid reminders of the injury?

To what extent do you talk about the injury with others (including the child)?

Coping with the injury

What helped you cope with your child's injury?

How did you support your child in the aftermath of the injury?

appraisals of the burn event, hospitalisation, and its aftermath. These topics were chosen based on the cognitive model of PTSD (Ehlers & Clark, 2000), literature on parents' psychological responses to their child's injury and the phases that occur after paediatric medical trauma (Price et al., 2016). Memories and appraisals were further explored with probing questions to elicit their content and associated emotions. To determine the appropriateness and workability of the interview guide, two pilot interviews were carried out. Using the constant comparison method, the interview guide was continuously adapted based on information from the interviews and a better familiarisation with the topic (e.g. after the ninth interview, we added a question on the 'worst part' parents remembered of the burn event and/or hospitalisation period). New interviews were carried out until thematic saturation was achieved (i.e. no new themes emerged from the last two interviews). The interviewer created field notes to record issues that could be important in interpreting the interviews (such as non-verbal behaviour and contextual factors). After the interview, all parents were reminded of the availability of psychosocial aftercare in case they had remaining concerns.

2.3. Data analysis

The interviews were transcribed verbatim and names were replaced by pseudonyms. Transcripts were analysed within the software program MAXQDA 12 (VERBI Software, 2015). Data were analysed using thematic analysis, including three steps: open, axial, and selective coding (Boeije, 2010). All transcripts were independently reviewed by [ME], [NvL], [AdJ], and [HH]. [ME] and [NvL] independently coded all interviews. The coding of the first five interviews was discussed in detail (i.e. on the open coding level) and the remaining interviews were discussed on the axial coding level. In the open coding process, interviews were read line-by-line, and meaningful fragments were selected and assigned a code that summarised the fragment's content. Fragments with a similar content were assigned similar codes (within and across interviews). Disagreement about the content of the codes was infrequent, and consensus was reached through discussion and re-examination of the transcripts. The open coding process resulted in a coding tree listing the codes. In the axial coding process, codes were merged and grouped, and a hierarchical structure was created, dividing main- from subcodes. In the selective coding process, the core theme, sub-themes, and the integrative model were determined, to answer the research questions. Throughout the process, reflective notes were written by the primary investigator [ME], to document perceptions,

questions, and emerging ideas about themes. To enhance the trustworthiness and credibility of the findings, peer debriefing was used: [IE] and [RG] provided feedback on the data analysis, data interpretation, and established themes.

3. Results

Parents' experiences of their child's burn injury and its aftermath were categorised into memories related to the burn injury (category 1) and appraisals of the burn injury and its consequences (category 2). Within these categories, six themes were identified, in which the central element (i.e. selective code) was a sense of threat. Inspired by the integrative trajectory model of paediatric medical traumatic stress (Price et al., 2016), Figure 1 presents an integrative model that summarises and integrates the themes, and depicts parents' experience of paediatric burn injury. A central element in parents' memories and appraisals is the threat perceived by parents, which can be external (e.g. a threat to the child's physical integrity) or internal (e.g. a threat to the parent's perception of their parental role). The model also includes a wide range of negative and positive emotions that may be related to specific memories as well as appraisals, and are experienced in isolation or co-occur with other emotions. The themes are described below.

3.1. Memories related to the burn injury

Two themes were present within this category: threat of the injury and the child's suffering.

3.1.1. Threat of the injury

Parents reported vivid memories of the burn accident and first aid procedures, associated with strong emotions, such as feelings of shock, fear, and panic. Many of them described their memories in great detail. Parents remembered particularly well the moment they realised the severity of the injury:

'For me it's the moment I realize that that cup, that that's boiling water. That I stand there and I, sort of realize, he's now got boiling water over him.' [mother of a 2-year-old boy].

Also, they remembered their uncertainty about the severity of the child's injury. Especially parents who were not present at the time of the accident (who were informed by others), said that it was hard not knowing how serious the situation was and they felt helpless:

'You've lost your grip, you don't know exactly what happened, but something awful has happened, life-threatening, and you're not there. You're not where it's happened. You can't judge the situation. So you

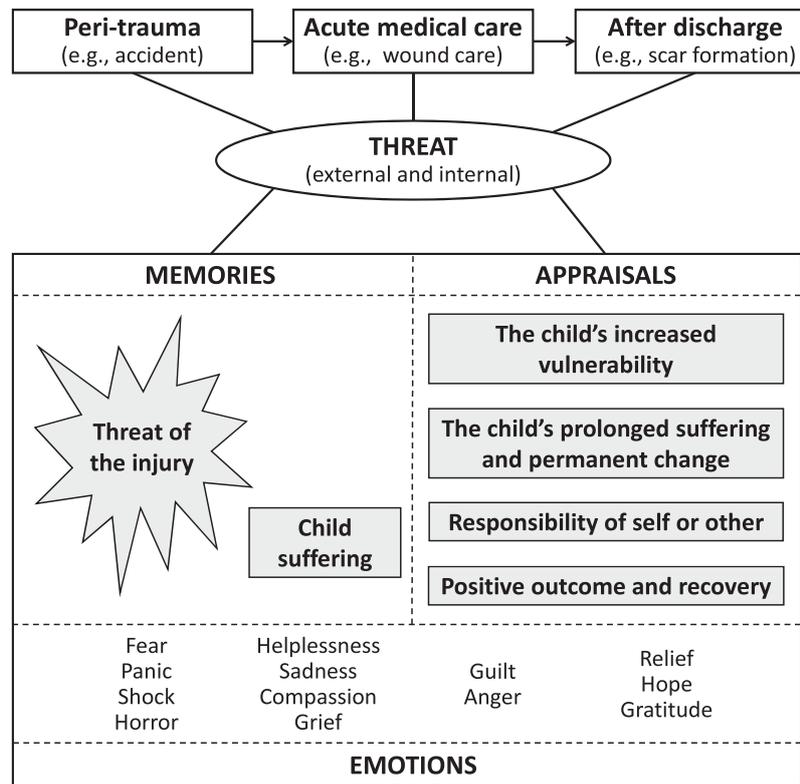


Figure 1. Integrative model of parents' experience of paediatric burn injury. The upper part reflects the phases related to paediatric medical trauma. Memories, appraisals and emotions may relate to each of these phases. Dotted lines represent the interrelatedness of the constructs. The potential intrusive nature of memories concerning the threat of the injury is reflected by the star-shaped outline.

can't reassure or protect your child and that's the worst moment.' [mother of a 13-year-old girl].

Several parents mentioned that, at some point, they were afraid their child would not survive the accident. Given the highly stressful uncertainty about the child's medical status and potential outcomes, parents looked for cues or information that their child would be alright. Several parents mentioned that entering the burn center was a positive turning point. They felt reassured by the staff's expertise and said that health professionals 'knew what they were doing'. A few parents clearly remembered how reassuring it was when the staff complimented parents on providing adequate first aid and when positive information about the child's medical situation was provided (e.g. stating there was no life threat):

'But at first it's like: is he OK, will he survive? That's very primal, after all. While afterwards you think, the chances of him dying weren't that big, but still. It's a sort of assurance and no one gives that assurance. Until the moment you're in the burn center, he's bandaged and the doctors just say: yes, he has burns but he's just going to carry on going to kindergarten. Then you get a sort of first confirmation.' [mother of a 2-year-old boy].

Parents predominantly reported visual memories, including images related to the cause of the injury (i.e. water falling over their child, their child in

flames, or their child being electrocuted), the face of their child during the accident (i.e. in panic, in pain, or crying), how the wounds looked shortly after the accident, and their child being intubated. Several parents also reported an auditory memory of their child's screams during the accident:

'I still think the worst moment was his screaming. Because of course I was upstairs and he was downstairs. I'll never forget it; that was a scream that went right through you. It was absolutely horrible.' [mother of an 8-year-old boy].

Some parents said that during hospitalisation and in the first week(s) after discharge, they could hardly think or talk about what happened without experiencing intense emotions, but this became easier over time.

Most parents reported that in the first weeks after the injury, certain moments of the accident and first aid came to mind involuntary and these memories could be regarded intrusive. The intrusive nature of these memories decreased with time for most parents, but a few parents still experienced intrusive memories at the time of the interview. They were commonly described as visual moving or static images and sometimes as sounds. Parents said that these memories were typically accompanied by (intense) emotions they had experienced during the actual event (e.g. fear), and sometimes by other emotions (e.g. sadness) as well. Specific triggers of intrusive

memories included the sight or sound of an ambulance, a trauma helicopter, the place of the accident, a TV report of a similar event, and seeing the child's scars.

3.1.2. *The child's suffering*

When parents recalled the hospitalisation period, most of them thought of their child's suffering in terms of pain, distress, sleeping problems, itch, and the inability to drink or eat. Parents expressed great sympathy and sadness. Not being able to relieve their child's suffering made them feel helpless. When parents recalled the wound care procedures, they remembered the child's pain and distress. However, they also emphasised positive feelings due to wound healing and the good care and reassurance they had received from health professionals.

Again, related memories appeared to be mainly visual in nature, although some were primarily described in terms of thoughts. For the majority of parents, memories of wound care did not come to mind spontaneously in their daily lives and did not classify as an intrusive memory. Only one mother reported visual and auditory intrusive memories of wound care and re-experienced feelings of powerlessness. Of note, this mother also reported intrusive images and sounds related to the accident and a history of PTSD in response to a previous life-threatening experience with another child in a different medical setting.

3.2. *Appraisals of the burn injury and its consequences*

This category contains four themes. The first three comprise negative appraisals and the last concerns a more positive appraisal of the child's situation.

3.2.1. *The child's increased vulnerability*

Nearly all parents of young children reported an increased awareness of their child's vulnerability and were afraid that another accident would happen. One mother reported vivid images of something bad happening to her child that appeared like 'flash-forwards', such as hot food falling on her child and causing injuries. Especially the parents of young children had become more cautious. Safety behaviours included keeping hot drinks far away from their child, not allowing their child into the kitchen, or monitoring other people's behaviour around hot substances:

'I'm really very cautious when it comes to the kettle, when it comes to hot tea and things like that. I can find it quite frightening. And also towards her, reacting more impatiently than necessary. I don't let her climb while I'm cooking and I also don't want her coming into the kitchen while I'm cooking.' [mother of a 1-year-old girl].

Some parents reported hypervigilance, and agitation in potentially dangerous situations or avoidance of such situations. However, some parents reported awareness of the risk of overprotecting their child and linked this to the burn event. They tried to make sure that their thoughts of potential danger would not influence their behavior (e.g. by telling themselves not to be too restrictive):

'At first you're so overanxious. What I wanted most of all was for him to just sit on the couch and do nothing. You've really got to let go of that at first. That you just let your child be a child and you're not constantly saying: be careful, look out, don't do that. Oh, it's awful.' [mother of a 3-year-old boy].

3.2.2. *The child's prolonged suffering and (risk of) permanent change*

Some parents reported that it was hard for them to be confronted with negative consequences of the injury in everyday life, for instance, in terms of the child's permanent scarring, physical impairments, infections, negative mood, or anxiety. A few parents reported feelings of loss and grief and found it difficult to accept changes between the pre- and post-burn situation. At certain times, the general realisation of what had happened to their (young) child and family came to mind, which was often associated with sadness:

'It also casts a shadow over the whole year. For instance if someone asked or asks how it's going. Someone I haven't spoken to yet, the first thing I think of is, do you know what we've been through. And it dominates everything actually. If I think about last year, the only thing I can think about is this.' [mother of a 1-year-old boy].

Parents said that the development of scars evoked feelings of helplessness, and it was difficult to deal with unpredictability and uncontrollability over scar development. Several parents reported uncertainty about future outcomes and worries about the future looks of the scar, reactions of other people, physical complications, or the child's behavioural and emotional response at a later age.

3.2.3. *Responsibility of self or other*

Parents reported appraisals and emotions regarding the responsibility for the child's injury. Several parents described trying to differentiate rational thoughts concerning their own responsibility from emotions such as guilt (e.g. they reasoned that their child's injury resulted from an accident, but still felt guilty).

'Actually I couldn't really do anything about it. Yes, of course, you can always do something about it, I mean, if you'd been more careful then you could have avoided it, say. But you don't do it on purpose. It's more like it's just stupid. But if I see her scars now,

then I already blame myself less, but in the beginning I blamed myself more. [mother of a 1-year-old girl].

It was difficult for parents to deal with feelings of guilt or thoughts such as ‘I let this happen’. In case someone else was present during the child’s accident, most parents emphasised the accidental nature of the injury and did not assign blame. This was especially the case when it concerned the other parent or another family member. One parental couple expressed more ambiguous feelings. They acknowledged that it had been an accident and no one was to blame but still experienced anger, especially because the people involved had shown little expression of regret or remorse. Some parents noticed that other people were also concerned with perceived responsibility. They found some reactions supportive (e.g. ‘this could have happened to anyone’) and others hurtful (e.g. ‘this is a lesson learnt for you’).

3.2.4. Positive outcome and recovery

Despite the stressful nature of the past experiences, almost all parents also reported minor or major positive appraisals of their child’s and family’s current situation and positive emotions, such as relief and gratitude. For instance, parents mentioned that their child had not developed any fears, was developing normally, or had only minor scarring:

‘So it did turn out alright, so you can go through something that at that moment is totally awful. You feel like everything stops. But that’s not the case, our child only has a scar on his arm or whatever, you know? Everything has just carried on.’ [mother of a 2-year-old boy].

Some parents mentioned that they ‘had been lucky’ or ‘it could have been worse’ as in hypothetical or actual cases. They said that seeing their child do well and focusing on positive experiences strengthened their own recovery. In addition, almost all parents expressed positive appraisals and feelings of gratitude when they reflected on the medical care and support from family, friends, and the hospital staff.

4. Discussion

The current study was the first to examine the content of parents’ memories and appraisals after their child’s burn injury. The results indicated that parents’ intrusive memories were predominantly related to the burn event and not to medical procedures. Common appraisals about the event or its aftermath contained an element of external or internal threat, such as appraisals about the child’s vulnerability or about the parent’s responsibility for the injury. Positive appraisals were also reported. A range of parents’ negative and positive emotions was associated with memories and appraisals.

Our first research question involved parents’ memories. Intrusive memories concerned the accident and first aid, and predominantly had a visual or auditory nature. The most prominent emotions associated with these memories seemed to be fear, sadness, and helplessness, which fits with findings from previous studies on intrusive memories (Grey & Holmes, 2008; Holmes et al., 2005). The combination of perceived threat and high levels of distress at the time of the trauma has been shown to be associated with the development of intrusive memories, and these factors are likely to be present during the burn event (Brewin & Holmes, 2003; Ehlers & Clark, 2000; Holmes et al., 2005). Findings are also in line with the ‘warning signal’ hypothesis, which suggests that intrusive memories typically represent moments that mark the onset of the trauma or had the largest emotional impact (Ehlers et al., 2002).

An unexpected finding was that parents’ highly emotional memories about their child’s suffering (i.e. pain and distress) during hospitalisation were not experienced as intrusive. During wound care, perceived threat may be relatively low when procedures are appraised as contributing to recovery, instead of causing physical harm. In addition, our previous study suggests that parents typically experience a sense of control when they are present during wound care (Egberts et al., 2018), which may decrease the procedure’s traumatic nature. However, McGarry et al. (2015) described that some parents relived experiences of wound care. It is unclear whether these experiences would classify as ‘hotspots’ associated with intrusive memories. As suggested by the account of a mother with a history of PTSD in the current study, an accumulation of previous traumatic events that leads to reliving aspects of these events, may activate perceived threat, also during wound care. Overall, the results support the assumption that several elements of an injury and its aftermath may be experienced as traumatic (Kazak et al., 2006; Price et al., 2016), but suggest that the burn event is the primary traumatic event for parents.

The second research question of our study concerned appraisals. Although most parents reported adaptive responses to the injury and appraisals of positive outcomes and recovery several months post-burn, they also reported negative appraisals about vulnerability in their child and thoughts about prolonged suffering. These increased uncertainty about the future. The child’s scars may contribute to this uncertainty and may also act as a reminder of the trauma, as was indicated by adults with burns (Macleod, Shepherd, & Thompson, 2016). In addition, parents’ appraisals of external threat may impact family behaviour, such as protective behaviours. However, overprotection may be unhelpful for the child’s recovery (Williamson et al., 2017). The themes within the current study resemble domains of an instrument assessing parental appraisals following

child trauma (Williamson et al., 2018) and the appraisals assessed through this instrument have been shown to predict child post-traumatic stress (Hiller et al., 2018). Parental appraisals may impact the child's adjustment, for instance, through influencing the child's appraisals (Hiller et al., 2018), through parenting behaviours (Williamson et al., 2017) or parents' coping assistance (Marsac, Kassam-Adams, Delahanty, Widaman, & Barakat, 2014). This emphasises the need to pay attention to parents' appraisals in the aftermath of child trauma.

Appraisals of perceived responsibility for the child's injury, accompanied by feelings of guilt or anger, were also present. Theory suggests the sense of internal threat imposed by guilt may maintain symptoms of PTSD (Ehlers & Clark, 2000). A large body of evidence indeed shows an association between guilt and post-traumatic stress (Pugh, Taylor, & Berry, 2015), and this includes studies of parents of children with burns (Bakker et al., 2013; Bakker, Van Loey, van Son, & van der Heijden, 2010; De Young et al., 2014; Egberts, van de Schoot, Geenen, & Van Loey, 2017). Parents of younger children (i.e. infants, toddlers, and preschoolers) appear to experience higher levels of guilt than parents of older children (Bakker et al., 2013; Egberts et al., 2017). In the current study, some parents rationalised that they were not responsible for the child's injury, despite feeling guilty. Guilt includes both cognitive and affective components (Kubany & Manke, 1995), and the current findings suggest that parents may experience a discrepancy between these components. Trauma-related guilt is prone to change through cognitive therapy (Kubany & Manke, 1995) and future research may test whether this is also the case for parents who feel guilty in relation to their child's injury.

Some limitations of the current study merit note. First, experiences within burn care systems other than the Dutch system might differ, for example, depending on the involvement of parents in their child's care and the psychosocial orientation of the burn care team. Second, no information was available on the parents' current psychological symptoms, such as PTSD symptoms. A mixed-method approach may be considered in future studies to examine how the qualitative content of parents' intrusive memories and appraisals relates to their PTSD symptom levels. Third, compared to the general family population admitted to the Dutch burn centres, the current sample had a relatively high proportion of native Dutch parents and parents with a high education.

4.1. Clinical and research implications

The current study informs the delivery of trauma-informed care after child accidental (burn) injury.

Although parents have been involved in early interventions after child trauma, the primary goal of these interventions was to minimise long-term psychological problems in the child (e.g. De Young, Haag, Kenardy, Kimble, & Landolt, 2016; Kramer & Landolt, 2011; Marsac et al., 2018). Extending programs by specifically targeting parents' psychological reactions as well, may enhance positive outcomes in both children and parents. Parental memories, appraisals and emotions comprise potential targets for early interventions and may inform the development of screening measures. Moreover, a family-centred care approach in burn care is recommended, in which parents are involved in their child's care at the level they choose (e.g. by being present during wound care and by participating in activities such as bathing the child). This may positively influence parents' sense of control (Egberts et al., 2018).

It is worthwhile for future studies to examine the development of parental appraisals over time and potential differences in appraisals of parents of younger versus older children. The current study focused on a limited time period postinjury and included mostly parents of young children. In addition, it seems relevant to unravel the interplay between parents' memories and appraisals of the accident, early symptoms of traumatic stress, the hospital experience, and longer lasting intrusive memories. Methods such as ecological momentary assessments, which allows experiences to be sampled in real time and within the participant's natural environment (Shiffman, Stone, & Hufford, 2008), are promising in examining intrusive memories in everyday life (e.g. Kleim, Graham, Bryant, & Ehlers, 2013).

In sum, the current study offers insight into the traumatic nature of paediatric burns from the parent's perspective and suggests that intervening on parents' problematic intrusive memories, appraisals or intense emotions may foster the recovery of both the parent and the child.

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