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## A Qualitative Analysis of Emotions among Rescue and Recovery Workers Responding to the Oklahoma City Bombing

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**ABSTRACT: Objectives:** At the time of the bombing of the federal building in Oklahoma City, Oklahoma (OKC), it was the deadliest terrorist attack in the United States of America. Available research on this incident, and in general, has been quantitative, using deductive methods. The purpose of the current study was to systematically examine professional disaster response workers' emotions elicited spontaneously and in detail as they were experienced over time after a major disaster. This qualitative study will add to existing knowledge of psychopathology and the psychosocial effects of disasters on professional responders, which have not been explored by prior quantitative studies. **Methods:** A volunteer sample of 181 rescue and recovery workers for the 1995 bombing of the OKC Murrah Federal Building was interviewed approximately 3 years after the bombing. These responders were asked open-ended questions to elicit undirected responses in their own words. In these interviews, they were prompted to describe their feelings at 3 distinct time points: upon their arrival at the bombing scene ("immediately"), in the first 1 week following the bombing, and currently at the time of the interview ("now"). **Results:** Data items were coded into the 5 themes: *Anticipation, Shock and awe, Negative reactions, Positive reactions, and Emotionally unengaged/unaffected*. The emotional themes of the responders mapped into 2 conceptual domains. The first domain is related to common human responses to horrible events such as the bombing. The second domain is related to the professional identities of the disaster responders. **Conclusions:** Specific aspects of the professional responder roles asserted themselves, shaping their emotional responses distinctly from those of the bomb blast survivors. This study identified both negative and positive emotions, which may help identify risk for or resistance to posttraumatic stress disorder (PTSD).

**KEYWORDS:** Disaster; rescue/recovery workers; qualitative; emotions; feelings; first responders

### 1 Introduction

The bombing of the Alfred P. Murrah Federal Building in Oklahoma City, Oklahoma (OKC), on 19 April 1995, was, at the time, the deadliest terrorist attack to date in the United States of America. The majority of available disaster research on this incident, and also more broadly, has been quantitative, using deductive methods. This research has largely focused on psychiatric symptoms and disorders and psychosocial effects among directly-exposed trauma survivors and less affected groups. Substantial research has documented psychiatric problems in these groups following exposure to disaster [1,2], especially posttraumatic stress disorder (PTSD) [3,4], depression [3,5], and anxiety [5,6]. Disaster responders have also been studied



extensively for psychiatric problems, and this population is well documented to be vulnerable to negative psychiatric sequelae [7], especially posttraumatic stress, depression, and substance abuse [8,9].

A few published studies of disaster survivors have examined their reported emotions using qualitative methods, with some consensus emerging. For example, prior studies of the 1995 Great Hanshin Awaji Earthquake in Japan [10] and the 2016–17 earthquakes in Italy [11] found that survivors expressed fear, anger, and sorrow. Fear/anxiety started during the disaster, and both sadness and anger arose early in the disaster aftermath.

Disaster response workers, like other people, may experience emotions related to their roles, and these may interfere with their work and their mental wellbeing. Emotions beyond those implied by psychiatric disorders have been recognized as an important part of the experience of disaster responders [11–13], but there has been little published research on this topic, even though difficult emotions are well recognized in this population [14,15]. A quantitative study on the mental health effects of the OKC bombing on male rescue/recovery workers found bombing-related PTSD in 13% and post-disaster major depression in 8%, far lower than among directly-exposed survivors. Post-disaster alcohol use disorder was found in 24%, with virtually no new (incident) alcohol cases and a 47% lifetime prevalence, far greater than among directly-exposed survivors [16].

While quantitative research studies are useful, the information they provide is largely limited to categorical and numerical responses to predetermined questions. An important advantage of qualitative research is that it may elicit more detailed and spontaneous material than quantitative methods. Similar to quantitative research, qualitative research is also likely to reveal distinct differences between the disaster responder group and the directly-exposed survivors.

Qualitative research on reported feelings of disaster rescue and recovery workers has been meager relative to similar research examining survivors' emotions. A study of 11 Israeli police first responders found that while working on the site of a disaster, the police used their training to perform their duties; however, after finishing their deployment, they revealed feelings of professional pride and sorrow over the fatalities [17]. The qualitative literature on healthcare workers in disaster is also larger than that of professional rescue and recovery workers: a systematic review of 19 articles also identified prominent fear and sadness related to disaster in this population [12]. Because existing knowledge is, therefore, relatively limited on the emotions of disaster response workers, this deficit may limit efforts to support this population's psychological response to disaster work.

To augment the scant knowledge of emotions experienced by professional disaster response workers as identified above, the purpose of the qualitative data presented here was to systematically examine professional disaster response workers' emotions elicited spontaneously and in detail as they were experienced in the first 3 years after a major disaster. The research questions addressed here are: What were the specific emotional responses of disaster response workers who were highly exposed to an unprecedented human disaster?, and how were these experiences integrated into their description of the events 3 years post-disaster?.

## **2 Methods**

### **2.1 Data Collection**

Recruitment of the study sample began in 1996, the year after the bombing. A volunteer sample of 181 OKC bombing rescue and recovery worker study participants was enlisted primarily from the OKC Fire Department ( $N = 165$  of 824 members) and secondarily from the much smaller Tinker Air Force Fire Department ( $N = 16$ ), first responder populations that were available for recruitment by the researchers. Fire

department administrators distributed letters from the researchers inviting volunteers to participate in the study through self-return postcards. Approval for human studies research from the Washington University School of Medicine Institutional Review Board (study #96-0328, approved 6/12/96) was obtained in advance. Written informed consent was provided by all research participants when they enrolled in the study.

The data were collected an average of nearly 3 years (mean, 34 months; range, 15–42 months) after the 1995 bombing. Experienced research clinicians administered the Disaster Supplement interview [18] to the study participants to collect demographic data as well as information on the responders' disaster experience, perceptions, feelings, and cognitions related to it. The study participants were asked to describe their feelings at 3 distinct time points with the following questions: "What emotions best describe your feelings on that day [at the scene/upon learning] of the disaster?" and "What emotions best describe your feelings during the week following the disaster?" and "What emotions best describe your feelings now?" In these interviews, the interviewers asked open-ended questions to elicit the workers' responses in their own words, using undirected prompts only if needed to elicit further discussion. The responses were hand recorded by the interviewers, following training specific to this instrument that directed them to record complete and accurate responses.

## 2.2 Data Analysis

The data collected were typed into text for thematic analysis. The analysis plan was atheoretical, allowing the findings to emerge directly from the material provided in the responses of the participants rather than being formed to fit any pre-existing framework. One researcher identified 5 themes present in the text response data from the questions about the workers' feelings in each of the 3 time frames. These themes were labeled *Shock and awe*, *Anticipation*, *Negative reactions*, *Positive reactions*, and *Not engaged/affected emotionally*, whose content is defined in Table 1. Coding of responses into multiple themes was permitted; responses that fit into more than 1 theme were coded into all applicable themes. Although it might be argued that some of these reactions may not strictly adhere to broader definitions of feelings and emotions, these are the responses given by these rescue/recovery workers to the questions about feelings and emotions. Additionally, these themes were derived without theory from the data rather than following predetermined themes chosen by the authors.

**Table 1:** Themes and definitions

Theme	Definition
Anticipation	Feelings upon hearing of the incident, being deployed, and entering the bomb site: adrenaline, fear, anxiety, nervousness, dread, worry, expectations, excitement, eagerness (Note: emotions of fear and anxiety represented normal human fight-or-flight responses to confrontation with expected danger in chosen professional responder duties, and were therefore coded into this theme rather than indicating pathological posttraumatic <i>Negative reactions</i> .).
Shock and awe	Feelings upon first witnessing bombing-related destruction: surprise, alarm, disbelief, incredulity, unreality, eeriness, astonishment, amazement, confusion.

(Continued)

**Table 1 (continued)**

Theme	Definition
Negative reactions	Negative post-disaster feelings about the bombing itself and the management of recovery efforts: sadness, sorrow, depression, hopelessness, helplessness, disappointment, guilt, fatigue, anger.
Positive reactions	Positive feelings about the bombing and recovery efforts: appreciation, gratitude, accomplishment, pride, relief, hopefulness.
Emotionally unengaged/unaffected	Emotional disconnection/disengagement: narrow focus on job duties, indifference, unconcern, ambivalence, emotional distance, emotional numbing, emotionless, blocking memories and feelings, ready for it to be over, tired of hearing about it, desire to move on.

Next, 2 researchers independently rated the content of the passages into the 5 themes until they achieved excellent inter-rater reliability as defined by  $\geq 0.80$  Cohen's kappa [19], with a mean = 0.84 and range = 0.80–0.90. During this process, discrepancies in coding between the researchers were settled through dialogue and consensus, leading to the development of detailed theme definitions with rules for inclusion and exclusion of content (see Table 1). For organizational purposes, the content of the largest of the themes, *Shock and awe*, was informally subdivided into 4 subthemes. The counts of coded responses in each theme were tabulated, and percentages of the material are provided for each of the 3 time frames queried relative to the time of the interview (see Table 2). The content of each theme is summarized in text and illustrated with pertinent quotations from the interview question responses. Demographic data are also summarized in text using numbers and percentages for categorical variables and means and standard deviations (SD) for numerical variables. More detailed descriptions of the sample, data collection, and analysis beyond those summarized above are provided elsewhere [16].

**Table 2:** Themes and numbers of responses coded by time frame

Theme	Time frame							
	Immediately		First 1 week		Now <sup>1</sup>		Total	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Anticipation	23	19	24	11	2	1	49	8
Shock and awe	131	68	37	17	14	7	182	30
Negative reactions	21	11	91	41	74	39	186	31
Positive reactions	2	1	27	12	30	16	59	10
Emotionally unengaged/unaffected	17	9	41	19	70	37	128	21
<b>Total<sup>2</sup></b>	<b>194</b>	<b>32</b>	<b>220</b>	<b>36</b>	<b>190</b>	<b>31</b>	<b>604</b>	<b>100</b>

Note: <sup>1</sup>“Now” refers to the time of the interviews that were conducted ~3 years after the bombing. <sup>2</sup>Total column percentages sum to >100% because of the overlap of coded themes permitted for individual response items. Percentages represent proportions of coded responses, not proportions of responders reporting emotions.

### 3 Results

#### 3.1 Overall Description

The sample of 181 rescue/recovery workers was predominantly Caucasian (89%,  $N = 161$ ) and male (97%,  $N = 176$ ) with a mean age of 38.5 years ( $SD = 7.9$ ) at the time of the interviews. Years of education averaged mean = 13.8 ( $SD = 1.3$ ) years, and the majority (76%,  $N = 138$ ) were married. These responders worked at the disaster site from 1 to 17 days (mean = 8.2,  $SD = 4.2$ ; median = 7) and a majority (74%,  $N = 134$ ) had labored under the “mother slab” (a precariously hanging 35,000-pound section of pancaked floors) (mean = 11.1,  $SD = 14.8$ ; median = 6 h) and in the “pit” (a depressed area relative to 3-story-high surrounding debris piles in the most unstable section of the structure, directly underneath the mother slab) (84%,  $N = 152$ ). Workers spent from 15 min to 74 h working under the mother slab (mean = 14.1,  $SD = 16.6$ ; median = 7), and spent from 15 min to 99 h in the pit. Injury or illness resulting from the responders’ disaster experience was reported by 11% ( $N = 20$ ).

Altogether, 604 items were coded into the 5 themes, with roughly equivalent total numbers of coded responses across all 3 time frames (see Table 2). There were 23 miscellaneous responses that did not fit into any category and hence were not coded into any theme. The largest themes overall in terms of numbers of responses coded across all 3 time frames were *Negative reactions* and *Shock and awe*. By far, the theme with the highest number of coded responses in the immediate time frame alone was *Shock and awe*, including more than two-thirds of the coded responses in that time frame.

#### 3.2 Anticipation

This theme was the smallest in number of passages coded. Its content consisted of powerful anticipatory emotions and reactions of the workers. This theme’s content was most prominent in the immediate time frame, continued through the first week, and dwindled to almost no content at the time of the interviews.

In the first 2 time frames, emotions described in this theme included excitement, fear and anxiety, nervousness, and worry and apprehension as the workers contemplated the work to be done. They mentioned feeling scared because of having little information about what had happened, nervous about what they might find when they entered the site, and “adrenaline.” Additional emotions were urgency and a sense of duty in anticipation of the activities ahead, and frustration. Responders on their way to the bomb site recalled being eager “to be there and help” and “to get in and find people” in their urgency to begin the work (“couldn’t wait” to start), and also “wanting to do a good job.” They expressed a sense of a calling in their work: “Duty calls,” and “I felt I needed to be there.” One worker felt frustrated by having to “walk past injured people and not being able to stop” because he was on his way to an assignment elsewhere. The responders contemplated potential danger at the disaster site for their own personal safety and that of their fellow responders; one worker asked himself, “Gut check: do I really want to go in the building?” They also expressed worries over friends who worked downtown and whether they had been in the bomb blast. Some were delayed by having to sit in the staging area and felt frustrated that the process was moving far too slowly: “Everyone wanted to be there and couldn’t participate all the time.”

At the time of the interview, responders reported having persistent fears of potential future incidents. For example, 1 worker found himself “wondering if it will happen again, and where.”

#### 3.3 Shock and Awe

The major components of this large theme, in terms of the number of coded responses, included emotions. In the immediate post-disaster time frame, this theme had the largest number of responses of all the themes, and it sharply diminished in amount of content over time. Miscellaneous *Shock and awe*

responses were reported in terms specific reactions to witnessing the sheer numbers of injured people and the severity of damage at the site: “my jaw hit the floor—I came around the corner and saw the building and stopped in awe”; “my first [reaction] was wow, this place is tore [sic] up—devastation”; “awestruck—the feeling was so overwhelming that someone would do this, a huge shock”; “I was in awe—[it was] something I expected to see overseas”; and “I was shocked that an American could have done this.” Four main subthemes were identified within the Shock and awe theme, including disbelief, feeling overwhelmed, amazement, and numb/unreal feelings.

Disbelief was described in all 3 time frames as “total disbelief—I couldn’t believe a building that size would have that much damage”; “it looks like a Third World country during a war”; “I could not fathom the damage”; “it was an unbelievable mess”; and “I could not believe it was really happening.”

Feeling overwhelmed was described in relation to the amount of destruction as well as by the sheer number of people who needed help and wondering how they would ever get the needed work done and specifically as “I thought I had seen just about everything—I was wrong”; “I stood there trying to take it in”; and “I couldn’t accept what I was seeing.” The coded responses reflecting feeling overwhelmed dwindled in numbers over time to almost nothing by the time of the interviews.

Amazement was expressed by participants in the immediate time frame generally as “utter amazement” and specifically as a negative categorization in reference to the size of the blast and the magnitude of its destruction: “half of the building was gone”; it was “unlike anything I had ever seen before,” and it “looked like Beirut.” Coded comments also indicated positive aspects of amazement, such as at how well the people were helping each other. After a week had passed, amazement was described in terms of the cooperation among firefighters and bonds that developed among them, how well everything was coordinated, how all the different agencies worked together, and how the community came together, and “still amazed at the destruction.” At the time of the interviews (nearly 3 years post disaster), one worker was “still shocked that an American could have done this” and another was “amazed at all the people who are still going down there.” The coded responses reflecting amazement decayed in numbers over time to almost nothing by the time of the interviews.

Numb/unreal feelings were described in all 3 time frames as feelings of being in a dream or a movie or a war zone, “dumbfounded”; “a state of confusion—too many things happening at once” and “still trying to figure out what had happened,” “varying from numbness to focused” and “need to get away from the bomb site,” noting that things seemed “eerie” and “very strange; everyone seemed dazed.”

### 3.4 Negative Reactions

This was the largest of the 5 themes in terms of total number of passages coded into it, and also specifically in the 1-week and at the time of the interviews. Coded material in this theme reached its peak in numbers by 1 week and remained robust into the present time frame.

Immediately following the bomb blast, anger and frustration were the dominant *Negative reactions* and were described as intense. Anger was expressed by many simply as a 1-word response. Many responses describing angry feelings were embedded in the context of cognitions: “I don’t understand why this happened,” and “after I found out it was a bomb, I got angry.” Feelings of helplessness (“from seeing all the people that were wounded,” as one responder noted) were present immediately and had mostly dissipated by 1 week.

By 1 week, sadness/depression/grief and feelings of devastation were also prominent, along with anger. Sadness was encapsulated as, “A feeling of despair was palpable in others, a feeling in the atmosphere.” One responder said he “cried a lot.” Sad and hopeless feelings were recalled over “giving up hope of finding

survivors,” with “disappointment that there was no chance of finding people who were alive”; so that “as days wore on, it took a toll on me because no more people were found alive.” By then, responders described themselves as emotionally and physically exhausted and wanting “to get away from all that death” and media reports of it. Both sadness and anger were embedded together in many responses: “Intense sadness. Intense anger. Really mad.” Intense expressions of anger at 1 week were described as “rage over hurt to innocent people” and “hate towards the people who were responsible,” responses typically remaining embedded in cognitive context, e.g., “anger that someone could do this.” Other main contexts attached to anger included not having been allowed to do more or having to do jobs they didn’t want to do, responses mixed with frustration. Some responders could not find a proper target for their anger: “You had anger but you didn’t know who to have it toward—you knew someone was responsible but you couldn’t direct it at anybody.” Others acknowledged urges to retaliate against the perpetrators. For some, the anger had generalized: “I caught myself getting angry quickly at things.”

At the time of the interview, anger and frustration remained strong along with sadness/depression. Context attached to feelings of anger included “anger about how this whole thing has been dragged out with trial” and “anger at perpetrators.” Feelings of sadness were attached to contexts of “sadness for victims and family members” and “a senseless waste of human life.” As time had passed, anger was reduced in amount and intensity” “some anger but relieved it’s almost over” and “still angry by less intense.” Intolerable feelings were “still painful” with “bad feelings still there” and giving way to emotional numbness for some, prompting avoidance reactions: “I don’t like to hear about it,” “I’m tired of hearing about it,” and “I am tired of dragging it on.”

### **3.5 Positive Reactions**

This theme was comprised of feelings about the organization and efficiency of the rescue efforts. It was the smallest theme in total numbers of coded responses, accounting for 10% of all coded passages.

This theme had few coded responses in the immediate time frame following the bomb blast. The workers expressed feelings of being proud and impressed at how well the response was set up and also over the collaborative character of the rescue effort.

At the 1-week time frame, proud and impressed feelings over the firefighter efforts continued to dominate regarding the firemen. They appreciated how quickly resources were gathered and “how people worked together for the good.” One worker expressed a “new appreciation for my wife and kids.” During this week, workers held hope that there would be survivors in the building and that some children would still be found alive in the daycare. One worker reported, “While I was there working, I felt great,” and another said he “felt better when he got to go back to the site.”

At the time of the interviews, many workers expressed gratitude that they had been able to participate, and they continued to express pride in their efforts and their success and pride for their city and the fire department, and “good feelings about the people I met and the work they did.” One worker remarked positively about families of the victims who, despite having lost so much, had joined the vigil with an abundance of “human spirit.” Many workers expressed relief that the ordeal was over, for example, “I was glad to have participated, but never want to do it again!”

### **3.6 Emotionally Unengaged/Unaffected**

This theme consisted of a remarkably large collection of remarks indicating emotional disengagement and feeling emotionally unaffected. The material in this theme grew as time elapsed.



The immediate post-disaster time frame yielded few responses in this theme. Representative comments were, “I just went to work...no fears, no second thoughts,” “I had a job to do—I did whatever was needed,” “Things were happening so fast, there was no time to think or feel,” and “I went into job mode, just started doing what needed to be done; I probably didn’t feel anything for several days.” The workers said they kept grounded by keeping their “focus on small areas,” staying “focused on getting people out of the building,” and “trying to remain detached and comfort those who needed it.”

The responders provided more coded responses in this theme in the 1-week time frame. They were “on autopilot: work, then go home” and “going through the motions day by day.” They also began to feel “ready to get into recovery mode” and “ready to get it over with.” Several workers reported being emotionally unaffected, for example: “I never got emotional; I was too busy working.” Feelings of numbness arose: “I was tired, numb...while pulling bodies out.” One worker regarded them as “just an object.” One worker “felt like I didn’t have the right to enjoy anything; I sat in front of the TV when I wasn’t working,” and another said, “I started to feel normal. I was tired of hearing it on TV.” Others tried to put the experience out of their minds and “block out the horror and horrific aspects of the event.”

By the time of the interviews, the number of coded responses in this theme further increased. The comments repeatedly indicated that the responders were predominantly “tired of hearing about it” and “ready for it to be over,” or they had “no emotions” and they wished people would “let it go,” without elaboration, and with little else to say.

### 3.7 Conceptual Domains (Latent Constructs)

The themes of the responders mapped into 2 conceptual domains that represent latent constructs. The first domain addresses common human responses to horrible events such as the bombing. The strong emotional content expressed by the firefighters primarily included material from this domain’s themes of *shock and awe* and *negative reactions*. These emotional responses were similar to those of directly-exposed disaster survivors, as elaborated in the Discussion section. The second domain relates specifically to the professional identities of the disaster responders, from material drawn from the themes of *anticipation*, *positive reactions*, and *emotionally unengaged/unaffected*, reflecting their unique experience.

## 4 Discussion

This study examined qualitative data pertaining to emotions over time among a sample of firefighter responders to the OKC bombing. This study’s data provides new knowledge on how rescue and recovery workers felt about their bombing experience.

The 5 themes taken together indicate a consistent narrative. The responders reacted initially, drawing from their professional identities and purpose. They anticipated the job ahead, but then experienced shock and awe as they initially arrived at the site of the bombing. As the responders began their work rescuing survivors and later recovering victims, professionally, they withheld emotional responses congruent with meeting the demands of their job. However, they were not without human emotional responses, including negative reactions such as anger, hate, and frustration. These negative emotional responses appeared to arise from the initial shocking experience, emerging by the end of the first week and continuing thereafter. Over time, the responders indicated positive reactions, including pride in their professional performance and emotional disengagement as they focused on finishing the job and moving on to future calls to action, similar to a prior study of police [17]. The types and the time frames of the emotions that emerged in the data presented here are generally reminiscent of those described in studies of disaster survivors, as well as in studies of healthcare and disaster workers mentioned in the Introduction of this article [12,17].



The predominant emotional responses overall were predominantly in the *Shock and awe* theme and secondarily in the *Negative reactions* theme, represented in the domain of common human responses. These types of emotions are ones that would be basically human and generic to all individuals exposed to the horrors of this disaster. *Shock and awe* peaked immediately, then dwindled quickly and steadily over time to negligible amounts, while *Negative reactions* were slow to start and rose to peak in the first week. Anger, hate, and frustration were woven through the negative reactions across all 3 time frames, but their quality was markedly less intense as years passed. Sadness and depression were slower to appear, but they persisted. At the final time frame when the interviews were conducted, feelings of numbness had prompted avoidance responses.

In the domain of emotional responses related to professional identities, the disaster responders anticipated the job that lay ahead, an immediate concern that diminished as they completed their duties. Over time, the responders developed positive emotions related to pride in the work that was done and the cooperation of helpful entities, which grew as the work was completed. They indicated that they felt increasingly unengaged and unaffected emotionally as their work was behind them, and they came full circle to shift their attention to the next incident to be encountered in their jobs.

#### **4.1 Comparison between OKC Bombing First Responders and Survivors**

Available work comparing qualitative data on the emotions of OKC bombing survivors [20] provides a basis for contrast and comparison with the findings presented here. The disaster survivors' emotions were coded into different themes than those of the disaster responders, reflecting differences in their roles in the disaster (rescued vs. rescuers). Both responders and survivors expressed variations on overwhelming emotional upset arising immediately. Unlike the survivors who had no systematic preparation for being in the bomb blast or for their emotional responses to it, the professional responders' initial emotions involved anticipation of the jobs for which they were trained and expected to perform. This is why the responders' emotional reactions began prior to their arrival on the site, compared to the survivors, whose reactions commenced at the moment of the bomb blast. On site, both groups initially experienced overwhelming feelings of shock and disbelief over the bombing and its magnitude.

The initial reactions of the responders upon hearing of the incident were to engage in their professional response roles. Upon reaching the bombing site, however, their immediate responses were like those of the survivors and everyone else on site: shock, disbelief, and feeling overwhelmed. Both groups described immediate negative emotions including anger, sorrow, guilt, and emotional numbness. For both groups, sadness and sorrow were slow to begin and persisted over time. Unlike the survivors, whose anger about the bombing started slowly and grew over time, anger for the responders began immediately and diminished in intensity over time. Anger of the responders was directed mostly at the perpetrators. Both groups also expressed positive feelings of gratitude, the survivors grateful for having survived, and the responders grateful for assistance and support received. A theme unique to the responders was *Anticipation*, a momentary emotional response consistent with their unique role or identity as responders, as they were preparing for and assuming their duties. Both groups reported fear, but for the responders, fear was an expected part of confrontation with danger in their chosen jobs and was therefore coded into the *Anticipation* theme. For survivors, fear was instead coded into the *Negative responses* theme, as it was a response to rather than an anticipation of the danger. Fear and anxiety of the survivors persisted over time as a negative posttraumatic response even after they were out of danger, but the responders reported virtually no longer-term fear and anxiety. Instead, the responders' reports of anticipatory fear and anxiety progressed over time into coping with their professional roles through longer-term feelings of emotional numbing and detachment, warranting a separate theme for them. Of note, 2 conflicting effects on fear may have been operative in these workers. One is fear of a recurrence of such a horrible experience, common to reactions of virtually all

humans, and the other is composed of concerns about future incidents inherent in operational and threat assessment training and the professional experience of these workers.

#### **4.2 Strengths and Limitations**

A major strength of this study was its relatively large sample of disaster responders for a qualitative study ( $N = 181$ ). These responders had time to reflect on the event and their feelings over the passage of time that had elapsed between the bombing and the collection of the data almost 3 years later. The qualitative methodological approach to this study, using non-leading, open-ended interviews, yielded more detailed and nuanced information than obtained by quantitative methods alone, because the responders were able to speak at liberty, providing data not captured using data collected in circumscribed categorical variables. The data for this article are part of a larger longitudinal mixed-methods study of multiple aspects of the OKC bombing. Reporting of the quantitative data and other topics within the qualitative data has occupied many years and can be found within multiple published articles that are readily available in the literature. This article presented data collected from rescuer/recovery workers, using a conceptual approach to segmenting the data that has been consistently incorporated across the larger study, with targeted analysis of responses to specific questions about emotions and feelings.

As argued elsewhere [21,22], “older” data do not necessarily represent an inherent weakness but rather an opportunity to understand the context of this event and how it provides insight into more recent circumstances. A strong and complex dataset such as this one yields opportunities for advancement of new knowledge that other, more recent, less methodologically rigorous research may not provide. This is because prior studies have not provided such detailed qualitative responses regarding rescue/recovery workers’ disaster-related emotions collected in the short term after a domestic terrorist attack of such magnitude. Additionally, the collection of the data for this study relatively soon after the disaster avoided contamination of retrospectively collected memory and perceptions that are susceptible to degradation and distortion over many years or decades inherent in longer-term cross-sectional studies. Assumptions that these findings are uninformative after the passage of years would therefore be unwarranted.

An important limitation of this study was the selection of a volunteer sample, which may have introduced sampling bias and non-representativeness of the disaster responder population. However, the large sample size likely helped to offset representativeness issues and promoted the likelihood of achieving saturation. Regardless, the sample selected from 1 disaster of 1 type in 1 site may further contribute to the lack of generalizability of the findings to other disaster worker populations. An additional limitation of this exploratory study was that the responses to interview questions were not audio-recorded and transcribed for analysis, but instead were hand-written by trained clinicians instructed to record responses as completely and accurately as possible. Despite intensive training of interviewers to record responses verbatim and completely, the handwritten collection of these data may have resulted in data loss or introduced inaccuracies. Thus, more definitive qualitative studies with audio-recorded, transcribed data are needed to confirm these findings and further explore this topic. Additionally, iterative procedures as conducted with grounded theory methods could be applied, beginning with presentation of the findings to the study participants, to gain further detail and insights from them, and incorporating more advanced procedures such as participant validation (member checking) and methodological triangulation. Finally, because the finite scope of this study did not permit expansion of presentation and tracking over time of the co-occurrence of responses across themes, which must await future study.

### ***4.3 Implications for Policy and Practice and Directions for Future Research***

The policy and practice implications from this qualitative study echo recommendations from previous quantitative disaster research. Negative adjustment after the disaster has been observed to appear primarily related to pre-existing problems rather than new disaster-related problems, such as disaster-related PTSD [23], similar to the findings among the OKC bombing responders [16]. Emotions have been identified as a means to prepare for and mitigate the negative mental health effects of disaster [24,25]. Expression of anger may detect individuals who are distressed and at risk for psychopathology. These findings suggest the potential need for interventions to address anger in the post-disaster setting.

Compared to the survivors of the OKC bomb blast, the firefighter responders participating in this study had far lower rates of disaster-related PTSD [23], and it was assumed that their training, selection to the profession, self-selection to it, and experience on the job were contributory to their level of functioning. Possibly, elements of the training itself may have been protective against vulnerability to disaster-related PTSD.

The narratives of the responders were quite similar to those of the bomb blast survivors in terms of their initial human responses to the horrors of the bombing. It was over the early days and weeks, however, that the specific aspects of the professional responder roles asserted themselves, shaping their emotional responses distinctly from those of the bomb blast survivors, with protection from PTSD and with persistence of anger. Future research is needed to isolate the specific elements of the professional training that appeared to have conferred this advantage over time, to allow development of interventions applying these elements to help survivors cope with and thrive in the wake of their disaster experience, for which they were systematically unprepared. These could provide especially useful elements to be added to disaster responder training programs, as well as disaster-related interventions to be applied during the 1-month post-disaster period before which PTSD fully develops and can be diagnosed, to confer protection from PTSD.

## **5 Conclusions**

The findings of this study identified both negative and positive emotions, which may be helpful in identifying risk for or resistance to PTSD. Additionally, formal disaster training might help responders learn to negotiate difficult emotions as well as to promote anticipation and nurturing of positive emotions as part of useful coping techniques. Similar programs might also prove helpful to disaster mental health professionals responding to overwhelming numbers of highly traumatized disaster survivors as well. Development of programs for these purposes is needed, and then will require application of randomized clinical trials to test and further refine them.

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**Informed Consent:** All participants provided written informed consent upon enrollment in the study.

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