


## Article

# Survivors' Narratives of the Oklahoma City Bombing Retold Seven Years Post-Disaster

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**Abstract: Introduction:** A large proportion of the existing voluminous disaster mental health research literature represents the quantitative study of psychopathology, especially posttraumatic stress disorder. Subjective disaster experience is relatively unexplored. Qualitative narratives of surviving a disaster may provide insight into individual experiences of it and efforts to derive meaning from it. **Methods:** From an initial random sample of 182 survivors of the Oklahoma City bombing, narrative descriptions of this experience were collected 7 years after the bomb blast from 116 of the original sample, for the purpose of examining persistent as well as newly evolving content through qualitative analysis. The narrative content was analyzed for the evolution of thematic content in narrative data also collected at 6 months post-disaster and 1 year later. **Results:** The thematic content of the bombing experience was structured in a chronological fashion from the bomb blast (sensory, cognitive, and emotional), its immediate aftermath (e.g., escaping danger), and later experiences, (e.g., leaving the bomb site and receiving hospital treatment). During the time between interviews, the focus and general content of the narratives changed minimally, despite considerable compression of detail. **Conclusions:** The consistency of the material in these narratives over 7 years may reflect the persistence and salience of disaster memories, with the potential for its continuation for the rest of their lives.

**Keywords:** disaster; survivors; narrative; mental health

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## 1. Introduction

A large body of literature has accumulated over recent decades pertaining to the mental health sequelae of disaster. A considerable portion of this literature has focused on psychopathology and posttraumatic stress disorder (PTSD) using quantitative methods. Prior research has solidly demonstrated that the majority of survivors of extreme exposure to even the most severe disasters do not develop PTSD or other new psychopathology afterward [1]. Therefore, to understand the full emotional experience of survival of disasters, it is important to examine other disaster mental health experiences outside of psychopathology among representative populations of disaster survivors, not just those who develop psychopathology.

Terrorism represents one subtype of disaster, involving an intentional mass casualty incident, usually with a political, religious, or other ideological basis. Like other disaster literature, much of the mental health research on terrorism has focused on psychopathology, especially PTSD, also primarily using quantitative methods. Research on the mental health

effects of direct survivors of terrorism has examined classic terrorist attacks such as the 1995 Oklahoma City bombing [2], the 1998 bombing of the US Embassy in Nairobi, Kenya [3], the 11 September 2001 terrorist attacks on US targets [4,5], the 2001 anthrax bioterrorist attack on Capitol Hill [6], and the 1995 sarin gas attacks in the Tokyo subway [7], for example. These studies found considerable psychopathology including PTSD in up to one-third of survivors.

Relatively few published studies have examined the personal experience of a terrorist attack from the original words expressed by representative groups of survivors. Research exploring the raw experiential impact of living through and surviving terrorism is needed to begin to fathom the extent and depth of what terrorist survivors have gone through, initiate and facilitate efforts to help them process their experience, and help others understand what they have been through. Qualitative methods can be especially informative in obtaining this information. A few remarkable studies of terrorism survivors using qualitative focus group methods have collected brief disaster experience descriptions, which have suggested the value of more comprehensive qualitative studies [8,9] to provide personalization and immediacy of terrorism experiences, giving a foundation and background to survivors' reactions, mental health sequelae, coping, and efforts to recover with a richness not available in quantitative studies [10].

At the time of its occurrence on 19 April 1995, the bombing of the Alfred P. Murray Federal Building in Oklahoma City, Oklahoma, was the most severe act of terrorism on American soil. At 9:02 a.m., a domestic terrorist parked a rental truck filled with explosives in front of the Alfred P. Murray Federal Building and detonated it, resulting in 168 fatalities and hundreds of severe injuries. The explosion blew off the front half of the Murrah Building and devastated >800 properties, generating \$625 million in damages. Because of the severity of this incident and the availability of sufficient numbers of highly exposed survivors, the Oklahoma City bombing has provided multifaceted opportunities for gathering extensive data of great importance for understanding the mental health effects of terrorism, including both quantitative [2] and qualitative studies [11] of personal experiences of extreme human experiences.

A unique study of 182 Oklahoma City bombing survivors was conducted through individual open-ended interviews collecting bombing narratives at 6 and again at 17 (N = 137) months after the disaster. These disaster narratives revealed intense and vivid memories of the experience [11]. The descriptions of their bombing experiences were consistent across both interviews but the amount of detail reported in the later interview was diminished. These Oklahoma City bombing narratives included extensive detail of the survivors' sensory, cognitive, and emotional experiences, as well as recollections of escaping the danger, including the assistance they received and gave to others. Their narratives drifted beyond the immediate bombing experience they were asked to describe, demonstrating tenacious engagement in these survivors' storytelling of these experiences.

Research on individual mental health consequences of disaster exposure has mostly focused on relatively short-term responses, a sensible focus for the purpose of understanding immediate disaster mental health consequences and the needs of the exposed population. However, understanding longer-term needs and broader effects of the experience over time requires examination over longer periods of time. A 7-year follow-up study of the OKC bombing survivor sample permitted a longitudinal investigation of qualitative data reflecting the recollection of their subjective experiences of the bombing, providing a unique opportunity to address the personal experiences of disaster survivors to be presented in this article in addition to previously published quantitative data on mental health outcomes [12]. Therefore, the purpose of this article is to examine the survivors' disaster narratives for persistent and newly evolving content approximately 7 years after the bombing.

## 2. Materials and Methods

From a registry provided by the Oklahoma State Department of Health of 1092 survivors of the Oklahoma City bombing, 255 eligible adult survivors were randomly selected. The selected survivors were directly contacted by the research team to invite them to

participate in the baseline research study. A total of 182 (71%) of these survivors enrolled in the initial study, with a 71% participation rate. Data collection was completed at a mean of 6 months after the bombing. This was a highly exposed sample, as one-third were in the Murrah Building where the truck bomb exploded, and the remainder were in adjacent buildings or outdoor locations heavily damaged by the bomb blast and where fatalities occurred; 87% of the sample was injured in the bombing. At the 7-year follow-up, members of the baseline sample were contacted by the research team to invite them to participate in the follow-up study. A total of 116 survivors completed follow-up assessments at a mean of 7 years after the bombing, reflecting an approximately one-third loss to follow-up of those still alive, with little evidence of demographic or diagnostic attrition bias [12]. The responses from these follow-up assessments are presented in the current article. All of the survivors in the sample were directly exposed to the bombing from locations within and surrounding the buildings that were severely damaged by the bomb blast and where injuries and fatalities occurred among the majority of survivors. This article narrowly focuses on the survivors' direct disaster experience as recalled 7 years later, and the findings related to other aspects of their lives can be found in other articles from this large, complex study.

Further details of the sampling procedures, characteristics of the sample, and other methods in the baseline and follow-up groups of data collection were provided in previous articles [2,12]. The study was approved in advance by the Washington University Institutional Review Board (#88-0832, 10/10/87 for the baseline study and #00-0922, 10/18/01 for the 7-year follow-up study), and all participants provided written informed consent at each wave of data collection.

During each wave of data collection, participants were interviewed using the Disaster Supplement to the Diagnostic Interview Schedule [13]. Two questions in the Disaster Supplement asked survivors to describe their personal experience with the bombing and their immediate reactions to it in narrative format: (1) "Can you describe your experience of the bombing?" and (2) "What was your immediate reaction to the danger?" The interviewer manually documented this information, which was later transcribed into a text document for analysis. The interviewers were specifically trained to capture the exact responses provided by the participants.

One researcher read all the transcribed narratives and identified the themes and sub-themes within the text that best reflected the content of the narrative data. Subsequently, 3 researchers independently rated the narrative material to code the content into themes and subthemes, achieving inter-rater reliability in an excellent range ( $\kappa > 0.80$ ) [14–16] with a range of 0.8 to 1.0. During this process, any inter-rater discrepancies in coding were resolved by achieving consensus through discussion between research team members, leading to the development of inclusion and exclusion criteria for each theme. After the achievement of excellent inter-rater reliability, the text narratives were imported into ATLAS.ti (ATLAS.ti Scientific Software Development GmbH, Berlin, Germany) for qualitative analysis. The same 3 researchers then coded passages from the narrative content into 1 or more of their respective themes and subthemes. The numbers of coded passages for each category and theme were tabulated.

### 3. Results

Thematic analysis of the data identified three themes and eight subthemes to represent the narratives of the experiences of the OKC bombing survivors. Table 1 reflects the themes and subthemes and the respective frequencies and proportions of passages coded in each. The three themes that emerged were Experience of the Bomb Blast, Immediate Aftermath of the Bomb Blast, and Experiences after Leaving the Bomb Site.

**Table 1.** Frequencies and percentages of passages coded according to themes and subthemes.

Themes/Subthemes	Frequency (Total N = 554)	%
<i>Experience of the Bomb Blast</i>	283	52
Sensory	164	30
Cognitive	97	18
Emotions	22	4
<i>Immediate Aftermath</i>	240	43
Destruction	68	12
Casualties/Injuries	60	11
Escape	63	11
Helping Others/Help from Others	36	7
Post-Escape On-Site Experience	13	2
<i>Experiences After Leaving Bomb Site</i>	31	5

The content of the first theme represents narratives pertaining to the direct experience of the bomb blast, including subthemes entitled Sensory, Cognitive, and Emotions. This theme had the largest number of coded content of any of the themes.

The second theme of narrative responses pertains to survivors' experiences at the bomb blast site in the immediate aftermath of the bombing. This category has 5 subthemes including Destruction, Casualties and Injuries, Escape, Helping Others/Help from Others, and Post-Escape Experience at the Bomb Site.

The third theme revolves around survivors' experiences after leaving the bomb site, including the first hours and days after the bombing was over. This theme had the least coded content of any of the themes, and because it was so small, it did not lend itself to subdivision into subthemes.

### 3.1. Experience of the Bomb Blast

The largest of the three themes had three subthemes, as described below. The material in this theme and its subthemes covered various aspects of the immediate experience of being in the bombing.

#### 3.1.1. Sensory

The narratives surrounding the immediate bomb blast invoked five sensory modalities. The majority of the perceptual descriptions involved auditory and tactile sensory modalities (35–37% of the total sensory content each) with fewer involving visual sensations (28%).

Several survivors recall hearing "the sound" and others described it more specifically as a "loud boom" or a "loud bang". One recounted: "I remember a real loud bang. It was like a thunderstorm. It was a real sharp bang. But then I remember after that bang it was kind of thunder. I thought it was echoing like boom, boom, boom. It kept on going on for a while". Some survivors identified hearing an "explosion" or "the blast" but others described hearing "the bomb go off". One survivor heard a "dull roar—then quiet". Another "didn't hear noise, it was very quiet afterwards". Other narratives also described car alarms, sirens and explosions, wires sparking, glass shattering, and people screaming.

Survivors also recounted seeing an "intense white light" and a "flash of light" from the bomb blast, followed by the lights going out and everything going "dark" or "black". According to one narrative, it was so dark that "I could see the sky and street". There was thick smoke and dust, and one survivor saw a mushroom cloud. The dust and debris made it hard for others to see, described as the experience of blurred vision. One survivor recalled being inside the building and "I stood up and can see blue sky on three sides of the building, could see no other people". Another survivor recounted standing outside the

building and observing that it “looked like crystal all over streets—a river of glass”. This survivor also described “A lot of black smoke from cars on fire. My new car was parked in front. I looked toward the parking lot and saw the Federal Building—I could see people trapped”. One survivor pulled up to the building and saw a yellow Ryder truck parked directly in front of it. This individual saw a man in camouflage get out of the Ryder truck. This survivor went into the building and took an elevator to the sixth floor.

Other narratives focused on tactile sensations from the bomb blast. Some described the building as “shaking” from the blast; one survivor “heard the ‘kaboom’ and simultaneously the building was shaking”. Numerous survivors recounted being thrown to the floor or being knocked backward from the shock wave of the blast. One survivor described being knocked unconscious by the impact for 20 or 30 min. Several narratives chronicled experiences of being covered with debris, buried underneath the rubble, pinned under furniture, and trapped inside the building.

### 3.1.2. Cognitive

The largest of the three themes had five subthemes, as described below. The material in this theme and its subthemes covered various aspects of the immediate experience of being in the bombing.

This theme is composed mainly of the survivors’ thoughts during the bombing and their initial contemplations about its cause. Survivors expressed concern largely about their own mortality in the face of the bombing as well as concern for others. In one narrative, the survivor thought “I might die; many people will die”. Another survivor feared bleeding to death. Expressions of concern for others mainly considered potential harm to family members and other coworkers in the bomb blast. One senior office worker expressed a desire “to get everybody out—I felt responsible for the office and wanted them out of danger”.

Survivors attempting to understand the cause of the blast were left with either an overwhelming feeling of uncertainty or various theories of different categories. Many survivors expressed complete confusion, and others were so shocked and stunned that they “could not understand what happened”. A large contingent of survivors thought it was a gas explosion or that a furnace or boiler room had exploded. Others believed it was an act of war, such as a nuclear attack, or that a plane had crashed into the building. The remaining theories revolved around natural disasters, with several survivors initially thinking it was an earthquake or a tornado. One survivor “first thought that a pipe bomb had gone off in the bathroom; then I thought that it was a gas explosion—the office had recently been evacuated due to a gas leak. But then I detected the smell of gunpowder and knew that a bomb had exploded”.

### 3.1.3. Emotions

This smaller collection of narratives focused on exclusively negative emotions elicited during the experience of the bomb blast. The main emotions expressed were fear and shock, described by one respondent as feeling “scared; I thought the building would collapse and I went into shock”. Another survivor described immense anger: “I was mad as hell” and “it was a miracle I wasn’t hurt”.

## 3.2. Immediate Aftermath of the Bomb Blast

This second theme is nearly as voluminous as the first theme and contains five subthemes, as described below. The material in this theme and its subthemes captured the survivors’ experiences immediately after the bomb blast was over.

### 3.2.1. Destruction

This subtheme accounts for the most passages in the second theme and includes narratives revolving around structural damage and destruction. Survivors mentioned that glass shattered, windows blew in, walls fell down, and ceilings caved in. One survivor recounted that “everything was crashing in with glass shattering, ceilings coming down,

and concrete walls coming in". Another survivor described how he "looked down hallway and it was destroyed completely—walls down, wires dangling, and 1 room was full of smoke". Yet another survivor stated that the surrounding "room was just a shambles; the wall was blown out and I could see the sky. There was so much debris in the air it was hard to breathe".

### 3.2.2. Casualties/Injuries

This subtheme contains graphic descriptions of casualties and injuries both sustained by survivors and observed in others around them. Injuries that were mentioned included lacerations, profuse bleeding, a broken leg, crush injuries, and being knocked unconscious. Graphic descriptions were shared: "my jugular vein was severed, my leg was broken, and my hand crushed", "a coworker with part of his head blown off", and "a glass shard protruding from my breast". Some narratives described dying and dead individuals: "A man next to me was killed" and "People were dying in front of me". According to some narratives, some victims were already dead when they were found.

### 3.2.3. Escape

This subtheme's accounts of escape included stories of being injured by the destruction in the building and of getting out of the building as it collapsed from the explosion. Survivors described crawling under tables and diving under desks to avoid injury. One survivor described having to "move a very heavy copy machine in order to get under my desk". Some survivors escaped the building by digging out of debris, crawling on their hands and knees, crawling down to the fire exit, and ducking under a partially knocked-down wall. Many described escaping the building with coworkers using the back door, the escape door, and the back steps. One survivor "couldn't use my legs, so I pulled myself toward a hole in the building". Another survivor described tying together curtains and using them to get out of the building. Yet another was cognizant "that the fittest survive. I had a lot of energy; I kept thinking fast, not confused or muddled. I went to the back of the building with a friend". Several survivors described strong desires to escape as a need "to get out ASAP [as soon as possible]" and "to get away", not stopping to take purses or look around or do anything else.

### 3.2.4. Helping Others/Help from Others

This subtheme covers accounts of survivors assisting others with injuries and escaping the building along with assistance to survivors, such as being dug out of the rubble and carried or dragged out of the building, with one hearing the pronouncement, "we've got you now". One survivor described being set down on the street by a firefighter who rushed back into the building. Assistance provided included yelling colleagues' names, searching for survivors, administering first aid, and comforting others. One woman who had lost her shoes searched barefoot for her child in the glass-filled nursery, got stranded, and was carried out. One survivor recounted escaping through a window and down a ladder with a coworker.

### 3.2.5. Post-Escape On-Site Experience

This small but rich subtheme details survivors' experiences onsite after escaping the building. Upon emerging, survivors sawdust and glass everywhere; cars and the federal building were on fire. One survivor went around to the front of the Murrah Building and, upon seeing the crater, realized there had been a bomb explosion. On this beautiful morning, survivors described papers and debris flying down the street and glass everywhere, with the sun reflecting off the broken glass. One survivor described "people wandering around outside with a vacant look, dazed, not knowing who they were or where they were". Another described people running and screaming, many people bleeding, and people lined up on the curb waiting for ambulances. This survivor was "cold and shaking like a leaf". Some survivors had the presence of mind to call their loved ones to tell them they were all right.

Some survivors described returning inside damaged buildings. One found a barefoot woman walking in glass who was cut badly and screaming. Another went inside to look for a coworker, found her under her desk, and tried to get her out, but the coworker would not come, leaving the survivor with “a totally hopeless feeling”. Yet another survivor went back inside and successfully retrieved a briefcase containing a wallet and keys.

Outside, survivors saw “hundreds” of injured people, many being loaded into ambulances and trucks. A triage area was attending to critically injured people. Witnessed injuries included people who were “shredded” and “a man walking by who was missing an arm”. One passage referred to seeing “dead children being carried out”. Some survivors came across dead bodies. One survivor “told folks to go to Robinson and run down the street. . . as fast as they could”.

### 3.3. Experiences After Leaving the Bomb Site

The third theme, much smaller than the other two themes, had no subthemes. This theme is a collection of survivors’ narratives during the hours and days after departing from the bomb site. Its content includes transport to medical centers, the care received there, and reunions with family members and friends. One survivor walked to the hospital for the dressing of a head wound. Another survivor relayed having passed out in the ambulance in transit, and two others described waking up in the hospital hours or weeks later with no recall of the bombing. Injuries treated in the emergency room included damage to extremities, the removal of foreign bodies from the skin, and suturing wounds. Survivors with less acute injuries were treated by their family physicians, such as for non-extreme breathing difficulty. Several survivors proceeded directly to the damaged YMCA to find their own or their friends’ or coworkers’ children, or to help extricate the children from it. Survivors described desperate attempts to connect with their loved ones, some of whom were at the bombing site, including their children in daycare. One survivor was moved to donate blood and waited 7 h in line to do so.

## 4. Discussion

This article describes a qualitative follow-up study of 116 directly exposed survivors of the Oklahoma City bombing interviewed 7 years after the disaster, focusing on personal narratives of the experience. Their stories were told in vivid and intense detail, as though it were yesterday, describing raw perceptions, emotions, cognitions, and behaviors during and immediately after the bomb blast.

An earlier article [11] gathered similar data from the Oklahoma City bombing survivors at approximately 6 and 17 months. Even though the themes organizing the qualitative data collected in these different time frames were selected separately for each dataset, the themes were remarkably similar across time. The volume of narrative content reflected in the numbers of coded passages sequentially diminished between data collection at 6 months (1824 coded passages), 17 months (1035), and 7 years (554). This pattern likely reflects a true change in the amount of material shared because the research methodology was consistent across all three of these data collection points. It has been well-established elsewhere that serial repetition of research questions with the same participants across time yields diminishing returns [17–20], consistent with the methodological contribution to the diminishing amount of content observed over time. Although this known methodological phenomenon likely contributed to the compression of narrative volume across sequential collections of data, what did not diminish was the vividness of the descriptions, and considerable detail remained after 7 years. In other words, as people repeatedly convey versions of the same stories again and again, they may distill the content to its most salient elements.

The compression of details with the maintenance of dramatic content may also relate to a rehearsal effect from repeated retellings of the narrative of the events. These findings are similar to those of Brooke and colleagues [21] who reported that trauma narratives collected in an emergency department became more thematically organized yet remained consistent in detail over the course of repeated interviews over a 1-year period. Repeating the



narrative over time may result in organizing the information into a coherent structure based on specific recollections that elicited the greatest responses from listeners. Additionally, finding a uniformly rich narrative across different time frames may reflect the consistent and effective processing of the mental health consequences of exposure. Brooke and colleagues found that the richness of detail in follow-up interviews was related to better coping and mental health outcomes.

The narratives from the current study mostly focused on the experience of the bomb blast with less attention to later time frames in terms of the number of coded descriptions. At 6 months, 17 months, and 7 years, the immediate aftermath of the bomb blast comprised the most voluminous theme in terms of number of coded passages (51%, 47%, and 52%, respectively). This finding reflects the apparent salience and persistence of the most memorable parts of the experience. This focus may have also contributed to the compression of the amount of material provided in the collection of data over time. At all three time points, the sensory (28–30%) aspects of the bomb blast experience outweighed the cognitive (10–18%) aspects. Clearly, the bomb blast was such an intense sensory experience that perception overwhelmed thoughts. Descriptions of the bomb blast and its immediate aftermath at all three data collection time points emphasized destruction, casualties, and efforts to escape the danger. In all three time frames, the survivors continued to discuss their experiences after the bombing ended and beyond its immediate aftermath, even though they had not been asked to discuss experiences at later time points. This not only follows the interview instructions provided to the survivors but may also reflect the strong momentum in the act of storytelling and the understandable difficulty in establishing threshold points in time to mark the story's conclusion. The tenacious consistency of the material in these narratives over 7 years despite the gradual compression of the volume of material expressed speaks to the persistence of the survivors' memories and the salience of the experience. This suggests the very long-term nature of the experience in the minds of the survivors, with the potential for its persistence for the rest of their lives.

An implication from these findings is that both researchers and clinicians can anticipate vivid recollections of the experience of surviving a disaster, even many years later. This may be expected to keep emotions alive over a long time, fueling persistent psychopathology and longstanding struggles to complete cognitive processing of the experience. Thus, clinicians and researchers who interface with disaster survivors even many years after the event need to be prepared for continuing raw emotions and psychological difficulties. The recognition of such longstanding effects can inform the long-term need for psychosocial interventions and formal psychiatric treatment, as well as provide an informative foundation for the development of psychotherapy approaches to longstanding mental health effects of exposure to disaster trauma.

The consistency of content and the vividness and intensity of detail of these narratives collected at different points in time indicate that these survivors' memories of their experience of the bomb blast were strong and had many salient features that remained with them for a very long time. Despite the intensity of their memories in these narratives, there was almost no discussion of psychiatric disorders, even though some emotions were expressed. This is not unexpected, however, because weeks, months, or sometimes longer are required to develop psychopathology, which is far outside the time frame of focus of the narratives sought for this study at each data collection point. The findings of this study reveal that there is a great deal of material of considerable interest regarding the experience of a terrorist bombing outside of psychopathology. This further reinforces recommendations for clinicians and researchers to address psychological distress outside of diagnosable psychopathology, which is especially important given prior recognition that psychological distress is far more prevalent than psychiatric illness in disaster survivors.

A review of the current literature revealed few qualitative studies on the narrative experiences of survivors of terrorist events, most of which were by this research team. In the study of the anthrax bioterrorist attack on Capitol Hill, survivors commented extensively on authorities' responses and communications on risk potential and safety and less on



their personal disaster narratives [9]. Similar to the content found in the current study, people who experienced the 9/11 attacks on New York City's World Trade Center reported sensory, cognitive, and emotional aspects of the experience of the bomb blast within their disaster narratives [8]. In that study, in contrast to the current study's sensory emphasis, the discussion of perceptions was outweighed by emotions and cognitions.

Given the small amount of qualitative literature available from survivor narratives of terrorism specifically, the further pursuit of published studies of survivor narratives of disasters more generally was made. This effort located one study of a small number of survivors of Hurricane Maria (a natural disaster) in Puerto Rico interviewed in focus groups at 12 (n = 5) and 17 months (n = 7) [22]. This natural disaster study also provided vivid and emotional narratives of disaster survival within a larger context of material gathered for the study. The disaster narratives elicited from the available qualitative disaster experience studies all described confrontation with danger and survival concerns as prominent features of the disaster experience. The brief narrative contents in these few published disaster/terrorism studies hint at the rich material obtained in the disaster narratives collected in the current study.

The current study's findings suggested that vivid and intense memories of surviving a terrorist persist for a long time, quite likely staying with the survivors and affecting them for the rest of their lives. This suggests that emotionally focused interventions may be of benefit to survivors for a very long time after the disaster. Because the narratives consisted largely of nonpathological content related to memories, emotions, and cognitions rather than indicators of psychopathology, this suggests that long-term interventions may be needed. In addition to formal psychiatric treatment for the minority of survivors who develop psychopathology, the most-needed long-term assistance may be psychosocial interventions helping survivors process their memories emotions, cognitions, and perspectives to help them make meaning of their experiences and live their lives to the fullest given what they have been through.

This study had some notable strengths. The baseline research sample was randomly selected with high participation rates, the retention of the majority of the sample at 7 years, and little evidence of attrition bias (associated only with unmarried status and lower educational level; [12]). The sample size for this qualitative study provided extensive qualitative bombing survivor narrative data. This was a highly disaster trauma-exposed sample (87% injury rate at baseline; [2]), providing opportunities to examine the most severely imaginable disaster experiences. Another strength was the prospective longitudinal design of the study, allowing for the evolution of narrative details over the course of 7 years to reveal levels of recollection, consistency, and evolution over time as well as the course of vividness and intensity of the descriptions provided.

Because this article limited its focus to the survivors' direct disaster experience 7 years after the disaster, it did not include other salient aspects of their lives related to their disaster trauma exposure, such as in-depth emotional reactions, personal perspectives of their disaster experience, and psychopathology, which are provided in other articles from this large and complex study. The longitudinal attrition of the sample over 7 years and minor evidence of attrition bias might be considered a relative limitation of the study. The length of time since the collection of the data more than two decades ago does not necessarily diminish the value of the data by itself [23,24]. This research, with its original data collected using rigorous methods, adds new and useful knowledge not previously provided in other published research. Another limitation is that responses to interview questions were manually recorded by the interviewers rather than audio recorded and professionally transcribed, potentially causing lost information and the imprecise recording of responses. Even though interviewers were specifically trained to record the research participant responses verbatim as faithfully as possible, imperfections may be present in the data collected. Because this sample was selected for only one disaster of one type (terrorist bombing) and in one geographic location, it is possible that the findings may not be fully representative of or applicable to other disasters.

Because the data presented in this article were collected only 7 years after the disaster, this study could not address longer-term findings related to the evolution of disaster narratives among survivors of terrorism. Therefore, even longer-term studies are needed to examine the continuing evolution of memories of disaster narratives throughout the remaining life span of survivors. Additional studies of many disasters of various types in different locations and in different survivor populations are needed to ensure greater generalizability of the findings of these studies.

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