What Is It Like to Self-Rescue from a Building Collapse as a Firefighter: a Phenomenological Inquiry

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Abstract

This descriptive scientific-phenomenological study set forth to discover what is like to survive a building collapse as a firefighter. The participants of the study were 3 uniformed and sworn professional firefighters performing interior operations at a commercial building structure fire. The 3 participants all become trapped and had to self-rescue as a result of a structural collapse. The data collected from the participant interviews was analyzed and transformed so as to form the structure of the study.

Keywords

firefighter – phenomenological – psychology – experience – meaning

1 Introduction

The purpose of this descriptive scientific-phenomenological study was to describe what it was like for a firefighter to survive a building collapse or entrapment while fighting a fire on the inside of a burning building. Firefighters are at risk of being trapped in buildings while fighting fires inside of them. Buildings may collapse or firefighters may become lost due to conditions that disorient
them while working in heavy smoke with low visibility of compartment fires (US Fire Administration [USFA], 2011). The participants recruited for the study were three (3) professional uniformed and sworn firefighters that survived a building collapse as a crew. Therefore, this descriptive scientific-phenomenological study describes the lived-experience of firefighters that survived a building collapse or entrapment while fighting a fire.

In addition to the environmental toxicity and thermal dangers, firefighting inside a burning structure poses hazards of firefighter disorientation and entrapment. Operating in a smoke-filled environment diminishes visibility to a range of inches and can inhibit firefighters’ ability to stay spaciotemporally oriented. Because a Self-Contained Breathing Apparatus (SCBA) has limited breathing-air capacity, time is often gauged by bottle pressure because the relative time of survivability depends on air supply (Gagliano, Phillips, Jose, & Bernocco, 2008). Furthermore, the protective clothing inhibits the firefighters’ abilities to feel objects through the gloves and hear well through the thermal protective hood and ambient noise. Disorientation is a regular possibility in the extreme environmental conditions of a compartment fire.

Like any work that involves risk of life and health, firefighting has its “close calls” and the firefighters often narrowly escape serious injury or death. Building collapse is a significant concern to fire commanders and firefighters when combating structure fires (Brannigan & Corbett, 2008). Gagliano et al. (2008) outlined the challenges of entrapment in buildings like the limited air supply and the need for Rapid Intervention Teams (RIT) designated and trained to rescue firefighters in trouble. There are also self-rescue techniques that are taught and practiced in firefighter training to help them deal with instances of entrapment or disorientation. Many of these techniques were developed by fire trainers after the incidents that killed firefighters were analyzed for cause determination and “lessons learned.” The focus of this study was on the first-person perspective of trapped firefighters that survived a building collapse found their own ways out of the structure. The research question was: “What is it like as a firefighter to survive a building collapse while working inside a burning building?”

2 Literature Review

The literature came together to form this descriptive scientific phenomenological study. The review of the literature begins with the why this study matters and that is fatal injuries that firefighters face as a result of their chosen profession. The researchers ground this section of the literature review in the works
of the US Fire Administration (USFA). The USFA (2011) that been monitoring the number of firefighter Line of Duty Deaths (LODDs) and analyzed them for approximately 30 years. The purpose of such tracking and analysis is to discover ways in which firefighter deaths can be reduced through better understanding the situations, conditions and causes for their occurrences (USFA, 2011).

3 Firefighter Fatal Injuries

The USFA (2002) defines “cause of injury” as the action, lack of action or circumstances that resulted directly in the fatal injury. “Nature of injury” (otherwise known as the physiological cause of death) refers to the medical cause of the fatal injury or illness. For example, a firefighter who is caught in a building collapse would be listed under the “structural collapse” category, but the nature of injury might be trauma or asphyxiation, depending on what the actual physiological cause of death was. Of course, the firefighter who dies in the line-of-duty may suffer the event or situation that is the found cause of injury, but live for quite a while (whether consciously aware or not) before he or she succumbs to the nature of injury or physiological cause of death. This presents us with a lived-experience that is unique, but not researchable due to the life-expiration of the person who experienced it. For the purpose of this study, the researchers sought a select sample of firefighters who have had “near-misses” in being trapped by a collapse but were able to survive the life-threatening situation.

The categories of causes of fatal injury that here are: (1) Structural Collapse, (2) Caught/Trapped, and (3) Lost/Disoriented. In these categories, firefighters were fighting fires on the inside of a building and were unable to get back out alive. “Structural Collapse” might cause traumatic injuries of impact, crushing or entrapment. The category of “Caught/Trapped” means that the firefighter was hung up in some way that inhibited or stopped his or her ability to freely move about. And because of the heavy smoke and reduced visibility of a compartmentalized fire, firefighters are vulnerable to getting lost inside of a structure and running out of air in their Self-Contained Breathing Apparatus (SCBA) in an immediately dangerous to life or health (IDLH) environment. In such cases, firefighters can die from asphyxiation from keeping their SCBA facemasks on or die from smoke inhalation from having removed their facepieces. Firefighters train to discipline themselves to keep their face-pieces on and go unconscious rather than remove the mask. This is because resuscitation can be nearly impossible for the firefighter who is rescued by a rapid intervention team/crew (RIT/RIC) due to his or her poisoning by toxic gasses or having a seared airway from the heat (Gagliano et al., 2008).
We provide a snapshot below in Table 1 of the modified categorical definitions of entrapment, lost/disoriented, and collapse for the purposes of this study. This is in no way meaning to diminish the importance or degree of loss of the firefighters that died in the line-of-duty that are included in the USFA’s categories. Rather, the researchers wanted to hone in on the kind of experiences for which this study will research. That is, firefighters who get trapped in a collapse and successfully find their way out. The researchers have included entrapment and lost/disoriented with the collapse category because the phenomenon at issue here is the experience of being in trouble in a structure fire and surviving it. Table 1 below provides the data reported to the USFA of the LODDS involving these modified categories. The annual total is the sum of all LODDS in all categories as reported by the USFA (2015). Therefore, one who compares the quantities and proportions in my modified categories with the USFA categories will find the numbers different.

The National Institute for Occupational Safety Health (NIOSH) is an institute of the Centers for Disease Control (CDC) responsible for investigating the circumstances of firefighter fatalities. NIOSH investigators conduct post-incident inquiries into firefighter fatalities using case study methodology.

### Table 1  Firefighters killed during interior operations

<table>
<thead>
<tr>
<th>Year</th>
<th>Entrapment*</th>
<th>Lost*</th>
<th>Collapse*</th>
<th>Sub-total*</th>
<th>Annual total</th>
<th>%*</th>
</tr>
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<tbody>
<tr>
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<td>4</td>
<td>4</td>
<td>12</td>
<td>20</td>
<td>101</td>
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<tr>
<td>2003</td>
<td>6</td>
<td>0</td>
<td>0</td>
<td>6</td>
<td>113</td>
<td>5</td>
</tr>
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<td>2004</td>
<td>5</td>
<td>0</td>
<td>6</td>
<td>11</td>
<td>119</td>
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<td>11</td>
<td>107</td>
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<td>2007</td>
<td>7</td>
<td>11</td>
<td>7</td>
<td>25</td>
<td>119</td>
<td>21</td>
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<tr>
<td>2008</td>
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<td>0</td>
<td>5</td>
<td>6</td>
<td>120</td>
<td>5</td>
</tr>
<tr>
<td>2009</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>6</td>
<td>91</td>
<td>6</td>
</tr>
<tr>
<td>2010</td>
<td>5</td>
<td>1</td>
<td>3</td>
<td>9</td>
<td>87</td>
<td>10</td>
</tr>
<tr>
<td>2011</td>
<td>5</td>
<td>0</td>
<td>3</td>
<td>8</td>
<td>83</td>
<td>6</td>
</tr>
<tr>
<td>2012</td>
<td>1</td>
<td>0</td>
<td>4</td>
<td>5</td>
<td>81</td>
<td>6</td>
</tr>
<tr>
<td>2013</td>
<td>4</td>
<td>1</td>
<td>5</td>
<td>10</td>
<td>106</td>
<td>9</td>
</tr>
<tr>
<td>2014</td>
<td>6</td>
<td>1</td>
<td>1</td>
<td>8</td>
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<td>2015</td>
<td>0</td>
<td>1</td>
<td>6</td>
<td>7</td>
<td>90</td>
<td>8</td>
</tr>
</tbody>
</table>

* These are modified categories oriented toward the focus of this study.

Summaries are published of their reports that include a narrative description of the situation and cause of injury along with a list of recommendations to minimize risks under similar future events.

In many NIOSH (2003a, 2003b, 2004, 2008a, 2008b, 2009, 2011) investigations, inadequate command understanding and ongoing evaluation of the interplay between the building construction, fire behavior, and firefighting strategies were key aspects of fire personnel not predicting the building collapse. Additionally, NIOSH (2003a, 2003b, 2004, 2008a, 2008b, 2009, 2010, 2011) found that communications between these levels of operation in the command system is often a key aspect that is found to have been inadequate. Firefighters inside the structure often fail to communicate deteriorating conditions to their incident commander and command officers often fail to clearly communicate strategy, tactics, and deteriorating conditions to those inside the building.

Perception is a matter of the person’s senses interfacing with stimuli from the environment, which in firefighting gear is greatly inhibited by its nature. Obviously, the tactile sense is inhibited by the firefighting gears thermal protective properties and SCBA face pieces narrow down the visual field to some degree (International Association of Fire Fighters [IAFF], 2003). Heavy smoke conditions can eliminate visibility in a compartment fire altogether because compartment fires in their earlier phases of growth are typically inadequately ventilated (DeHaan & Icove, 2011). In attempts to overcome the visibility inhibitions of smoke, thermal imaging devices have been developed and deployed in many fire departments in the US and other industrialized countries. It is recommended that firefighters use such devices to navigate low visibility environments and incident commanders can also gain important information in their size-up evaluations with them too (NIOSH, 2003b, 2008a, 2008b). Incident commanders need to effectively coordinate extinguishment and ventilation teams to improve the visibility and reduce the heat in building fires, as soon as possible (NIOSH, 2004, 2008b). A combination of technology and tactical coordination reduces the thermal dynamics that speeds the fire propagation and deterioration of the building integrity (Brannigan & Corbit, 2008; DeHaan & Icove, 2011). But these risk reduction efforts will not offset the challenges that firefighters and commanders face with communications due to the personal protective gear worn in structural firefighting (IAFF, 2003).

4 Summarizing the Literature Review

The purpose of approaching this topic through a descriptive phenomenological psychological method is to keep the experience holistic and in its lived-context. What it means to keep the experience holistic means to take a qualitative
approach so that the mind, body and situation are not divide, but rather kept together in the account of the participants so that we can see their interdependence. Therefore, the physical, communicative, cognitive, and other aspects of the experience will reveal a general structure of the experience. This approach to research is non-reductive and intended to maintain the “voice” of the participants while providing a rigorous psychological analysis of their unique experience. From the findings of this study, the researchers hope to provide a deeper and richer understanding about firefighter “MAYDAY” situations to the fire service’s trainers, educators, and policy makers. While it’s impossible to research firefighter deaths from the first person perspective, the researchers believe that studying firefighters who have had a “close call” will reveal much needed information for the dialogue regarding this important issue.

5 Methodology

The descriptive phenomenological psychological method provides a general structure of the lived-experience in a particular kind of situation. Giorgi (1985) explains that lived-experiences are made up of “constituents” rather than “elements” because constituents are always context laden. He draws this distinction from Husserl’s (2001) explanation of “pieces” versus “parts” or “moments.” Pieces are elements of something that by themselves are “wholes” that are not dependent on anything else.

The first task of conducting a phenomenological psychological research is to recruit participants who have the lived-experience that the researcher is interested in analyzing. The participants for this study where three (3) firefighters who were on an interior firefighting operation in a commercial building when the roof collapsed on them. The firefighters were not injured, but were somewhat trapped in the building which was charged with smoke that reduced their visibility. The firefighters found their way out of the building on their own without the assistance of a RIT. The researchers interviewed each of the participants separately to obtain an account of their experiences as best as they can recall and recount them. The researchers audio recorded and transcribed each of their accounts and the transcriptions served as the raw data to be analyzed using the descriptive phenomenological method (Giorgi, 2009).

The descriptive scientific phenomenological method is a systematic approach for analyzing the consciousness of a person at the psychological level. There are five steps (was expressed originally as four steps, but is now regarded as five) to performing the analysis that Giorgi (1985, 2009) assembled by the
inspiration of Husserl’s philosophical phenomenology (Broomé, 2011). The five steps are (1) Assume and maintain the phenomenological attitude throughout the analysis, (2) Read the entire account of the experience to gain a sense of the whole, (3) Delineate meaning units so that the account is divided up into manageable parts, (4) Transform each meaning unit, by employing imaginative variation, into a psychologically oriented expression of its essential lived-meaning, and (5) Synthesize the General Structure from the constituent categories found in the transformations into one coherent psychological description. Imaginative variation is also used to discover the constituents of the experience by imagining its removal from the general structure to see if the structure’s coherence would collapse. The general structure is “thing” from which elaboration and interpretation takes place.

The structure allows researchers to see how the thoughts, feelings, motivations, anticipations and so forth unfold in a general sense so they can be critically reviewed, discussed and compared to the findings of similar research. The general structure is found in a mode of discovery rather than in a mode of validation, but there may be aspects discovered that have a veridical nature or call into question previously accepted theories or other findings (Giorgi, 2009). In this manner, science is practiced through a methodical, systematic, general and critical with rigor oriented toward the qualities of the lived-experience in its everyday context (Giorgi & Giorgi, 2003). While many quantitative modes of research deliberately abstract the personal meanings out of the data to achieve mathematical exactness, a descriptive phenomenological approach seeks to maintain the meanings to learn more from those who have lived them.

6 Results

6.1 General Structure of the Self-Rescue Experience
The Participant (P) responds as a member of a firefighting team to a building fire to put it out. Drawing on previous knowledge about firefighting, P makes decisions and takes physical actions against the obstacles and challenges of the hostile environment of the burning building. P faces the ambiguity of the inconsistent indicators of the severity of the fire conditions that results in underestimating the danger in his or her ongoing situational evaluations. P coordinates firefighting efforts with his or her colleagues wherein they reorient themselves as a group according to their interpretations of the fire’s location and spread. P experiences a sudden crashing blow that forces him or her to the ground and strips him or her of all available firefighting tools. P imagines
a specific escape route based on his or her understanding and orientation in the burning building and focuses on escaping that way. Having suffered the collapse and reorienting himself or herself, P feels vulnerable and concern for the safety of his or her colleagues. Having successfully escaped, P is driven to return into the burning building to rescue his or her friends and colleagues while feeling horrific grief about their possible demise. Being reunited with his or her crew emotionally consoles P and they discuss their experiences to find a greater understanding of what they had been through. P also reviews the fire scene and radio recordings to find insights clarify the nature of the experience. P has some lasting emotional impacts from the event.

6.2 Constituents of the Lived-Experience of Firefighter Self-Rescue
The constituents of the lived-experience are the phenomenological aspects that are essential to firefighters’ self-rescue from a building collapse. While the General Structure represents the way the experience unfolded in a general descriptive way, the constituents might be seen as the essential psychological aspects from which the General Structure was synthetically composed (Giorgi, 2009). The constituents of the lived-experience of firefighter self-rescue are: (1) Identification with Crew, (2) Drawing from Previous Knowledge, (3) Contending with Obstacles and Exertion, (4) Coordinating Efforts, (5) Incongruent Interpretations of Danger, (6) Surreal Experience, (7) Reorienting to Conditions, (8) Radio for Help, (9) Shock and Overwhelming Blow, (10) Escape Route Focus, (11) Existential Vulnerability, (12) Concernful Loss of Friends, (13) Reunited with Crew, (14) Post Hoc Reflections and Insights, and (15) Lasting Emotional Impacts. Table 2 lists the constituents with empirical examples of the way they were expressed in the words of the participants’ accounts. In the examples provided, we attempted to provide the key portions of their words with ellipses used to condense the text for purposes of making them succinct, yet still capturing what the participants said in their everyday language.
### TABLE 2  Psychological constituents with empirical variations

<table>
<thead>
<tr>
<th>Constituents</th>
<th>P1</th>
<th>P2</th>
<th>P3</th>
</tr>
</thead>
</table>
| 1. Identification with Crew   | ... in the middle of the night. We were the second on-scene after engine 2.  
                                 | On the Ladder that day there was just the three of us.  
                                 | ... from the time I was a "Boot," every time I got on that Ladder, if my bottle wasn't at least 4,100 to 4,200 psi, I took that thing off and topped it off. And I would do the same thing with P3's and P2's bottles. Every beginning of every shift. | We were first Ladder assignment; it wasn't our first-due-in area. It was station 2's first-due-in area.  
                                 | Afterwards like, that crew stayed my crew for a long time; those guys ... we won't talk about it but we know and we'll just mention you know, "Jack's fire."  
                                 | But the guys I was in there with, at the same time, on the same token ... that was my crew for a long time ... I always think of that as my crew. | I remember P2 was my engineer and P1 was the firefighter.  
                                 |                                                                                                                    | I'd been a captain for quite a while at that time and, you know, we had responded on ...  
                                 |                                                                                                                    | We were the first truck company on scene.  
                                 |                                                                                                                    | You know those two guys are like my best friends.  
                                 |                                                                                                                    | ... that incident brought us close together ... like a bond that I can't even describe ... until you live through something like that with other people, you just can't even describe what it's like. |
| 2. Drawing from Previous Knowledge | ... we happened to get Jack's restaurant as a business inspection.  
                                 | ... and I remember sitting there and ...  
                                 | "scoping the placed out" after we had looked through the restaurant.  
                                 | So I remember turning around and seeing this glass door, this glass exit blocked by a vending machine ...  
<pre><code>                             | ... I realized that I was sitting against that stupid door that blocked in the breezeway. | You could see all the way down the hall. Literally, I don't want to say “textbook” or anything. But it was almost like kind of one of those training scenarios. | I'd been on a lot of fires where we lost buildings. I didn't want to lose that building. That was me. I don't want to be that guy that loses the Jack's restaurant. You know, historic thing in South Borough, popular with the firemen and with the cops, with the city, you know what? This is a fire we've got to get under control. |
</code></pre>
<table>
<thead>
<tr>
<th>Constituents</th>
<th>P1</th>
<th>P2</th>
<th>P3</th>
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<tbody>
<tr>
<td>3. Contending with Obstacles and Exertion</td>
<td>... the main entrance which was locked at the time, It (the roof) came right down ... into the middle of us; almost separating us into two groups. ... it was hard to see at this point, a lot of smoke, a lot of debris on the ground—chairs overturned, benches, tables ... So at that point, we started picking up any junk that we could and started beating on the windows inside the restaurant. Trying to get something to break.</td>
<td>But there was stuff hanging like, core wire and two-by-fours and truss members are hanging everywhere around us. So we can't really make our way out. So I get this two-by-four, I don't know, like a five foot piece of two-by-four, and I start banging on it to try and break this door. But ... and I knew that it was going to be hard to break this door ...</td>
<td>And everywhere that we pulled ceiling, there was more fire. But being the type of person, firefighter, that I am—aggressive. We can get this thing. Obviously couldn't see a thing, it was dark with smoke and fire in the building now on the ground. So we lost all of our hand tools, didn't have any means of breaking out, if we needed to.</td>
</tr>
<tr>
<td>4. Coordinating Efforts</td>
<td>... they left me at the main entrance which was locked at the time.... I went and grabbed a K-12 and stood at that main entrance with the K-12 waiting for, um, the word to go ahead and force entry on the door. ... they determined that forcing the main entry door wouldn't make it any worse ... and gave me the go-ahead to force entry on that door.</td>
<td>... they've brought in another hose team. I'm not sure who it was ... I know it was a mutual aid ... And they're mostly in the refer/galley area and they're not encountering fire in there. They're pulling ceiling down and they're not fighting fire in that area. ... we start spreading out to try to see how far this fire has extended past where we're fighting.</td>
<td>So we made entry with engine 2's firefighter and ... forced the door, went inside—no smoke. Advanced the hoseline through the back of the building through the kitchen area, and then continued on and it was pretty clear inside still. ... and I would move back and forth between crews; between my crew and other crews, pulling ceiling and fighting fire.</td>
</tr>
<tr>
<td>Constituents</td>
<td>P1</td>
<td>P2</td>
<td>P3</td>
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<tr>
<td>---------------------------</td>
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<tr>
<td>5. Incongruent Interpretations of Danger</td>
<td>... when we pulled up on the building, there was billowing black smoke coming from the eaves. ... we found the fire in that back office area; And we noticed it had spread to the attic area. ... wasn't a whole lot of smoke in the restaurant area. ... from the exterior of the building ... The smoke was so thick on the outside, I couldn't breathe without my air ... the environment inside was 180 degrees different from what it was outside.</td>
<td>So you couldn't really tell, really, how much involved the building really was or anything ... You could smell smoke; it was a wood smelling smoke ... But there was no smoke in the building. You could see all the way down the hall. And you could see a door shut and an orange glow on the bottom of the door. It was plain as day. ... it seemed pretty straight forward, room and contents fire, breached into the attic space.</td>
<td>... we had multiple callers stating “smoke showing from the roof.” As soon as we walked in, I looked inside and ... so we went around back ... ... we made it to an office ... you could see a glow underneath the officer door. ... we can get a handle on this thing quick. We can put this think out, you know. Straight-forward attic fire, well, that's where we went wrong. And everywhere that we pulled ceiling, there was more fire.</td>
</tr>
<tr>
<td>6. Surreal Experience</td>
<td>We continued to pull ceiling for easily 1.5 minutes, I'm thinking ... it seemed a lot longer than that ... I sat there for a few minutes, well, it seemed like a few minutes. But it was probably just a couple of seconds.</td>
<td>At this point, things start ... my memory is very clear. Things are almost like in slow motion, at this point, for me. More in like ... things were like in slow motion. When [the roof] came down ... it kind of seemed like the floor, like we went up and they went down. So they were gone.</td>
<td>I remember both of them, like vividly, turning over their PASS devices. You know, after the MAYDAY, it just didn't seem real. I remember just looking up into the sky and seeing stars and thinking, “Holy shit! The ceiling really did collapse on us.” And there was fire everywhere on the ground. “We've got to get the hell out of here.”</td>
</tr>
<tr>
<td>Constituents</td>
<td>P1</td>
<td>P2</td>
<td>P3</td>
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<td>-------------------</td>
<td>--------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------</td>
</tr>
<tr>
<td>7. Reorienting to Conditions</td>
<td>... after we came to, got our helmets realigned, P2 and I started heading towards what we thought was that front entry or that front exit that I had forced open. We kind of worked ourselves that direction, it was hard to see at this point ...</td>
<td>And so it had collapsed on us and kind of came to our senses ... ... what you revert to ... you're going to revert to ... you know, it's fight or flight, you're in panic mode, &quot;and what are you going to do?&quot; But in my mind, I could still fight my way out.</td>
<td>You know, just crazy noise, chaos all of a sudden, and I remember finding my helmet, grabbing it and putting it on my head. Finally crawling out from under something, looking for P2, looking for P1, found them, they were both freaking out,</td>
</tr>
<tr>
<td>8. Radio for Help</td>
<td>I remember [captain P3] radioing to Command a couple of times saying, “hey, let’s get some more guys in here to help us pull ceiling. We need ventilation” ... our next option was to try and call “MAY...”, well, P3 had already called “MAYDAY,” at this point.</td>
<td>P3 said, “I’m calling ‘MAYDAY.’” The roof’s collapsed on us. So he calls for “MAYDAY” and, like I say, in my mind we were the ones that were OK. So he just gets on the radio and ... I don’t know exactly what he says on it, but all he says is, “MAYDAY! MAYDAY! MAYDAY! Building collapse!” ... and I’m trying to get out on the radio two times. But at this point, there’s so much radio traffic. So I’m trying to get on the radio, and at this point, P1 leaves; he goes off.</td>
<td>I think the battalion chief arrived at that time and took over Command. I told him [radioed] what we had inside. I told Command that, and said, “We need more people in here; more hoselines.” ... when we first started, I said, “We need ventilation. We need to get that ceiling opened up now.” So we’d asked [radioed] for it like 10 to 15 minutes prior to the collapse. And that means we’d been in there for a long time. I said, “I’m going to call MAYDAY because I don’t know where everybody else is.” So I got on the air and went through the MAYDAY procedures.</td>
</tr>
</tbody>
</table>
Psychological constituents with empirical variations (cont.)

<table>
<thead>
<tr>
<th>Constituents</th>
<th>P1</th>
<th>P2</th>
<th>P3</th>
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</thead>
<tbody>
<tr>
<td>9. Shock and Overwhelming Blow</td>
<td>... and while we were bent over is when the roof collapsed on us; when the entire thing came down ... something hit me in the back of the head. It knocked me to the ground. And all I remember is seeing the back of P2, P2 was laying in front of me and I don't remember seeing [captain] P3. Hard to see at this point ...</td>
<td>But then that's when the roof came down and it knocked us to the ground. And so it had collapsed on us and kind of came to our senses ...</td>
<td>... at that exact moment, the next thing I knew is, a loud crash and then being on my hands and knees. And not knowing what in the hell happened. What the hell literally hit me? And like, pitch black. I'm trying to stand up and bumping my head on something. Reaching around on the floor blindly trying to find my helmet. Thinking, “What the ...” like freaking out.</td>
</tr>
<tr>
<td>10. Escape Route Focus</td>
<td>I knew that from where the roof fell down, it kind of blocked our egress through that back kitchen area. P2 and I started heading towards what we thought was that front entry or that front exit that I had forced open. ... all that we saw was the outline of a door; a closed glass door. And we knew that was the exit. We were hell-bent on getting out of that door. ... I walked out the exit into the parking lot ... and didn’t even know I was out there ...</td>
<td>P3 says, “can you guys get to the front door?” ... Because in my mind, we couldn’t get back. There was no way to get back out the way we came in. ... at this point, I think P3 is coming with us. But in my mind, P3 is coming with us, on the way out. So I head towards what I think is the door ...</td>
<td>And so, grabbing them and saying, “Let’s get out of here” and me just assuming that they would, instead of going through the fire, go the same way we went out because that was our protected area.</td>
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<td>Constituents</td>
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<td>11. Existential Vulnerability</td>
<td>... I had realized that the collapse had actually broken ... the valve on my air tank. ... having my bottle free-flowing, I could hear it hissing out the back ... that's when my low-air alarms starts going off ... Our egress was blocked somehow. And we couldn't get a window broken. I had basically given up. I knew my air was about gone ... and I just sat down and just realized that “this is it; I am done.”</td>
<td>And kind of backing up a little bit, which is something that I didn't mention, is a firefighter that I knew had been killed ... about a week before this happened.... and I remember thinking about that on my mind.... because I had been on the phone with the spouse of this firefighter that had been killed. At this point, our low-air alarms going off ... And we're still stuck in this fire. ... I mean, I was concerned ... I just knew we had to get out before this air ...</td>
<td>... at that exact moment, the next thing I knew is, a loud crash and then being on my hands and knees. And not knowing what in the hell happened. What the hell literally hit me? And like, pitch black. I'm trying to stand up and bumping my head on something. Reaching around on the floor blindly trying to find my helmet. Thinking, “What the ...” like freaking out.</td>
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<td>12. Concernful Loss of Friends</td>
<td>So I went back in, came back around the corner, grabbed P2, told him where the exit was, and the two of us got out. Because when I went back in and got P2 and the two of us came out at the same time ... that is when my mask just sucked to my face. I was ... [choked up] I was gone.</td>
<td>And in my mind, those guys were trapped. In my mind, everybody else was trapped because I was ... I was alive ... I could move and I was alive. And so I get out of the building and then I turn back because P3 is not there. And I felt so guilty. I was like, I don't have any air. I can't do anything. I can't help these guys. And I just kept saying, “They’re right behind me! They’re right behind me!”</td>
<td>And so, grabbing them and saying, “Let’s get out of here” and me just assuming that they would, instead of going through the fire, go the same way we went out because that was our protected area.</td>
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TABLE 2  Psychological constituents with empirical variations (cont.)

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<thead>
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<th>Constituents</th>
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<td>13. Reunited with Crew-members</td>
<td>… when I went back in and got P2 and the two of us came out at the same time ...</td>
<td>So P1 comes back and he says, “P2, we can't get out this way.”</td>
<td>I remember running around the front and by the time I got around to the front, I saw P2 and P1 out there.</td>
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<td>And then, that’s when I see P3 running around, he’s running around the building.</td>
<td>I remember P2 coming up and he was just pissed. Yelling at me and he was just so mad at me. He was like, “Where did you go? Where did you go? Where did you go?” I’m like, “I thought that you guys were behind me. I thought that you were behind me. What happened to you guys?”</td>
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<td>He actually had gone back in the way we came in. And he gets to me and he was freaked out too. Because he didn’t know if P1 or I were able to get out. So he … I saw him come running around the back of the building. And I grabbed him and was like, “P3! P3!”</td>
<td>So we met out front ...</td>
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<td>… P3, being on his crew, he trains constantly and he's an awesome captain. One of the things that I learned from him was 4,000 psi in your bottle is not enough. You know, it’s never enough so ... Because if it had 3,800, that was unacceptable ...</td>
<td>By looking back on it know and thinking about it, you know it was pretty obvious that it probably started in the attic.</td>
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<td>… we didn't know, we found out later ... the fire has actually initiated in the attic. And so the whole attic space ... has been involved long enough to breach the ceiling of the office and burn down into the office.</td>
<td>Luckily, when we go back to where the collapse happened ... if it weren't for the half-wall that we were sitting next to that caused a lean-to. That's what saved us. We fell into that void, once it kind of knocked us down; knocked us to the ground and messed us up.</td>
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<td>14. Post Hoc Reflections and Insights</td>
<td>… we're still alive is because of business inspections ... if anybody like, bitches and moans about business inspections ... I never do. I'll go on those all day long.</td>
<td>… P1 had ... done a business inspection on this business within the last month ...</td>
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<td>... P3, being on his crew, he trains constantly and he's an awesome captain. One of the things that I learned from him was 4,000 psi in your bottle is not enough. You know, it’s never enough so ... Because if it had 3,800, that was unacceptable ...</td>
<td>And he knew where I was at ... So I didn't know where I was at. He knew right where I was at and so ... really P1, he saved me out of that situation.</td>
<td>... P1 had ... done a business inspection on this business within the last month ...</td>
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<td>… P3, being on his crew, he trains constantly and he's an awesome captain. One of the things that I learned from him was 4,000 psi in your bottle is not enough. You know, it’s never enough so ... Because if it had 3,800, that was unacceptable ...</td>
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<td>15. Lasting Emotional Impacts</td>
<td>I was ... [choked up] I was gone. So, that's the ... that's how I remember it.</td>
<td>And even ... I look back and feel bad that I didn't look for people. And I think there are still a lot of ... I wouldn't say like ... I mean like, I'm not mad at anybody about what happened. You know it happened and it was unfortunate ... I didn't feel like ... I felt we had time to operate still, even though knowing now obviously that we didn't have the time. So I never really felt like ... I didn't have any animosity toward anybody or blame anybody for what happened.</td>
<td>... and that right there was I think my downfall in this whole entire thing. I felt kind of in a conflicted position. (a) should I stay outside and help him, but I know the battalion chief was right behind us, and so (b) I wanted to get inside and see what was inside right away. So you know, I obviously ... to this day, feel guilty about keeping my crew and myself and other crews inside that building too long. You know, I should have recognized some of the fire conditions that a captain ... known that we were in there too long ... and gotten us out of there sooner. You know, it was a ... beat myself up about that because I could have lost those two guys. You know those two guys are like my best friends.</td>
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7 Discussion

The firefighters in this study are saliently aware of their role on the team that involves their respective kinds of expertise, training and experience. The concept of a team in firefighting is one of interdependence upon one another to fulfill the objectives of their assignment(s). From the time firefighters are trained in the academy, team cohesion and “the buddy system” is emphasized and a critical lesson criterion for firefighter safety purposes (International Fire Service Training Association [IFSTA], 2013). Crew continuity is manifested in five constituents, (1) Identification with Crew, (2) Drawing from Previous Knowledge, (4) Coordinating Efforts, (12) Concernful Loss of Friends, and (13) Reunited with Crewmembers. The intersubjective context of the crew is salient from the fire station where they live together all the way to each and every emergency incident. The crew continuity involves a thread of trust for one another that is woven through the entire social fabric of the crew. It is in lived-experiences of facing mortality together that each member expresses the others as vital-parts of their crew. When this crew realized they had become separated by the collapse, their crew cohesion had been ripped away and the basis for (15) Lasting Emotional Impacts was born.

The lasting emotional impacts that were born from the crew separation lean on the existential confrontation the firefighters faced in the collapse experience. The cluster of constituents, (6) Surreal Experience, (7) Reorienting to Conditions, (8) Radio for Help, (9) Shock and Overwhelming Blow, and (11) Existential Vulnerability, amounted to a lived-life-threat-experience under an enormously powerful crash of building materials. One might characterize it as “the world crashing down around them” followed by a realization that their immediate escape was necessary for survival. Once the overwhelming shock of the physical blow had sent them to the ground and scattered their tools and safety equipment, they reoriented themselves as a crew and decided to hastily exit. They coordinated with others via a radio for help and then headed toward the only imagined feasible exit [10] Escape Route Focus. However, the crew members had different assumptions about which exit was the only feasible one and headed in different directions. Their crew continuity and intersubjective trust led them to believe they were headed out together. It seems like the (7) Reorienting to Conditions was initially felt complete, but ended up being partial. Once the participants realized they had been separated as a crew, the (12) Concernful Loss of Friends became a focus for them.

The firefighters were more than workmates or colleagues. Firefighters are known for regarding their crewmembers as a second family (Kirschman, 2004). One of the lasting emotional impacts was their shared sense of galvanizing
their crew as a special sort of sacred kind of relationship. It appears that the participants being (14) Reunited with Crewmembers crystalized their bonds in the face of grief as the alternative had they not been. It was the (11) Existential Vulnerability the placed death in the participants’ faces. Whether it was fear of dying or losing a crewmember, the embodied close-encounter with their demise created a kind of “relational scar” between them that was more solid than before.

Paton (2006) says that emergency workers demonstrate resiliency when they are able to learn something from the critical incident experience. The (14) Post Hoc Reflections on the near-miss with death was the time the participants engaged in making sense of the experience. The exertion and successful navigation of a fire fighting operation bonds those crewmembers on a regular basis. This is where the sense of kinship is born (Kirschman, 2004). But when that (3) Contending with Obstacles and Exertion is in the context of literal survival, the embodiment of those efforts appears to deepen their personal and collective meaning for the firefighters. The efforts that led to their survival would be categorized in firefighting as a self-rescue. Implicit in the self-rescue competency that was demonstrated by the crewmembers actually enhances the intersubjective trust in both, each other’s skill capability and one another’s willingness to put oneself at risk for the others. The (6) Surreal Experience of the existential confrontation provided a dimension of spacio-temporal shift in the firefighters’ perceptions of time, direction, and situational position. This made re-orienting to conditions feel urgent and time dragged due to that sense of urgency to escape. Moreover the urgency to escape in the moments of Surreal Experience, the ungroundedness of it lent itself to the Escape Route Focus that ultimately was the point when the crewmembers were divided.

It appears in this study that those constituents that are thematically existential are those dimensions of the lived-experience that are not replicable in self-rescue training exercises. It is the actually confrontation with mortality in a physically impacting and strenuous experience in the context of a lived-life-threatening-experience that characterizes psychophysical trauma. The Lasting Emotional Impacts involved emotions such as guilt for duties the participants felt they failed to fulfill and some level of grief from a near-loss. The lessons learned were strong convictions to do things different in their work or the value of doing things in a precise and thorough manner.

Lessons-learned is a common phrase used by firefighters and other emergency workers to refer to work experiences that sharpened their knowledge, skills and abilities. Giorgi (1999) theorizes that there is a kind of learning he calls “Existential Learning” where in one must face the opacity of a situation
requiring skilled action. The (9) Shock and Overwhelming Blow put the firefighters on the ground by force and stripped them of their tools and some safety equipment. The firefighters were faced with the fact that their safety tools and equipment had limitations. Moreover, the training they had received before were drills and simulations. This situation had potentially grave consequences in a severely time-compressed context. The Lessons-learned in this situation were the value of that equipment while not being able to fully rely on it. Further, the self-rescue skills learned in training are more fully moved toward competence when put into real-world action in the face of real consequences of (10) Existential Vulnerability. This is consistent to Giorgi’s existential learning that describes learning as an ever-moving toward greater competence in knowledge and skill.

When comparing police deadly-force training simulations with real shooting situations, Broomé (2011, 2014) found that the existential confrontations with life and death consequences make the actions much more personally impacting when the situation is not a drill. The police cadets doing deadly-force simulations experience high anxiety, physical challenges, and behaviorally similar actions to the officers in real shootings. However, the deadly force paradox of taking a life to save a life was not part of the lived-experience of training (Broomé, 2011, 2014). In this study, the real-world confrontation with a building collapse, disorientation, and physically navigating the space skillfully provided lessons-learned that were punctuated with (15) Lasting Emotional Impacts. Paton (2006) says that even when the lessons learned are negative or mixed, the ability to learn from one’s experience is part of PTG following a critical incident. Therefore, posttraumatic growing is a way that the human being moves toward greater competence in knowledge and skill.

8 Conclusion

Firefighters and their crewmembers rely very much on one another both to perform their duties but also for socio-emotional support. These firefighters made meaning out of this horrific experience by socially supporting and valuing one another. While less-extreme incidents forge bonds between crewmembers, actually facing possible death together in a “close-call” deepened the participants’ relationship. Perhaps this is why when firefighting crews lose a member the experience is like losing a part of oneself, just as family members describe the loss of a loved-one. Firefighting crews and firehouses become the second family for each member (Kirschman, 2004).
The general structure of the experience and examination of the constituents lends to society a better understanding of how that unfolds in the firefighters’ vocational lives. Moreover, these kinds of experiences in their varying degrees of intensity seem to explain why fire agency leaders who force crew “shake-ups” or (punitive) “re-assignments” can so greatly upset the crew’s sense of integrity and unity. It puts an existential strain on the members to “lose” on another in just about any context because the most extreme kind of loss is symbolically experienced. This symbolic transfer of “Non-being” whether it is through transfer, termination, or death, represents a continuum of loss (Heidegger, 2008). Therefore, when it comes to station assignments and crew relations, fire agency leaders should be sensitive to this dynamic and manage these changes delicately. The participants of this study expressed that “this crew” was the one crew with which they most identified, even after having been split up later but prior to the interviews for this inquiry.

The inherent limitations of this study include the aspect that this was a singular incident. All three participants were part of a firefighting work-unit experienced the collapse while still together. When a firefighter gets separated from his or her crew, lost, or trapped alone, this seems to be an important difference that would change “what it is like” for him or her. Therefore, the application of the findings of this study must bear in mind the context of the fire and the crew’s interactive dynamics during the firefight and their escape. Furthermore, all of the participants were male firefighters that lend itself to a kind of fraternal bond or "brotherhood." We cannot say how female firefighters might experience this kind of a situation in terms of similarities and differences, based on gender perspectival differences in relationships and sense of belonging. This incident also occurred in a suburban context with a smaller commercial building. Care must be exercised in applying these participants lived-experience with those firefighters in urban districts, involving large buildings, or even rural and volunteer department dynamics. Nonetheless, the results might provide some insights pertaining to some aspects that might transfer.

Because this study shows the complexity of high-hazard work in team contexts, other researches employing the descriptive phenomenological psychological method would be valuable in other similarly constituted occupations (military, police, EMS, and rescue.) Furthermore, studies like this with diverse crews could be very important. In this study, “the crew” was unified before this incident and their relationships crystalized and deepened as a result. However, a crew that had looser bonds, or perhaps conflict, may have crystallized and deepened the division and strife. Future research would be valuable in events where some firefighters survived but perhaps suffered a loss of a crewmember.
Many issues regarding traumatic loss of peers may be better understood, if they were qualitatively explored. Nonetheless, we can see by the salient bond of the crew in this study how important being a member of a crew can be psychosocially and professionally.

References


