Beyond tough appearances

The impact of fire service culture in the processing of critical incidents

Karin Dangermond

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The impact of fire service culture in the processing of critical incidents

Voorbij het stoere imago

De invloed van de brandweercultuur op de verwerking van ingrijpende incidenten (met een samenvatting in het Nederlands)

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Chapter 1

General introduction

A firefighter family

During the Second World War my grandfather, Jo Dangermond, signed up as a noncareer (volunteer or retained) firefighter in Enkhuizen. As a noncareer firefighter he could actually keep his bicycle and was not forced to work for the German occupiers. He remained a noncareer firefighter after the war. Later on his sons (my father and uncle) also joined the fire service. His grandchildren (my brothers) are continuing the tradition. I now know that growing up in a firefighter family is something special.

When my father's beeper went off, even in the middle of the night, my brothers and I would ask: is it worth it going there? And what does our mother think about that? The answer was always a resounding 'yes': missing a fire was inconceivable. Once we arrived there we would look for our father. Sometimes we got 'lucky' and had to wait, because we got there before him.

Monday evening was standard training evening: we would eat early, because dad had to get to the fire station on time. If we were lucky we got to go with him, to play 'victim' in a fire training.

For the most part my father liked the occupation of firefighter, but sometimes it was difficult too. As a child I didn't really notice the latter. When I asked him about it in the context of my dissertation, my father said that especially accidents in which victims were heavily maimed made an impression. 'We worked all that out nicely, by sitting down and talking, but only over coffee, no alcohol.'

Besides firefighting activities there were also a lot of social activities. For us as children, St Nicholas eve at the fire station was a thrill. My father liked best the firefighter competitions, where firefighter crews of different neighbouring stations – monitored by a jury and encouraged by friends and family who travelled for the event – showed off their skills. Partners were regularly invited for activities of the employee association; my mother has mostly fond memories of these festive evenings.

Even after retiring as a firefighter and after his sons took over, the 'firefighter' sign remained on my father's front car window for a long time. These days he bicycles to the fire station, to chat with other former firefighters (the 'golden boys') after a training evening.

The first time I realised the impact of growing up in a firefighter family was when I was sitting in my student dorm in Utrecht and heard a fire siren. I realised I had no idea who was in the vehicle and where they were riding to. To this day, when I hear fire sirens I try to find out what incident they are riding to, although I don't get on my bicycle anymore. Calling out 'firefighter' every time we pass a fire station does remain a family habit though.

Introduction

While performing their duties, firefighters deal with incidents that are dramatic and potentially traumatic. Firefighters are ready to rescue people and animals, day and night. They assist with fires and come into action when there is storm damage, inundations, release of dangerous substances, stuck elevators, water accidents, car accidents, resuscitations and suicides. Some incidents are experienced by firefighters as so critical that they have psychological consequences that can negatively impact their well-being and mental health (Johnson et al., 2020).

Usually, firefighters experience critical incidents as a collective, because they almost always work in a crew which in turn is part of a larger whole – the fire station. The culture within the crew and the fire station affects how these incidents are experienced and processed, and has a major impact on firefighters' well-being and functioning (Jeannette & Scoboria, 2008; Haverkamp, 2005). However, in-depth research into fire service culture in general and specifically in relation to the processing of critical incidents is scarce. This dissertation research aims to generate insight into the role of fire service culture when firefighters process critical incidents. Since little research has been done on the role of fire service culture in handling critical incidents, an inductive exploratory study of fire service practice was conducted prior to the actual dissertation research. This preliminary study included a qualitative empirical investigation consisting of a large number of open interviews with key figures in the fire service industry. Insights from the literature regarding fire service culture formed the starting point for these interviews. This preliminary study aimed to identify themes emerging in fire service practice concerning fire service culture in general and the processing of critical incidents in particular.

Theoretical framework

The theoretical framework explains how fire service culture can be defined, which aspects of it play a role in experiencing and coping with critical incidents, and why the concept of social ecology is appropriate to gain deeper insight into the significance of fire service culture in the process.

Fire service culture

Literature on fire service culture shows several characteristics that may be important when experiencing and processing critical incidents. The culture within a firefighter crew and station is characterised by mutual trust (Varvel et al., 2007) and tight cohesion (firefighters' brotherhood, Crosby, 2007), and is experienced by firefighters as a family culture (Stinchcomb & Ordaz, 2007). Firefighters have a joint mission and, because of their joint experiences, a shared history. Loyalty to each other and to the group is expected (Crosby, 2007). Strong bonds between crew members lie at the core of their functioning (Johnson et al., 2020). The culture within a crew and station can affect the impact of critical incidents, for example due to group expectations and norms that apply to critical incidents and their processing (Jeannette & Scoboria, 2008).

This research understands fire service culture as experienced and described by firefighters themselves, given that the culture varies per crew and station. The preliminary study revealed four themes about firefighter culture that are important for an in-depth study on the handling of critical incidents: 1. Aspects of experiencing incidents as so critical that these incidents have an impact on firefighters and their crew; 2. Informal peer support from colleagues in the crew or station; 3. The role of humour; and 4. The differences between noncareer and career firefighters in experiencing critical incidents and the role of informal peer support in processing them. These themes provided the basis for the research questions of the dissertation.

Social ecology

During the preliminary study, the suggestion arose that the concept of social ecology might be appropriate to gain more insight into the significance of fire service culture in processing critical incidents for individual firefighters, particularly for understanding their resilience against the impact of critical incidents. The concept of social ecology refers to an ecological approach to resilience that presumes a mutual interaction between a person and their social environment. In this approach, resilience develops through a positive bond between individuals in their social environment, and depends on the social ecology the person is part of (Duyndam, 2016; Ungar, 2012; 2013).

From the perspective of social ecology, resilience is first and foremost a social phenomenon, meaning that individual resilience derives from the socioecological context within which the person works. Social ecology is a bond between people who cooperate and are responsible for each other. Resilience is shown and achieved within this social bond, for example through the support received when processing critical incidents. Social cohesion or a social bond however cannot be taken for granted – further research is needed to find out when this applies.

The socioecological approach is relevant for research into firefighters' processing of critical incidents because the social cohesion within a firefighters' crew is an important precondition for the adequate processing of such incidents. The mutual interaction and connectedness between firefighter peers contribute not only to the resilience of individual firefighters but can also reduce or mitigate the impact of critical incidents. Group expectations and norms within the firefighters' collective play an important role in this process (Jeannette & Scoboria, 2008). For this reason, in this research fire service culture – the 'brotherhood' of firefighters (Crosby, 2007) – is understood in relation to social ecology.

Aim and research questions

Critical incidents are experienced by firefighters as a collective (at the crew and station level). The fire service culture present within that collective plays an important role in processing critical incidents and affects firefighters' well-being and functioning. However, it is unclear how this culture affects the processing of critical incidents. This dissertation research aims to generate insight into the role of fire service culture while firefighters process critical incidents.

The main question of the dissertation reads:

How does fire service culture as described by firefighters affect the processing of critical incidents?

To answer this main question, the following sub-questions were posed:

1. Why do firefighters experience specific incidents that occur during their work as so critical that these incidents affect them and their crew?
2. What role does informal peer support play in helping firefighters cope with critical incidents?
3. What role does humour play as part of fire service culture in general, and specifically when dealing with critical incidents?
4. What are the differences between noncareer firefighters and career firefighters in terms of experiencing critical incidents and the role of informal peer support in processing such incidents?

Firefighters form a specific group of first responders that may benefit from a better understanding of their unique (collective) work culture and the complexity of the firefighting profession (Johnson et al., 2020). Since there is a lack of knowledge about fire service culture, the role it plays in the processing of critical incidents and the role of socioecological resilience, it is important to offer a deeper insight into available results on these topics. By gathering knowledge about fire service culture – 'the DNA of firefighting' (Weewer, 2015, p. 65) – and firefighters' processing of critical incidents, the link between theory, policy and practice on both topics can be strengthened.

Besides academic relevance, this dissertation research also has practical applicability. Deepening knowledge and insight into the role of fire service culture in firefighters' processing of critical incidents is important to the personal well-being of firefighters and the firefighting organisation in general. This knowledge can be deployed to support firefighters in processing critical incidents so they can perform their duties in a healthy, productive way. It can reduce sickness absenteeism and curb the loss of firefighters to the profession. The present research elucidates which aspects of aftercare in the processing of critical incidents firefighters are satisfied with, showing where improvement is possible and help and aftercare can be even better attuned to firefighters' needs.

Fire service in the Netherlands

This research focuses on firefighters in the Netherlands. The Dutch fire service consists of 24,000 firefighters, mainly noncareer (20,000), next to career firefighters (4,000). There are 953 fire stations: 62 career, 831 noncareer, and 60 both career and noncareer. The vast majority of firefighters are male (94 percent). Three-quarters of the firefighters are between the ages of 25 and 54. The largest majority hold a function of crew member (61 percent), followed by crew commander (23 percent) and candidate crew member (9 percent) (NIPV, 2021). A fire station is part of one of 25 safety regions. With an average arrival time of over eight minutes, firefighters assist in 56,800 priority-1 incidents – incidents whose nature necessitates firefighting vehicles to get quickly (flashing lights and sirens) to the scene (NIPV, 2022).

Explanation of the main concepts

Literature is used to explain the main concepts from the research question: critical incidents and their impact on firefighters, formal/informal peer support, humour and differences between career and noncareer firefighters.

Critical incidents

Critical incidents experienced by firefighters are related to personal loss and injury, are unplanned and unexpected, and take place within a specific timespan (Harris et al., 2002; Bacharach & Bamberger, 2007; Lewis, 2003; Fraess-Philips et al., 2017; Monnier et al., 2002). An incident can also be experienced as critical if the assistance fails or mistakes are made, if there is a lot of media attention to the incident, and/or when it involves death and severe injury of children (Harris et al., 2002). The term 'particular critical incident' is used for incidents that firefighters describe as belonging among the worst they have had to face in their career (McCaslin et al., 2006). Firefighters are exposed to critical incidents immediately or afterwards (during the evaluation and/or aftercare). Firefighters do not need to be or have been present at the incident site to experience distress (Murphy et al., 2004).

Studies into firefighters' experiences with critical incidents show that incidents they experience as critical involve victims with severe burns, drownings, suicide and chemical hazards (Van der Velden et al., 2006; Jacobsson et al., 2015), as well as dangerous fire scenarios, threats (from bystanders), death of a colleague and lack of sufficient medical training (Beaton et al., 1999; Lim et al., 2000; Jacobsson et al., 2015). Indicators of possible critical incidents encountered by Dutch firefighters largely correspond with these insights, like incidents involving severe injury, resuscitation, death and maiming, accidents with a child, bizarre situations and serious crimes, situations in which firefighters are powerless (failed rescues), and violence against/intimidation of firefighters (Brandweer Nederland, 2016). Incidents in which family or colleagues of firefighters are involved are also included as indicators. In existing research however, it is unclear what makes firefighters experience certain incidents so critical that they impact them and their crew so greatly.

Impact of critical incidents

A critical incident causes a strong, unpleasant reaction (Fraess-Philips et al., 2017) and overwhelms the coping mechanism of the individual (Monnier et al., 2002; Harris et al., 2002; Jacobsson et al., 2015).[1] Experiencing a critical incident affects life negatively (Halpern et al., 2009), often leading to critical incident stress (Fraess-Philips et al., 2017). Depending on its intensity and duration, a critical incident can also lead to physical health issues (Johnson et al., 2020) such as heart problems (Smith et al., 2019) and severe mental health problems like depression (Stanley et al., 2017; Pennington et al., 2018), post-traumatic stress disorder (PTSD) (Kehl et al., 2014; Lee et al., 2017; Bartlett et al., 2018), acute stress disorder (Fraess-Philips et al., 2017) and suicidal thoughts conducive to suicidality (Brazil, 2017; Henderson et al., 2016; Boffa et al., 2018; Pennington et al., 2021). But critical incidents can also induce positive changes, for instance in someone's strength, relationships and outlook on life (Armstrong et al., 2016); this is known as post-traumatic growth or post-event growth (Kehl et al., 2014).

Incidents that overstep moral convictions and expectations are morally damaging experiences and can cause moral injury (Litz et al., 2009). This can be the case when firefighters face complex life-and-death decisions that conflict with their morals. Moral injury can cause feelings like shame and guilt as well as – comparably with the impact of critical incidents – dysfunctional behaviour (e.g., suicidality) (Frankfurt & Frazier, 2016; Litz et al., 2009). Current research into moral injury focuses on military questions (Griffin et al., 2019), but it is a more widespread phenomenon that could also be playing a role in the firefighting profession.

Formal and informal peer support

Firefighters process critical incidents together with their colleagues through both formal and informal support. Formal support for firefighters while processing critical incidents usually takes place using critical incident stress debriefing (CISD), in which the critical incident and the subsequent stress reactions are shared and discussed in a group with peers from the crew and with colleagues specialised in aftercare (Harris et al., 2002). This method emphasises peer processes that make use of cultural aspects of the work environment (Adler et al., 2008). Various studies show that this method is not effective on all firefighters (Devilly et al., 2006; Jeannette & Scoboria, 2008; Johnson et al., 2020). For example, the method focuses on preventing PTSD, with varying results (Devilly et al., 2006; Jacobs et al., 2004), but participants could also be experiencing other psychological problems (Jeannette & Scoboria, 2008). In addition, CISD interferes with natural recovery processes (Lilienfeld, 2007). For this reason, it is not clear whether the recovery can be ascribed to CISD or

1 The psychological consequences of experiencing critical incidents are comparable with those of experiencing traumatic incidents (Fraess-Philips et al., 2017). Scientific studies do not always make a clear distinction between the terms critical incident and traumatic incident (Huddleston et al., 2006; Brazil, 2017; Fraess-Philips et al., 2017; Lewis, 2003). Halpern et al. (2009) posit that critical incidents are not the same as traumatic events. It is important to have a discussion around this definition issue, especially the difference between the two terms (Lewis, 2003; Halpern et al., 2009), but such a discussion falls outside the scope of this research.

whether it is possible for people who are exposed to a critical incident to recover from it without intervention. In the Dutch guidelines for psychosocial support for uniformed services, including firefighters, CISD is not a recommended intervention.

Research shows that while processing critical incidents firefighters have a preference for informal peer support, the natural dialogue that ensues between crew members after an incident (Isaac & Buchanan, 2021; Jeannette & Scoboria, 2008). Informal peer support is given within the socioecological context (fire crew and station) firefighters work in. The mutual interaction and connectedness between firefighters normally contribute to the resilience of individual firefighters but can also reduce or mitigate the impact of critical incidents. In brief, the concept and reality of social ecology are relevant to understanding firefighters' processing of critical incidents. However, research into how this informal support is given and into its meaning when processing critical incidents is lacking.

Formal and informal support are important forms of social support. Social support is one of the most effective sources of help to process stressful events (Kim et al., 2008). It includes instrumental, informative and/or emotional support (House & Kahn, 1985). Instrumental support entails offering psychological or practical help; informative support offers information, advice or guidance; and emotional support consists of love, empathy, caring, encouragement and sympathy (Birkeland et al., 2017; Cohen & Ashby, 1985). These different types of support are strongly correlated, especially when the support is coming from the same source/persons (Semmer et al., 2008).

Social support can be given by a partner, family, friends, colleagues or professionals. It reduces the negative psychological impact after experiencing a critical incident (Varvel et al., 2007), enables people to better deal with their stress, reduces the number of negative reactions and stimulates resilience (Bernabé & Botia, 2015). Research into the way people ask for help and preferences among firefighters shows that help-seeking patterns vary, depending on the number of service years and stigma-related barriers (Gulliver et al., 2019; Tamrakar et al., 2020). Experienced firefighters tend to seek social support from family and/or colleagues less often than their less experienced peers, but make more frequent use of professional help, possibly because of their hierarchical role as an officer (Regehr et al., 2003; Gulliver et al., 2019). Cultural stigmas could also withhold firefighters from talking about their mental health problems or their vulnerability (Henderson et al., 2016; Stanley et al., 2017; Pennington et al., 2021), for example, if they fear being seen as weak (Wilmoth, 2014).

Humour

Fire service culture is often described as a joking culture: humorous references that are familiar among group members and which they refer to in their communication, serving as a basis for interaction between them (Fine & De Soucey, 2005). One important aspect of fire service culture for the processing of critical incidents is what is known as black humour (Haslam & Mallon, 2003). This is a paramount coping strategy while dealing with stress and complex situations firefighters are confronted with in their work (Haslam & Mallon,

2003). Using black humour is a way to express feelings, distance oneself from the situation, receive social support, and develop group cohesion (Rowe & Regehr, 2010). In this way, humour has a buffering effect (Sliter et al., 2013). Although humour plays an important role when performing firefighting duties (Rowe & Regehr, 2010), research has so far failed to clarify why, how and when firefighters consider whether such humour helps process critical incidents.

Career and noncareer firefighters

Most studies on the experiences of firefighters with critical incidents are limited to career firefighters (Milligan-Saville et al., 2018; Brazil, 2017). Yet in many Western countries, including the Netherlands, most firefighting personnel consist of noncareer firefighters. Studies focusing specifically on noncareer firefighters experiencing critical incidents or on the impact of the firefighting profession on both career and noncareer firefighters (e.g., Dyregrov et al., 1996; Stanley et al., 2017; Pennington et al., 2021; Petruzzello et al., 2016) show important differences between the two (Brazil, 2017). The social ecology aspects of the two firefighter categories are probably different, while intragroup relationships may strongly vary. However, current research makes no distinction between specific or general aspects of the fire service culture of noncareer and career firefighters (e.g., Varvel et al., 2007; O'Neill & Rothbard, 2017; Moran & Roth, 2013; Thurnell-Read & Parker, 2008), or does so only to a limited extent (e.g., Johnson et al., 2020; Ward & Winstanley, 2006). Research into the experiences of critical incidents and informal support of both groups is therefore required (Sattler et al., 2014).

Dutch noncareer and career firefighters follow the same training and perform the same tasks. There are differences between the two groups though. Noncareer firefighters are not in service full-time and have another (main) job, but for career firefighters, it is their main job. Another difference is that noncareer firefighters are alerted while at work in their regular job or in their free time, whereas career firefighters usually have 24-hour shifts. The composition of the crews in which noncareer and career firefighters respond to a call also differs. For noncareer firefighters, this depends on who is available at that fire station at that moment or can be there on time. Career firefighters go on a call with their fairly regular crew. Last, whereas noncareer firefighters live (or work) in the areas they serve, career firefighters have 24-hour shifts in cities where they may not necessarily be residing.

Research design

This research aims to gain insight into the detailed role of a specific culture in experiencing and coping with critical incidents. It is emphatically not aimed at developing a theory or testing a hypothesis or a biased paradigm. Considering this aim and the fact that in-depth research into fire service culture is limited, ethnographic field research with an exploratory character centred on the perspective of the firefighters themselves is the most suitable method of data collection.

First, ethnographic field research offers the possibility to identify themes that are considered important by firefighters themselves, and which are necessary to truly understand their culture and habitat (Johnson et al., 2020). Hence this research started with a preliminary study to explore relevant themes and formulate the research questions.

Second, ethnographic field research is primarily suited to gain deeper insight into the relationships and group culture of firefighter crews. The visible part of fire service culture is studied during participating observations (Schein, 1984; Kawulich, 2005). It is a method to gain insight into aspects of a shared culture, conventions and the social dynamics of a particular group, such as a fire crew/station. For this study, the researcher immersed herself for a prolonged period in the fire service organisation and shared the everyday reality of the work of firefighters. This made it possible to gain the trust of the firefighters, have informal conversations about their personal experiences and views, and observe their behaviour and interactions up-close. To deepen this descriptive behavioural level and thoroughly comprehend fire service culture, the interviews focused on the perceptions, thoughts, feelings, experiences, values and assumptions of individual firefighters in the various crews and stations (Schein, 1984; Patton, 2015).

Third, ethnographic field research fits best because this study focuses on processing critical incidents. Talking about mental health problems is a sensitive topic that is sometimes seen as taboo (Henderson et al., 2016; Stanley et al., 2017; Pennington et al., 2021; Wilmoth, 2014). Ethnographic field research offers possibilities to develop trust in the researcher and discuss confidential matters.

Last, this study builds on previous research into firefighters' processing that is generally of a quantitative nature (see Brazil, 2017; Jacobsson et al., 2015; Jeannette & Scoboria, 2008; Milligan-Saville et al., 2018; Ogińska-Bulik, 2015; Bernabé & Botia, 2015; Pennington et al., 2021). The ethnographic method yields deeper information on the previously researched topics.

Data collection

The data collection took place among firefighting personnel (with an active function). After concluding the open interviews (preliminary study), information was gathered through participating observations. Simultaneously with the participating observations and after the observations were completed, semistructured in-depth interviews were held. A total of 88 participants were interviewed, and 20 participating observations took place with six crews. Participants came from 19 career stations and 18 noncareer stations in 12 safety regions.

Method 1: unstructured, open interviews (preliminary study)

During the preliminary study, 16 participants (key figures) were selected and interviewed because of their considerable number of service years in firefighting (over 20 years each); these included career as well as noncareer firefighters, with and without a leadership function, men and women, and with a variety of cultural backgrounds. New participants were approached by using the snowball method (most key figures have a large network).

The open interviews aimed at discovering relevant themes for the dissertation research from different perspectives. The interviews with key figures who also had a leadership function within a safety region were also intended to obtain consent for participating in observations and interviews in the corresponding safety region. This endeavour elapsed successfully.

The following themes (based on literature – Burggraaf, 1989; Crosby, 2007; Johnson et al., 2020; Jeannette & Scoboria, 2008 – and informal talks with colleagues) were discussed during the open interviews: fire service culture, processing and formal/informal leadership (for the topics list, see Appendix 1). The themes formed a starting point for further conversation, gradually revealing how participants thought about these themes. Participants also got the space to initiate new themes (Baarda et al., 2009). The 16 open interviews took place at participants' homes or workplaces. Interviews lasted 90 minutes on average, and all interviews were taped with a voice recorder.

Method 2: participating observations

Twenty participating observations took place during 24-hour shifts of six crews from six stations (career firefighters), with an average of three consecutive 24-hour shifts per crew. To get the best possible picture, crews were selected based on their group size and the location of the station (the area being served). The observations took place in groups varying from six to 12 persons, at fire stations in busy cities or more rural stations (in other words, busy and quieter areas of service). Consent for the observations was requested beforehand, during an introductory interview between the researcher and the entire crew. All crews gave consent. Additionally, various observations took place during training evenings for noncareer firefighters.

During the participating observations the visible part of fire service culture – open behaviour and artefacts (like trophies from a fire) – was described; the researcher participated in all activities, except for providing help during incidents. Besides observing, informal (casual) talks took place with crew members. The relationship between the researcher and the crew was also part of the data collection (Kawulich, 2005). A report based on an observation scheme was made during and directly after each participating observation. This scheme is based on insights from the literature and the interviews, and contains facts such as a description of the station, who was present, daily schedule and total number and type of service calls, plus other aspects like atmosphere, description of observations, moments experienced as valuable, the role of leadership, group dynamics and formal/informal aftercare (for the observation scheme, see Appendix 2). Initial notes were rather superficial and primarily descriptive; this changed as observations continued (Schensul et al., 1999).

Method 3: semistructured in-depth interviews

Semistructured in-depth interviews were held with 72 participants. Participants were selected based on the largest possible variation in the number of service years, function, repressive function, sex, age, ethnic background and place of residence/work. Characteristics of the 72 interviewed participants are:

- varying in service years from 1 to 39, with an average of 19 service years;
- 40 career firefighters (11 of whom had also been noncareer firefighters in the past), 20 noncareer firefighters and 12 participants that had worked in both capacities;
- crew members, crew commanders and shift leaders;
- 67 men and five women;
- ranging in age from 25 to 59 years, with an average age of 43; and
- mainly native Dutch (white), but also including Moroccan, Turkish, Antillean and Surinamese backgrounds.

To get a comprehensive picture, participating observations and interviews were conducted in every selected career station. This allowed results from the observations to be compared with the results of the interviews (and vice versa) in order to supplement, delve more deeply or make corrections.

The list of topics (see Appendix 3) for the semistructured in-depth interviews (method 3) is based on the findings of the open interviews (method 1) and participating observations (method 2) and contains these themes: personal characteristics and motivation, description of the station and crew, role of the crew commander, sense of community, social needs, circumstances of the critical incident, processing (peer support, coping strategy, collective versus individual, hindrances, formal support and support at home), and impact of critical incidents in the short and the long term. Interviews lasted one-and-a-half to two hours. All interviews were taped with a voice recorder and transcribed verbatim.

Insider researcher

The researcher comes from a firefighter family and works as a researcher at the Fire Service Academy (the current Netherlands Academy for Crisis Management and Fire Service), which qualifies her as an insider researcher (Greene, 2014). Research by an insider eases access of the investigator to the research population, which is an advantage given the close-knit fire service world. She also has relevant background and current knowledge that facilitates asking questions (Kniffin et al., 2015). The participants were aware of this insider position, and many indicated that they considered the researcher as 'part of the family'. On the other hand, the researcher also had to deal with bias. Additionally, moral dilemmas were present (Floyd & Arthur, 2012), for example, if there was both a personal and a professional relationship with a participant (Perryman, 2011; Vass, 2017). The researcher was aware of the potential bias and dilemmas. In the conclusion, she will reflect on this and describes how she took this into account during the research.

Ethical considerations

Except for those participants during the open interviews, all participants signed informed consent in advance (see Appendix 4). The researcher went over this declaration in detail verbally with the participant before the start of every observation and in-depth interview, explaining the purpose of the study and informing participants that the research data would

be processed confidentially and anonymously. If participants had questions or complaints, they could contact the researcher and/or the institute afterwards.

Analysis

A thematic analysis – an approach for 'systematically identifying, organising, and offering insight into patterns of meaning (themes)' (Braun & Clarke, 2012, p. 57) – was applied to analyse the dataset. The analysis consisted of six phases (Braun & Clarke, 2012):

> Phase 1: becoming familiar with the data
> Phase 2: generating initial codes
> Phase 3: searching for themes
> Phase 4: reviewing themes
> Phase 5: defining themes
> Phase 6: concluding the report

The dataset was coded openly, axially and selectively (Patton, 2015). Open coding took place primarily when analysing the open interviews and participating observations (phases 1 and 2). Next, the data was axially coded. While axially coding, codes were validated by splitting, merging and comparing them, and designating new codes. In addition, various codes were clustered into one or several group codes, based on substantive considerations (mainly derived from the analysis of interview reports, but also on statements/observations of participants). Last, the connection between group codes was analysed (selective coding, phases 3, 4 and 5) based on a comparison of the group codes; the study's results were described; and the study was concluded (phase 6). The qualitative analysis program Atlas.ti was used to analyse the data.

In an iterative process that alternated data collection, analysis and theory formation, data collection took place until saturation occurred (Aldiabat & Le Navenec, 2018). This means that during the observations and interviews no new insights were obtained, that in the thematic analysis sufficient data were available to describe the codes from different dimensions, and that no more changes needed to be made in the codebook (also known as meaning saturation; Hennink et al., 2017).

The combination of different research methods (method triangulation) further deepened the study's results. We also used researcher triangulation: during the study the researcher worked closely with a substantive expert (co-supervisor Dr. Ricardo Weewer) and two academic non-insiders (first supervisor Prof. Anja Machielse and second supervisor Prof. Joachim Duyndam). In this way, observational reports and interview reports were discussed and provided with feedback as needed. Last, the validity and reliability of the study were strengthened by the large number of participating observations and the open and semistructured in-depth interviews, combined with the detailed, structured method of data collection and analysis.

Table 1.1 Summary of data collection and analysis

	Open interviews (preliminary study)	Participant observations	Semistructured in-depth interviews
Participants	Firefighters with varying years of service, career and noncareer firefighters, men and women, and people of various cultural backgrounds		
Main themes	Fire service culture, incidents and their impact, formal/informal support	Atmosphere, incidents (if any), crew commanders' roles, group dynamics, formal/informal support	The crew and their station, sense of community, crew commanders' roles, social support
Analysis (thematic)	Open coding	Open coding Axial coding	Open coding Axial coding Selective coding
Examples of codes/ coding	'fire service culture' 'critical incidents' 'processing'	Career firefighters 'fire service culture' 'critical incidents' 'impact' 'informal processing' Noncareer firefighters 'fire service culture' 'critical incidents' 'impact' 'informal processing'	Comparing: - 'career firefighters: critical incidents' with 'noncareer firefighters: critical incidents'; - 'informal processing' with 'formal processing' - 'fire service culture: humour' with 'processing: black humour'

Structure of the dissertation

Chapter 2 describes what makes firefighters experience certain incidents that occur in their work as so critical that these incidents impact them and the crew they are part of. The focus of Chapter 3 lies on the role that informal peer support plays in firefighters' processing of critical incidents. Chapter 4 describes the role humour plays in fire service culture, and more specifically in processing critical incidents. Chapter 5 elucidates the differences between career and noncareer firefighters in terms of experiencing critical incidents and the role of informal peer support in processing such incidents. Last, the main results are summarised in Chapter 6, where sub-questions are answered consecutively, followed by a reflection on the methodology, practical implications and suggestions for follow-up research. The final remarks end with a general conclusion.

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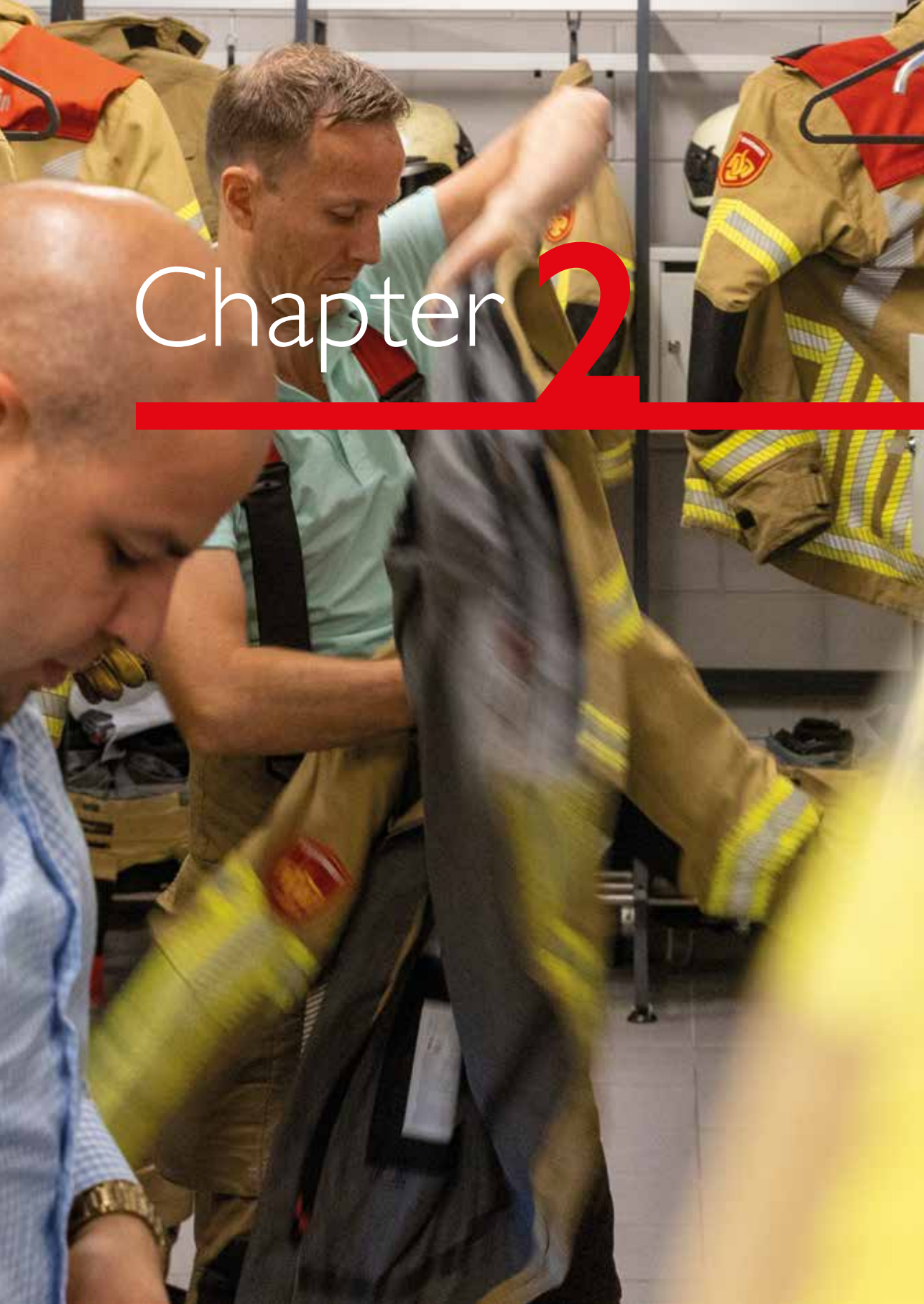

Chapter 2

"A sight you'll never forget"

Why firefighters experience certain incidents as critical and the impact of such incidents on individual firefighters and fire crews.

Dangermond, K., Weewer, R., Duyndam, J. & Machielse, A. (2022). "A sight you'll never forget." Why firefighters experience certain incidents as critical, and the impact of such incidents on individual firefighters and fire crews. *International Journal of Emergency Management, 17*(3-4), 296-312. https://doi.org/10.1504/IJEM.2022.125166

Abstract

Firefighters encounter critical incidents as part of their work. Little research has been conducted into the impact of critical incidents on firefighters' well-being and performance. The goal of this study is to gain in-depth understanding of firefighters' experiences with critical incidents and their impact on both individual firefighters and their crews. Data were collected by means of 20 participant observations and 72 interviews with Dutch firefighters from 37 different fire stations. Whether an incident is experienced as critical depends on the type of incident, the personal situation and the circumstances of the incident. Directly or indirectly, experiencing a critical incidents impacts firefighters during and after the incident, both professionally and personally. Experiencing critical incidents affects the dynamics within a crew. Knowledge about their impact is necessary to tailor help and aftercare more effectively to firefighters' needs.

Introduction

First responders, e.g., police officers, firefighters and ambulance workers, inevitably encounter critical incidents as part of their work. Critical incidents are described in the literature as related to personal loss, a threat to a person's well-being and potentially life threatening; and are often unplanned and unexpected, taking place within a specific time frame (Bacharach & Bamberger, 2007; Lewis, 2003; Fraess-Phillips et al., 2017; Monnier et al., 2002). Their intensity and inherent unpredictability makes their management a challenge (Bacharach & Bamberger, 2007; Lewis, 2003; Mitchell, 1983). Incidents are also perceived as critical if the first response failed or mistakes were made, if a lot of media attention was given to the incident and/or if it involved children being seriously hurt or dying (Harris et al., 2002).

A critical incident causes a vehement, unpleasant stress response, referred to as critical incident stress (Fraess-Phillips et al., 2017), and overwhelms the individual's capacity to deal with it (Monnier et al., 2002; Harris et al., 2002; Jacobsson et al., 2015). Experiencing a critical incident can have a negative impact on first responders' lives (Halpern et al., 2009). A critical incident can also lead to serious mental health problems or operational stress injuries (Carleton et al., 2018), such as post-traumatic stress disorder (PTSD) (Kehl et al., 2014), an acute stress disorder (Fraess-Phillips et al., 2017), or even suicide (Brazil, 2017). Critical incidents may also lead to positive changes or post-event growth (Kehl et al., 2014), such as changes in someone's sense of personal power, relationships and philosophy of life (Armstrong et al., 2016).

The experience of incidents as being critical dependents on the person and the context. Three factors determine why some people are overwhelmed by a specific incident and others are not: personal beliefs about the world, support and coping mechanisms (Harris et al., 2002). Individual differences in resilience and vulnerability likewise play a decisive role in the intensity and duration of trauma-related symptoms (Regehr et al., 2000). How a person

interprets an incident seems to be more important for the development of PTSD than the actual incident itself (Pinto et al., 2015).

Incidents that transgress moral beliefs and expectations are morally injurious experiences and could lead to moral injury (Litz et al., 2009). Moral injury may arise, for example, in incidents where first responders are confronted with complex life-and-death decisions that contravene or challenge their personal morals. Although there is no consensus definition of this construct (Griffin et al., 2019), moral injury is generally defined as "the inability to contextualise or justify personal actions or the actions of others and the unsuccessful accommodation of these potentially morally challenging experiences into pre-existing moral schemes" (Litz et al., 2009, p.705). Moral injury results in concomitant emotional responses (e.g., shame and guilt) and – comparably with critical incident stress and operational stress injuries – dysfunctional behaviours (e.g., self-harming behaviours: poor self-care, alcohol and drug abuse and suicidality) (Frankfurt & Frazier, 2016; Litz et al., 2009). Literature on moral injury has primarily focused on military-related issues (Griffin et al., 2019), yet is a more widespread phenomenon. It is therefore important that moral injury be understood in terms of the different contextual occupational factors of first responders (Lentz et al., 2021), which also applies to critical incidents.

First responders experience a different range of critical incidents under different circumstances – such as working conditions (e.g., length of shifts), the nature and frequency with which they are confronted with critical incidents, and collaboration with colleagues (Jones, 2017). Hence a proper evaluation of incidents and how first responders cope with them requires separate studies for different professional groups (Halpern et al., 2009). This paper focuses on the impact of critical incidents on firefighters. Firefighters are an under-researched group in academic literature, and studies on their wellbeing are lacking and inconsistent (Fraess-Phillips et al., 2017).

Monnier et al. (2002) developed the Critical Incident Inventory with a list of stressor categories and items that may apply to firefighters. Factors that make an incident critical are: being confronted with injury or death (especially multiple, bizarre or gruesome – and possibly fatal – injuries); knowing the victim personally; a failed intervention resulting in death; life-threatening situations for the first responder; incidents that involve children; working under unfavourable conditions; and dealing with a lot of media attention (Beaton & Murphy, 1993; Green, 1985; McCammon, 1996; Ørner, 1995). Critical incidents identified in the literature are: traffic incidents, casualties with severe burns, chemical hazards, drownings and suicide (Van der Velden et al., 2006; Jacobsson et al., 2015), as well as dangerous fire scenarios, a lack of medical training, being threatened or the death of a colleague (Beaton et al., 1999; Lim et al., 2000; Jacobsson et al., 2015). Most studies do not investigate why firefighters experience an incident as critical and which personal and contextual factors play a role, and little research has been conducted into the impact of critical incidents on firefighters' working and private lives.

This study serves to gain a better understand of firefighters' experiences with critical incidents and their impact on them as individuals and on the fire service crew. The key focus in this paper is the following research question: *Why do firefighters experience specific incidents that occur during their work as so critical that these incidents affect them and their crew?*

Research design

The study we report on in this paper is part of broader research in the Netherlands into the role of fire service culture in coping with critical incidents. It emphatically expands on previous research, which was generally of a quantitative nature (Harris et al., 2002; Kehl et al., 2014; Brazil, 2017; Bacharach et al., 2008; Jacobsson et al., 2015; Jeannette & Scoboria, 2008; Monnier et al., 2002; Sattler et al., 2014; Milligan-Saville et al., 2018; Wagner et al., 2009). The study is based on ethnographic field research with a robust exploratory character and consists of participant observations and interviews. In the first place, ethnographic field research brings about more profound insight into the relationships and the group culture among fire stations, by participating for extended periods in their reality, building trust, and talking about personal experiences and perceptions. Second, this method fits best because this study aims to better understand the impact of critical incidents experienced by firefighters and/or how they cope with them, which is a sensitive topic that is often considered taboo. Multiple studies describe how cultural stigma can inhibit firefighters from discussing mental health issues (Henderson et al., 2016; Stanley et al., 2017; Kim et al., 2018) or talk about their own vulnerability, as they fear being seen as weak (Wilmoth, 2014). Ethnographic field research offers possibilities to develop trust in the researcher and discuss confidential matters.

An important fact in this context is that the first author works as a researcher at the Dutch Fire Service Academy, plus, comes from a fire service family and is, therefore, an insider-researcher (Greene, 2014). Research by an insider eases access of the investigator to the research population. In addition, this investigator possesses the relevant background and current knowledge that facilitates asking questions (Kniffin et al., 2015). A possible drawback of an insider-researcher is interviewer bias. The investigator could also be dealing with ethical and moral dilemmas (Floyd & Arthur, 2012), for example if there is both a personal and a professional relationship with participants (Perryman, 2011; Vass, 2017). The participants in this study were aware of this insider position, and many indicated that they considered the investigator as 'part of the family'. Because of the possible bias and dilemmas, there was also researcher's triangulation. In all study phases, the first author worked closely together with a content expert (second author) and two academic non-insiders (third and fourth authors).

Data collection

Data were collected using a three-phase process. The first phase consisted of open interviews with key figures: people with many years of fire service, career (professional or wholetime) and noncareer (volunteer or retained) firefighters, men and women, and people with various cultural backgrounds. These interviews were held to identify relevant themes for follow-up research from different perspectives. The second phase consisted of collecting information through participant observations and semi-structured in-depth interviews. A total of 20 participating observations took place – throughout several 24-hour shifts per crew, the researcher participated in all activities except for providing aid during incidents (career firefighters) and training evenings (noncareer firefighters) – describing open behaviour (the visible part of fire service culture). An observation report was made during and directly after each participating observation. Besides an overview of some factual characteristics, this report mainly contains descriptions of the atmosphere, incidents (if applicable), valuable moments, management's role, group dynamics and informal aftercare.

To delve deeper into this descriptive behavioural level and understand the culture, semi-structured in-depth interviews were held in the third phase. These interviews focused on individuals' perceptions, thoughts, feelings, and experiences (cf. Schein, 1984). The list of topics for the interviews is based on the findings of the participating observations. The main themes are: description of the station and crew, sense of community, critical incidents, impact and social support. A total of 72 interviews were held, lasting one and a half to 2 hour. All interviews were taped with a voice recorder and transcribed verbatim. All participants signed an informed consent document in advance.

Sample

The research population consisted of firefighting personnel: crew members, crew commanders and shift leaders. Participant observations were taken from six crews from six stations. The in-depth interviews included both career and noncareer firefighters: 40 career firefighters (11 of whom had also been noncareer firefighters in the past), 20 noncareer firefighters, and 12 participants that had worked in both capacities. The participants represented 19 career and 18 noncareer fire stations.

Analysis

The analysis was an iterative process alternating data collection, analysis and theory formation processes. Induction and deduction took place simultaneously.

The Atlas.ti qualitative analysis program was used to analyse the data. Three coding steps were applied: open, axial and selective coding (Patton, 2015). Open coding took place primarily when analysing the participating observations and the open interviews (e.g., the codes 'critical incidents', 'impact' and 'processing'). In the subsequent step the data was axially coded, validating codes by splitting, merging and comparing them, and designating new codes. In addition, various codes were clustered into one or several group codes, based mainly on substantive considerations. These are some of the group codes created:

'critical incident: case', 'critical incident: circumstances', 'impact: individual', 'impact: crew' and 'processing: fire service culture'. Lastly, based on comparison of the group codes the connection between group codes was analysed (selective coding). The collection of data continued until signs of saturation appeared.

Method triangulation led to further deepening in the research results. The different forms of data collection elucidate various perspectives of the research object: through observations, that which is observable on the outside is mapped out, while the interviews gather more in-depth knowledge. The large number of participating observations and interviews, combined with the detailed, structured data collection and analysis method, strengthen the validity and reliability of the study.

Quotes from the interviews support the findings. The quotes have been edited for editorial reasons and to safeguard the anonymity of participants.

Results

Incidents frequently mentioned as critical are serious traffic accidents, drownings, cardiopulmonary resuscitations (CPR), suicides, and fire scenarios that participants considered exceptional. We discuss why participants consider these incidents to be critical. Subsequently, we describe the impact that these incidents have had, both on the participants (as first responders, but also in their private capacities) and on the fire crew (the collective).

Circumstances and the impact of critical incidents on firefighters

As soon as firefighters start their shift and/or receive an alert, they change mindset and assume the first responder mode. "The adrenaline starts pumping and a kind of shield comes up. Your first responder role takes over and you become less of yourself" [R.39]. This mindset enables firefighters to do their work despite possibly overwhelming circumstances, yet does not prevent them entirely from perceiving certain incidents as critical. This perception depends on the person, and also partly on the circumstances of the incident and of the person. The circumstances that determine whether an incident is interpreted as critical and the associated impact on the first responder are described below.

Unfolding of the first response

How the first response unfolds is perceived as critical if firefighters feel helpless or believe that the first response is failing.

Feelings of helplessness are experienced if, while rendering assistance, they realise that 'nothing can be done'. Several participants reported that an inability to find the casualty is perceived as critical. Despite having tried very hard, it was to no avail. "You desperately want to find the person. It's your goal, your task, your reason for going there. But you failed. And what's really irritating is that the next team does find them" [R.91].

Firefighters also perceive an incident as critical if they feel that the first response did not go well. "What bothers me most are incidents where I blame myself. When we didn't get it right. Or we could have done better. It's not so much the intensity of the incident at times like that" [R.20]. An incident is also perceived as critical and frustrating if a death could have been avoided had assistance been rendered differently: "A boy died in my hands. The paramedics had come up with a new idea on how to free a casualty. But it was a very cumbersome process that took a very long time. I think things took too long, and that's what killed the boy" [R.92].

Severe physical injuries and death

Firefighters will likely encounter severe physical injuries during their work. This does not necessarily mean that every incident involving physical injury is perceived as critical: "Civilians see it as overwhelming, because they've never actually experienced it themselves. It's our work, we're focused, we're doing our thing" [R.9]. However, various circumstances can cause incidents with physical injury to be perceived as critical, for instance because of the sights and smells. To render assistance, firefighters sometimes have to touch bodies. "I think it's quite different once you've held a dead body or a casualty; that's a different feeling than only looking at the scene of the incident" [R.48]. Firefighters are sometimes caught unawares when touching a body. The lack of preparation adds to the impact: "There was this boy we lifted. When he was lying, there was still some structure to him. But he'd broken every bone in his body, so we lifted him up and everything seemed to cave in to the point where he could hardly be recognised as a human body. These are things that stick with you. All that was left of a human being was a pile of flesh and bones" [R.26]. Sometimes it is necessary to damage a body even more, for example if it's stuck and needs to be salvaged. Because of the intensity of seeing, smelling, touching and/or damaging a badly injured or disfigured body, the mindset and focus on technical action sometimes features very prominently, if not excessively: "A car hit a mast. My colleague felt the driver's pulse and felt a heartbeat, but he was squeezing so hard that he was actually feeling his own pulse. We could all see that the situation was hopeless" [R.3]. Sometimes personal belongings of the disfigured casualty remind firefighters that they are not dealing with an anonymous casualty, but with a human being. "At some point, you just see a body and some parts. What then made a difference to me was when you saw the bank cards, cash. It's a person lying there. That did change things for me" [R.44].

Several participants indicated that incidents where the casualty was still alive at first, but died while the firefighters were trying to save them, were perceived as critical. Casualties die in their hands. "He was so badly injured that he was going to die. And I was sitting there with him. His last moment, the moment when he drew his last breath, he was in my hands. That's a strange thing to take in" [R.66]. Victims dying while first responders are rendering them assistance is sometimes perceived as being so critical that participants admit they would have preferred the victim to have died immediately: "Honestly, if there's been a very serious accident, I prefer people to die than be severely injured. If only for the sake of peace and quiet at the scene" [R.26].

Participants have described the impact of severe physical injuries and deaths as "retinal pollution". They identified no added value in looking at possible casualties for firefighters who have no role in the first response. "Not being able to do anything, but seeing everything, that's the very worst" [R.14]. If possible, they try to avoid these horrific images as much as possible: "it will never go away, so I don't look if I don't have to" [R.1].

Circumstances at the scene of the incident

Bystanders and relatives obstructing the first response have an impact since firefighters are not able to do their job. The emotions of bystanders, particularly relatives, confront firefighters with the emotional consequences of the casualty's injuries or death and make it difficult or impossible for them to maintain their first responder mindset. "The casualty is dead. It's often the reaction of bystanders, the relatives, that can get to you. If you hear a child screaming 'daddy' or a woman slumped down in intense grief because she has lost her partner" [R.57]. Some participants recounted how relatives explicitly threatened them during the first response effort; that has an impact as well and an adverse effect on the first response effort: "I was giving CPR once when someone stood behind me and said 'if he doesn't make it, you'll be in trouble as well'. That makes you feel seriously threatened, I can tell you" [R.57]. There may also be a threat from a group of bystanders, as happened in a stabbing incident: "I'll never forget it. It made such an impression. The boy had already died. The paramedics said: 'We're going to give CPR, things are so volatile here that we're just going to give CPR. We've got to do something or else all the aggression is going to be released on us'. Once we got him into the ambulance, we stopped" [R.48]. Some first responders prefer to leave the scene of the incident as quickly as possible if there are bystanders.

Firefighters can also be emotionally affected by a casualty's personal circumstances and the conditions they live in. The circumstances in which casualties are found trigger feelings of pity, particularly if it is apparent that they've suffered a great deal. A frequently mentioned circumstance is the casualty's home environment. "When you go to the scene of an accident, you know you can expect that shit and you mentally prepare for it. But CPR can be in someone's most personal environment, their own living room, surrounded by their defeated family" [R.72].

Incidents involving someone the first responder knows

Incidents that involve someone the firefighter knows, or a colleague's friend or relative, are experienced as very critical. In these situations, it can become difficult to fulfil a first responder role. If, while on the way to the scene of an incident, there is information that someone the first responder knows personally is involved, action is taken for that very reason: "We had to go to a very young child, CPR. We were in the tender and the atmosphere was quite tense. And then we heard that the family in question were friends of the crew commander. We stopped and changed crew commanders. He didn't come in. This is a way to protect colleagues and to prevent trouble afterwards" [R.94]. Several participants mentioned an incident where a child of a fellow firefighter died; his colleagues searched for

and found the child. “It took a long time for me to recover from that. It’s one of those things that you wouldn’t wish on anyone. Terrible. I was weeping like a child. You come to terms with such things, but they never truly go away. Some things come flooding back” [R.2]. Such incidents have a significant impact on the colleagues involved. The same applies when peers get injured while dealing with an incident.

Personal circumstances

Due to events or circumstances in their private lives, firefighters may feel more vulnerable and be overwhelmed by emotions during their work. Incidents that would normally not affect them can suddenly become quite distressing. Examples participants gave of such events include: divorce, an argument with family members, a relative’s death or serious illness. The personal situation mentioned most frequently by far is fatherhood/motherhood. Virtually all the participants who have children reported that it had changed them. “You become more emotional. And that even happens when your wife is pregnant” [R.49].

Personal association

Personal associations make firefighters experience an incident as critical, for instance if they identify with the victim: “That’s something you’ll never forget either, you compare your situation to theirs. You find yourself in familiar territory, because you’re the same age, you have children too” [R.43]. Incidents with children are always experienced as critical and this is reinforced if the firefighters have children of their own. Some participants referred to moments when they arrived at a scene and thought that their child was involved in the incident. “I saw a boy lying in the water: the same colour of hair, jacket, jeans, white shoes like my son and about the same height. And I knew that my son had been clubbing, so I knew he would have had to cross that bridge to get home. Actually, since that incident, I’ve made it a point to always look into my children’s bedrooms first whenever I receive such a call” [R.57].

The first time

The first time participants are confronted with a certain type of incident in the course of their work, the first turnout in a new job and the first turnout with a fatality have a major impact. Participants describe these ‘first times’ as a test of their suitability for the firefighting profession. They often remember every last detail of their first deployment as firefighters, especially if casualties were involved too. “It was my very first fire. A house fire. You go in for the first time and right away you find someone in there. I had to let that sink in. I had to come to terms with it” [R.84]. Most participants also remember their first turnout in a new job or specialism, e.g., as crew commander or diver. “A car had driven into the water. I managed to free two boys and bring them to the surface in quite a short time. It was chaos. It’s everything you’ve learned but ten thousand times more intense. It’s always a tense moment: how am I going to react, because it’s your first deployment” [R.77]. They also remember the exact details of the first incident where they were faced with a fatality due to CPR, fire or suicide. “The one that always comes to mind is my first CPR. We arrived on the scene to find a car in the street with someone under the car. No pulse, no breath, so off

you go, CPR next. He had eaten spinach and I'd already removed that from his mouth. I eat everything, but not spinach. I think that's also one of the reasons why it sticks in my mind. An extraordinary situation, but one I'll never forget" [R.42].

There is also a kind of curiosity about that first fatality. According to participants it is a way to determine what it takes to be a firefighter. A participant remembers the scene of a traffic accident: "My crew commander said: 'just wait in the vehicle, I'll be right with you'. Once I was able to leave the vehicle I was allowed to take a look. I saw some things that made quite an impression on me. It's something you have to experience. I now think that it was the ultimate test. But at that time I thought, "I'm done with the fire service" [R.63].

Experience

More experienced participants are better equipped to put things into perspective and less likely they will be to perceive an incident as critical. "Because you've been through a lot, your professional mindset has changed, calming you down. I have noticed that I'm more relaxed about things and find it easier to put things into perspective" [R.68]. On the other hand, participants also reported that incidents get to them more quickly the older they get. They experience more emotions because of the experience they have gained through their work and life. "As the years go by, more and more things get to me. Now you think about it more from an emotional perspective. When you're young, it's all about having fun. But you're being moulded without noticing" [R.67].

Not everyone thinks that having more experience is always positive. And that's not so much because they become more emotional, but actually because their emotions become blunted.

Frequency and period of time (cumulative effect)

Several incidents within a certain period are usually perceived as critical, because of the 'cumulative effect'. Incidents are stored away in one's memory – not only consciously but also subconsciously. "You commit them to memory. We forget a lot, but we do store it away, and there comes a time when you've memorised so much that it becomes very difficult to get things off your mind" [R.57]. It isn't always obvious that memories of incidents are piling up and that there will be a time when things become too much. In connection with this, participants not only referred to the cumulative effect, but also to the 'last straw'. "There's this film of intense things you've experienced playing in your head. It's not that you dwell on it, but the film suddenly starts playing again when you talk about it. It's imprinted on your memory. Everything can be going perfectly, until you get to that one incident: click, over and out. And suddenly it's all too much" [R.62].

Impact of critical incidents on personal lives

Critical incidents also impact on first responders' personal lives and development, especially if they joined the fire service at a young age. "It's given me a completely different outlook on life than other people my age. They went out boozing and clubbing and I was on duty. It shaped me" [R.20]. Some participants indicated that the firefighting profession shaped

them as individuals, especially when it comes to putting things into perspective, the way they experience emotions and safety and how they perceive the fragility of life. "You recognise or become familiar with intense situations and that might be one of the reasons why I don't let things get to me too much in my private life. I display fewer emotions, experience fewer peaks and lows" [R.26].

The opposite was also mentioned: being a firefighter made a person more emotional: "You appreciate life, since you see quite a few young people die in accidents. I'm sometimes a little more emotional. I think that the things you experience shape you" [R.48]. Experiencing incidents has made participants aware of how fragile life is. "Things could have gone very wrong. One little thing and I wouldn't be here to tell the story. There's a point when you think, what's life truly about? You change. It comes closer" [R.43]. The fragility of life is also experienced as something positive: "I for one started enjoying things more, because I also know how easily things can go wrong" [R.57]. Another effect on private life that was frequently mentioned is observing all kinds of safety measures, because participants are more aware of the dangers and the consequences in daily life: "When accidents have happened you think 'so that's a place to watch out on this road' or 'so this could also happen to me'. If would be very strange if it didn't have any effect on you" [R.40].

Impact of critical incidents on the collective

Participants reported that critical incidents not only impacted on themselves, as firefighter and as private person, but also on the crew.

Positive impact

Critical incidents strengthen the bond with the crew and enable firefighters to get to know each other better. These incidents enhance the sense of belonging to a group because assistance is being provided jointly as a crew. "It definitely brings the members of the crew closer together. You sometimes go through very intense events where you trust each other implicitly" [R.26]. Frequently mentioned effects are camaraderie: "I think camaraderie is the key word. Sharing something together. It creates a bond and you can talk about it. That's a great feeling" [R.67] and togetherness: "If you've had a fire and everybody has been able to do their thing and then you drive back feeling good, talking, joking if something strange happened. Chatting to unwind and then you see the sense of togetherness becoming even stronger; the bond gets stronger" [R.58]. The composition of the crew does not matter when it comes to developing a bond after having experienced a critical incident together. "The more shocking the incident, the more you will bond with colleagues you didn't know before. It can be quite special" [R.40].

Going through a critical incident together may strengthen the bond with a specific colleague, or with the entire crew. That effect can last for years. However a 'peak' was also mentioned immediately after experiencing an incident, which gradually normalises again: "The bond can become closer, more intense, but they are peaks. We're very close for a while and talk about it quite a lot, but gradually it lessens until things return to normal again" [R.48].

Negative impact

Occasionally critical incidents worsen bonds between firefighters, particularly if mistakes were made while responding to the incident. "If things got fucked up, you have a problem, there'll be trouble. Especially if someone else made a stupid mistake that caused things to go wrong. Then you've got some explaining to do to your crew mates. And that's part of the job too" [R.57]. In addition, several participants described how a lack of incidents actually caused unrest and irritation among crew members.

Not having been there but still feeling the impact

Incidents can also have an impact on participants who weren't actually there, and, incidents experienced by one crew can also have an impact on other crews. "I wasn't at the scene myself then, but I notice the impact on the station. CPR, for example, has a highly emotional impact on the station. This is shared across the crews" [R.20]. Sometimes, critical incidents have an impact on surrounding stations or even nationwide. One of the reasons for this is that people know the firefighters involved (e.g., they took the firefighter training course together, met each other on exercises or training courses, personal circumstances), and/or the incident took place in the local area. "I remember certain incidents where I wasn't present, but I know what it's like to go through them. I sympathise with the people in the other station. In my heart I know what it's like, I know the people" [R.21]. This is also relevant if any firefighters get injured during a deployment. They get support from fire service peers elsewhere in the country, in the form of get well cards and messages.

Discussion

This study aimed to provide a more in-depth understanding of why firefighters perceive certain incidents as critical and of the impact of such incidents on individuals and the collective. Consistent with previous studies (Monnier et al., 2002; Beaton et al., 1999; Van der Velden et al., 2006; Jacobsson et al., 2015), firefighters describe as critical severe traffic incidents, drownings, CPR, suicides and fire scenarios that are uncommon for firefighters. The results also confirm that firefighters perceive incidents as critical if they are confronted with injury or death; know the victim personally; consider the first response to have failed; experience life-threatening situations; have to lend assistance to children (Beaton & Murphy, 1993; Green, 1985; McCammon, 1996; Ørner, 1995), and if colleagues are threatened or die (Beaton et al., 1999). The majority of these incidents are also described as critical by other first responders such as police officers and ambulance workers (e.g., Donnelly & Bennett, 2014; Weiss et al., 2010). Working under unfavourable conditions, dealing with a lot of media attention (Beaton & Murphy, 1993), lack of medical training and chemical hazards (Beaton et al., 1999) were not mentioned as examples of critical incidents in this study.

Why and when firefighters experience incidents as critical depends on the individual, their personal circumstances both at work and at home, and the specifics of the incident. In addition to the findings from previous studies, firefighters in this study mentioned several

factors and circumstances that determine whether an incident is perceived as critical and has an impact during and after the incident. These factors and circumstances are not exclusively related to the working context of the fire service, but are probably recognisable for other first responders such as police officers and ambulance workers. The first three are in the work field, the last three in the private sphere.

(1) Death of a casualty during the first response is generally perceived as a more critical incident than death of a casualty before the firefighters arrive at the scene or after the first response.
(2) Looking at casualties while the firefighter has no role to play in the first response. Exposure to severe physical injury or a dead casualty and being unable to get rid of that image in one's mind.
(3) The presence of bystanders and specifically next of kin, can distract firefighters, obstruct their duties, and/or make them feel threatened during the response effort.
(4) Any first time is always critical, especially the first casualty who dies, but the first turnout for a certain type of incident and/or the first time in a new job can also be impactful.
(5) The degree of seriousness, the frequency and period in which the same or different types of incidents take place determine whether an incident is experienced as critical. Firefighters' vulnerability may increase because of the cumulative effects of traumatic experiences (Bryant & Harvey, 1996). Little is known about the possible consequences of repeated exposure to traumatic incidents (Levy-Gigi et al., 2015), for which additional research is needed (Jahnke et al., 2016).
(6) Firefighters' personal circumstances, which make them feel consciously or subconsciously more vulnerable, and/or private association during incidents cause incidents to be experienced as critical sooner. Regehr et al. (2000) posit that individual differences in resilience and vulnerability affect the intensity and duration of trauma-related symptoms.

To expand on existing literature, CPR deserves special attention because it can be perceived as critical due to an accumulation of circumstances. An initial aspect is that the casualty is thought to have died and their body needs to be touched in order to provide assistance. Furthermore, CPR often takes place in the casualty's home environment and, compared to other first response tasks, there is a greater probability of bystanders and/or next of kin adversely influencing the first response effort because of threats and/or emotions. And finally, the frequency of CPR interventions experienced by firefighters can play a role.

This study likewise shows that an impact is also experienced when firefighters believe that they might know the casualty, even if it becomes clear at the scene of the incident that this assumption is false. Consistent with previous studies (Murphy et al., 2004), firefighters indicated feeling immediately overwhelmed by a critical incident at the scene of the incident, to such a degree that they cannot always fulfil their role as first responders.

Previous studies (Kehl et al., 2014; Armstrong et al., 2016) have shown that experiencing a critical incident can also have a positive impact, such as post-traumatic growth. The participants did not identify this growth as a direct, one-to-one consequence of a critical incident. However, they did indicate that the fire service profession in general had led to personal growth, the ability to put things into perspective, the perception of safety and an appreciation of the fragility of life. A positive effect described on the collective level is that bonds are strengthened.

This study has shown that critical incidents in particular, or their absence, influence the dynamics within a crew. The impact on the collective is described as a strengthened group feeling, camaraderie and togetherness and can be of both a long-term and a short-term nature. A negative impact is experienced if mistakes were made during the incident. Because of the collective nature and significance of some incidents, firefighters can also be exposed to a critical incident afterwards, when sharing their traumatic experiences with peers who weren't at the incident scene. Firefighters do not have to be present at the scene to experience distress (Murphy et al., 2004).

Firefighters may benefit from mental health counsellors having a better understanding of their unique work culture and the complexity of the firefighting profession (see also Johnson et al., 2020). More knowledge about the impact of critical incidents is necessary to tailor help and aftercare more effectively to their needs. When developing interventions, the focus needs to be on specific stressors for firefighters as described in this study, rather than universal stress reduction interventions and comprehensive measures.

Limitations and future research

Only Dutch participants were involved in this study, however, there is no reason to believe that this culture differs substantial with firefighters from other Western countries. The extent to which the participants developed serious mental health problems due to a critical incident and sought professional help in that respect, has not been investigated.

Scholarly studies do not always distinguish clearly between the terms critical incident and traumatic incident, as the mental consequences are comparable (Huddleston et al., 2006; Brazil, 2017; Fraess-Phillips et al., 2017; Lewis, 2003). However, according to Halpern et al. (2009) there is an essential difference between critical incidents and traumatising incidents that may be relevant to the aftercare or the interventions that are used. It is therefore important to further investigate the distinction between the two phenomena and to sharpen the definitions (Lewis, 2003; Halpern et al., 2009).

The association between critical incidents and moral injury also deserves further investigation, and future research into moral injury should involve emergency services such as the fire service. For example, what experiences do firefighters have with incidents where their own moral boundaries are transgressed? And to what extent are morally injurious experiences and moral injury comparable with critical incidents and critical incident stress?

First responders may avail themselves of both informal and formal peer support to deal with critical incidents. Firefighters often prefer informal peer support to help them cope with critical incidents (see e.g., Jeannette and Scoboria, 2008). However, it is not sufficiently clear how this support is given and experienced and whether there are differences between career and noncareer firefighters. Follow-up studies should focus on

(1) the role of informal peer support in the fire service after experiencing a critical incident
(2) possible differences between career and noncareer firefighters in experiencing critical incidents and opportunities for coping with these incidents.

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Chapter 3

"The problem hasn't changed, but you're no longer left to deal with it on your own"

The role of informal peer support in helping firefighters cope with critical incidents

Dangermond, K., Weewer, R., Duyndam, J. & Machielse, A. (2022). "The problem hasn't changed, but you're no longer left to deal with it on your own." The role of informal peer support in helping firefighters cope with critical incidents. *International Journal of Emergency Services, 11*(2),300-311. https://doi.org/10.1108/IJES-02-2021-0007

Abstract

How firefighters cope with critical incidents is partly influenced by the culture of the fire station. Most studies confirm the importance of informal peer support when coping with critical incidents. This study provides initial, in-depth evidence of the role of informal peer support in helping firefighters cope with critical incidents.

An ethnographic field study of explorative nature was conducted. Data were collected by means of 20 participating observations and 72 interviews with Dutch firefighters from 37 different fire stations. The analysis was an iterative process alternating data collection, analysis and theory formation processes.

Firefighters will turn to informal peer support to cope with critical incidents provided that facilitating circumstances are present and there is adherence to certain implicit rules. The collective sharing of memories, whether immediately post-incident or after the passage of time, helps firefighters process critical incidents and serves to promote unit cohesion. Most firefighters reported these informal debriefings to be preferable to the formal sessions. By comparison, a minority of firefighters reported that they did not benefit at all from the informal interactions.

This study only focused on the informal peer support given by colleagues. Future research should focus on: (1) The possible differences between men and women as to what extent informal peer support is experienced after critical incidents, (2) Crew commanders: how do they, given their hierarchical position, experience coming to terms with critical incidents, (3) Premeditated critical incidents and the role of informal peer support, (4) Similarities and differences between career and noncareer firefighters in experiencing and coping critical incidents.

Firefighters are an under-researched group in academic literature, that would benefit from mental health counsellors having a better understanding of their unique work culture and the complexity of the firefighting profession. More knowledge about the role of informal peer support is necessary to tailor help and aftercare more effectively to their needs.

Introduction

First responders constantly face the possibility of being confronted with critical incidents that relate to personal loss, threaten one's well-being, and are often life-threatening (Bacharach & Bamberger, 2007; Flannery, 1999; Harris et al., 2002; Fraess-Philips et al., 2017). Incidents are also perceived as critical if the first response failed or mistakes were made and if it involved children in pain or dying (Harris et al., 2002; Fraess-Philips et al., 2017; Monnier et al., 2002). Such incidents are challenging because of the intensity of the subject matter and their inherent unpredictability and may lead to critical or even post-traumatic stress (Bacharach & Bamberger, 2007; Lewis, 2003; Mitchell, 1983; Fraess-Philips et al., 2017).

One of the most effective ways to help people cope with high-stress situations is social support, given by a partner, relatives, friends and/or colleagues (Kim et al., 2008; Thoits, 1982). Social support reduces the negative psychological impact after experiencing a critical incident (Varvel et al., 2007), enable people to cope better with stress, reduces the number of negative reactions they experience, and stimulates their resilience (Bernabé & Botia, 2015). Another key factor is the availability and/or quality of critical incident stress debriefing. A common example of formal peer support is the method Critical Incident Stress Debriefing (CISD), where critical incidents and the stress reactions it produces are discussed collectively (Harris et al., 2002). CISD sessions are attended by the direct crew members and colleagues with specialist training in aftercare. This method considers any susceptibility to and involvement with the workplace culture, and the emphasis lies on peer processes (Adler et al., 2008). Critical incident stress debriefing can also be conducted more informally, by peers following a critical incident, involving the natural dialogue that emerges amongst those who were on scene and involves interaction in dyads or small groups (Jeannette & Scoboria, 2008). This organic banter – including, for example, dark humour (Dangermond et al., 2022a) – is a constant amongst those who face adversity and tragedy uniquely as part of their vocational mandate and is connected to the group cohesion they experience (Jeannette & Scoboria, 2008). Informal peer support should be distinguished from formal peer support, this distinction is based on the recognition by behavioural scientists of the often detrimental impact of traumatic stress and the potential to defuse these negative effects by early processing.

This article focuses on informal peer support by a particular group of first responders: firefighters. Firefighters aid in all kinds of incidents, such as fighting fires and assisting to people and animals. Specific incidents are experienced as critical, such as serious traffic incidents, drownings, resuscitations, suicides, and incidents where firefighters know the casualty personally, where they perceive their response effort as having failed, or where the casualty dies during the first response effort (Van Der Velden et al., 2006; Jacobsson et al., 2015; Harris et al., 2002, Dangermond et al., 2022b). Firefighters experience almost all critical incidents as a collective because they usually work as a team and the team (crew) is part of a larger whole: the fire station. How firefighters process critical incidents is, to a certain extent, influenced by the fire service culture they experience (Haverkamp, 2005). This culture is distinctive (Johnson et al., 2020) and characterized by close cohesion (brotherhood) and mutual trust (Varvel et al., 2007). Firefighters have a joint mission and a shared history because of their communal experience; loyalty is expected to each other and to the group (Crosby, 2007). These strong intra-group bonds are central to the functioning of firefighters (Johnson et al., 2020). They may influence the impact of critical incidents, for example because of group expectations and standards applying to critical incidents (Jeannette & Scoboria, 2008).

Research into help-seeking behaviour and preferences among firefighters indicates that help-seeking patterns vary, depending on years of service and stigma-related barriers (Gulliveret al., 2019; Tamrakaret al., 2020). Studies on the formal method CISD have revealed contradictory findings on the effectiveness (Devilly et al., 2006; Johnson et al., 2020; Varvel et al., 2007). In practice, many firefighters prefer informal peer support to help them cope with critical incidents (see, e.g., Jeannette & Scoboria, 2008), but it is not clear how such support is given. This study aims to understand the role that informal peer support played for firefighters, after they experienced a critical incident. Firefighters are an under-researched group in academic literature (Fraess-Philips et al., 2017), a group that would benefit from mental health counsellors having a better understanding of their unique work culture and the complexity of the firefighting profession (Johnson et al., 2020; Gulliver et al., 2019). More knowledge about the role of informal peer support is necessary to tailor help and aftercare more effectively to their needs. Therefore, the key focus of this article is the research question: *What role does informal peer support play in helping firefighters cope with critical incidents?*

Research design

The study reported here was part of a research project in the Netherlands into the role of fire service culture in coping with critical incidents. An ethnographic field study of a highly explorative nature was conducted to answer the research question. The basic principle underlying ethnographic research is that groups of people who live together for a certain period develop their own cultures (Patton, 2015). Firefighters and the fire station they belong to are an example of such a group.

Long-term participation in the firefighters' world by building trust and talking about their personal experiences and perceptions is conducive to understanding of how critical incidents are coped with and the interactions between firefighters and their group culture. Hence this study effectively expands on previous research that is generally of a quantitative nature (Bacharach & Bamberger, 2007; Oginska-Bulik, 2015; Regehr et al., 2003; Cowman et al., 2004; Varvel et al., 2007; Bernabé & Botia, 2015; Huynh et al., 2013). An ethnographic field study is also an appropriate design for the current study, as it focuses on a sensitive topic that may be considered taboo by those involved. Various studies have described how a cultural stigma impedes firefighters from discussing mental health issues (Henderson et al., 2016; Stanley et al., 2017; Kim et al., 2017; Gulliver et al., 2019; Tamrakar et al., 2020).

An ethnographic field study offers many opportunities to discuss matters in confidence. A noteworthy circumstance in this study is that the first author works as a researcher at the Dutch Fire Service Academy and belongs to a fire service family. She can therefore be seen as an insider researcher (Greene, 2014). This researcher is more likely to be accepted by the population being studied. In addition, an insider researcher has relevant prior knowledge at their disposal, which makes it easier to ask more in-depth questions (Kniffin et al., 2015). However, an insider researcher may encounter ethical and moral dilemmas (Floyd & Arthur,

2012) because of personal or professional relationships with participants (Perryman, 2011; Vass, 2017). In this study many participants indicated that they regarded the researcher as a member of the "family". Although the distinction is not always absolute between etic (outsiderness) and emic (insiderness) (Beals et al., 2020), this study is executed from an etic perspective.

Data collection

Data were collected through a three-phase process (see Table 3.1). The first phase consisted of open ended interviews with firefighters varying on basis of length of service, sex, cultural backgrounds and career (professional or wholetime) and noncareer (volunteer or retained) firefighters. These interviews were held to identify relevant themes for follow-up research from different perspectives. The second phase consisted of collecting information through participant observations. A total of 20 participant observations took place in six crews of career firefighters from six fire stations. Throughout several 24-hour shifts per crew, the researcher was present and participated in all activities (except providing aid during incidents). In addition, observations were made during evening trainings (noncareer firefighters). Observation reports were made both during and immediately after each participant observation. These reports contain descriptions of the atmosphere, (critical) incidents (if any), crew commanders' roles, group dynamics, and informal and formal support. The third phase consisted of 72 semi-structured in-depth interviews with individual firefighters. Participants in these interviews were selected utilizing findings from the open interviews and theoretical sampling (Patton, 2015), a targeted selection based on considerations from the literature. For example: firefighters with different years of service were selected because of the possible effect on the degree of exposure of critical incidents and of experiencing social support (Regehr et al., 2003; Sluiter & Frings-Dresen, 2007), and both men and women were selected because female firefighters describe critical incidents differently than their male colleagues (Jacobsson et al., 2015). The list of topics for the in-depth interviews was based on the results of the open interviews and the participant observations. The main themes were: the crew and their station, sense of community, the shift leader/crew commanders' roles, social support (multidimensional model of social support, Cutrona & Russell, 1990), and support from friends and family. Participant observations and semi-structured in-depth interviews were conducted in each crew of career firefighters selected. This enabled observation results to be compared with the semi-structured interviews (and vice versa) to supplement or correct them or add more in-depth details. The face-to-face in-depth interviews took place in fire stations, in public places or at participants' homes. The interviews took one-and-a-half to two hours. All interviews were taped on voice recorders and transcribed verbatim. All participants signed an informed consent statement in advance.

Table 3.1 Data collection and analysis

	Phase 1	Phase 2	Phase 3
Method	Open interviews	Participant observations	Semi-structured in-depth interviews
Participants	Firefighters with different years of service, career and noncareer firefighters, men and women, and people of various cultural backgrounds		
Main themes	Fire service culture, (impact of) incidents, informal and formal support	Atmosphere, incidents (if any), crew commanders' roles, group dynamics, and informal and formal support	The crew and their station, sense of community, crew commanders' roles, and social support
Analysis (thematic)	Open coding	Open coding Axial coding	Open coding Axial coding Selective coding

Sample

The Dutch fire service is made up of 23,570 firefighters (4,357 career firefighters and 19,646 noncareer firefighters) located at 969 fire stations (Netherlands Institute for Safety, 2020). The study sample comprised crew members, crew commanders and shift leaders: 40 career firefighters, 20 noncareer firefighters and 12 participants who were both career and noncareer firefighters were involved, of whom 5 women and 67 men, with an average age of 43 and an average length of service of 19 years. The participants represented 19 career and 18 noncareer fire stations.

Analysis

Thematic analysis – an approach for "systematically identifying, organizing, and offering insight into patterns of meaning (themes)" (Braun & Clarke, 2012, p. 57) – was used to analyse the data set and consisted of six phases, (1) Becoming familiar with the data, (2) Generating initial codes, (3) Searching for themes, (4) Reviewing themes, (5) Defining themes and (6) Finishing the report. The analysis was an iterative process alternating data collection, analysis and theory formation processes. Induction and deduction took place simultaneously. The Atlas.ti qualitative analysis program was used to thematic analyse the data using open, axially and selective coding (Patton, 2015). Open coding was applied mainly when analysing the open and semi-structured in-depth interviews and participant observations (for example the codes: "fire service culture", "group dynamic", "formal/ informal processing") (phase 1, 2). The data was axially coded in the next step. As part of this step, codes were validated by splitting, merging and comparing codes, and by identifying new codes (for example splitting the code "fire service culture" into the subcodes fire service culture "unwritten rules" and "traditions"). In addition, several codes were clustered into one or more group codes, based on detailed considerations (for example "stimulating

factors" and "barriers" of the fire service culture in processing critical incidents). Lastly, individual and group codes were compared in order to analyse their relation (phase 3, 4, 5). After each coding step, the preliminary results were tested during observations and interviews, until the first signs of saturation appeared and the report could be completed (phase 6).

Triangulation of methods added depth to the study results. The different forms of data collection enabled us to study the participants from multiple perspectives. Observations were conducted to chart what could be observed externally, whereas the interviews gathered more in-depth knowledge. The combination of the prolonged participant observations, the many semi-structured in-depth interviews and the detailed, structured methods used to collect and analyse data enhanced the validity and reliability of the research. In all steps, the first author worked closely with an expert on the subject (2nd author) and two academic non-insiders (3rd and 4th authors) (researchers' triangulation).

Results

Participants prefer informal above formal peer support (e.g., CISD) to help them cope with critical incidents. Informal peer support from their crew members (without outsiders) at a moment when they feel the need (immediately after the incident or longer afterwards) is sufficiently effective: "We can solve most incidents internally, with each other" [R.98]. CISD sessions are regularly described as cumbersome because these sessions are not the first or the only moment to collectively process an incident. "In the fire appliance, in the shower, while drinking coffee and waiting for the crew to be complete. Then you have it all. And then you have to do it again" [R.49]. Some participants reported that negative experiences with CISD from the past are etched in their memories or the collective memory of the crew and therefore make them reluctant to attend these sessions. To understand how and why (not) informal peer support helps firefighters cope with critical incidents, the findings are clustered in three themes: (1) The conditions under which informal peer support takes place, (2) Joint coping, the added value of informal peer support, and (3) Inhibiting factors for informal peer support. Quotes from the interviews support the findings.

Conditions of informal peer support (where and when)

Participants indicate that coping with the incident normally starts as soon as the crew is in the fire appliance, on their way back from the incident to the fire station. "You feel it. You talk about it. It starts immediately when you're back in the appliance. Everybody wants to tell their story" [R.68]. The type of incident, how the first response unfolded, and whether the incident is experienced as having been a critical one, determine the atmosphere in the fire appliance. Diverging needs as regards coping with the incident have already become clear. A first attempt at getting a "complete picture" of the incident is made, this is considered to be an important part of the coping process: "At first, you're full of adrenaline, still trying to grasp what has happened and how did we do. And then comes the realization, what have we done? What are the points where things could have gone wrong? I do not

think people say this, but we can see it in one another" [R.71]. Participants observe the dynamics in vehicle's back to determine whether people need to come to terms with what they have experienced. An important condition during this initial stage of coping is that nobody can hear the crew talking because of the use of black humour: "When the picture's complete, the jokes start. This allows you to deal with it in a certain way, because then you know exactly what happened" [R.62]. Participants tell that although this type of humour is an essential aspect of coping with critical incidents, it can come across as inappropriate to people outside the fire crew.

There is no standard routine for what participants do upon their return to the fire station after a critical incident. Many participants reported that the coping process continues in the showers. "Myself and many others think that's important, to keep an eye on each other in the showers. Just to see how others are doing" [R.6]. Several female participants mentioned that they missed being part of such conversations. Since they have their separate shower facilities, they miss out on parts of the conversation and are excluded from the collective coping process for a while. After having showered, noncareer firefighters return to their jobs or homes and career firefighters continue their shifts, unless the incident is considered so critical and distressing that they feel the need to continue talking about it. Participants described this as "the coffee moment". Again, there is no specific routine. Usually, the crew review how the incident went and who did what for which reason. "Just some chit-chat going back and forth" [R.52].

Firefighters discuss critical incidents from the immediate or distant past during collective moments at the fire station. Furthermore, many participants have one or a few colleagues in the collective that they get along with, who are their "buddies". People confide – or do not – in specific colleagues, depending on the subject, the need, the moment, even their own personality. "I do not tell just anyone what's on my mind, but there are certain people I can and will express my feelings to" [R.96]. There are moments when the entire crew is not present, only a few members are, for example when sharing a dormitory, at the bar after an evening training, if some crew members are doing the shopping, while cooking, or on a specialist vehicle. Such moments are used for more individual talks.

Critical incidents are shared as professional knowledge, but also to preserve a fire station's collective memory. The stories that are shared influence the social relations among the crew or station. "Put five firefighters in a room and they'll start telling stories that will become taller and taller. Probably half of these stories never happened or are exaggerated. The later it gets, the taller the stories. It has to do with prestige. The tougher your stories, the higher you think you'll rise in your colleagues' esteem" [R.94]. Besides collectively coping with incidents at the fire station, the scene of an incident can bring back memories and impact the joint coping process. "Sometimes you're driving through the town and all these things pop up again. And there are some things you will never forget. You drive past and it all comes back when you talk about it" [R.21].

Joint coping – the added value of informal peer support

Teamwork is inherent to firefighting, critical incidents strengthen the mutual bond: "misery connects people together" [R.59]. Participants value personal attention for the well-being of fellow crew members after such incidents. "They're all there for you. They text, call, want to come over. Basically everybody's there for each other. Some more than others, but that's fine" [R.84]. A change in someone's behaviour – immediately or afterwards – is often reason to talk to each other. "You know each other quite well. If there is someone who is always on duty and I do not see them all day long, I'll go to them and ask 'hey, what's up?'" [R.79]. Especially aspiring firefighters, colleagues who have experienced a particular type of incident for the first time, and/or colleagues who have experienced a series of several critical incidents are monitored. Participants are alert to a possible cumulative effect – several serious incidents taking place within a certain period is usually experienced as being critical. An important reason participants use their crew for informal support is that they do not have to explain anything to their crew members; they understand each other better than "outsiders".

Participants emphasized that, as a result of joint coping, immediate colleagues know what happened during the incident and its impact on their peers involved. "The problem hasn't changed, but you are no longer left to deal with it on your own" [R.73]. That is why participants (crew commanders) opt to involve the entire crew in the coping process; they indicate this is typical of the fire service: "There are six of us in the appliance, which is different from the police and ambulances, they rotate too. If something happens to them, they haven't got a buddy to whom they can say 'you'll never guess what happened in my previous shift'" [R.50].

Although it is common practice for the entire crew to feel responsible for the well-being of individual crew members, it is formally the crew commander's responsibility. According to participants, the crew commander has a leading role in coping with critical incidents, and should ensure a safe and open culture in which colleagues are not afraid to show their vulnerability. The crew commander lends a listening ear and offers support when informing the rest of the crew. "It depends on the impact: does it only concern that person and me, or does it also concern the rest of the crew? I'll then say that it would be convenient if the rest knew as well, because they can support you and they will know why you react the way you do" [R.96]. Most crew commanders have seen quite a few years of service. Their work experience helps them identify potential problems. To assess whether coping support is going to be needed immediately after an incident and, if so, in what way, it is important for crew commanders to be aware of the impact of the incident on their colleagues and of any possible personal circumstances. Several crew commanders indicated that when in doubt they address their colleague individually: "I will not probe when all the others are around, because that would be putting him in a difficult position. I would wait for a more convenient moment to talk to that person alone" [R.2]. Sometimes the crew commander is alerted to someone's behaviour by another colleague quite some time after the critical incident: "It is fairly common for people to come to me. The person in question doesn't immediately see any problem, 'no, nothing's wrong, everything will be fine', but others tip me off" [R.98].

Inhibiting factors for informal peer support

Not everyone looks for and/or receives informal peer support: because the person in question is not open to it and/or because that support is not given or not experienced as such. Participants state several reasons for this:

(1) Substitutes as inhibiting factor
Substitutes (replacement colleagues) from outside one's own crew are considered to be an inhibiting factor for the coping process. The substitute is not present at the next shift, which impedes sharing experiences with the colleagues directly involved. Furthermore, it is difficult for the crew commander to assess the impact of an incident on the substitute, as the substitute may be an unknown. Depending on the substitute, not everyone feels comfortable opening up fully to their own crew: "You don't discuss anything that you'd prefer to keep within your own crew" [R.56].

(2) Stigma or taboo of showing one's vulnerability
Most participants do not experience any taboos when it comes to sharing experiences and emotions. However, several did wonder whether the colleague in question is actually suited for the firefighting profession, which takes a continuous toll on a person: "You know it can happen. I think that if you just talk about it afterwards, that should be enough to put it to rest, and if not, you're not cut out for the job" [R.56]. The type of incident and personal circumstances determine whether or not emotions are accepted. Some participants reported that they do not always show their vulnerability as individuals in the collective, because of the group dynamics. This is particularly true if someone is, or has the feeling of being, the only person who feels emotional after an incident: "I'm the softie of the crew then, because I was the only one who was scared at some point" [R.77]. The participants state that the fire service has made big strides in recent years when it comes to being open and showing one's vulnerability: "It does not come naturally yet, but I do believe that people have gradually started feeling free about discussing things together in the group" [R.19].

(3) Being open – or not – to support from colleagues
Some participants described themselves as being someone who does not look for informal support from colleagues – or at least not easily – and see themselves as a passive sharer – "It isn't so much that I'm ashamed, I don't really feel the need to share it with them [colleagues, ed.]"[R.58]. It may also be difficult to look for support privately. Some reported that, although colleagues should keep a lookout for symptoms, the colleague has a responsibility. "You can experience some intense stuff together. If you want to talk about it, you will have to reveal more of yourself" [R.78].

Discussion

This study provides initial evidence of the role of informal peer support in how firefighters cope with critical incidents. Insight is given in why informal peer support is experienced as a supplement to or replacement of a CISD session, how informal peer support is perceived at different times and differs per person and crew, that support is received from the collective,

an individual colleague (including the crew commander) or a combination of the two, and the different reasons why firefighters do not experience informal support at all.

In line with previous studies, our results clarify that informal peer support reduces the impact of a critical incident (Varvel et al., 2007). The results also confirm that firefighters, while coping with an incident, prefer informal over formal peer support such as CISD (Jeannette & Scoboria, 2008). Informal peer support is sufficiently effective and offers three benefits. First, crew members had the same and/or similar experiences and knew each other personally. Experiences and emotions are shared without any further explanation being required. Second, informal peer support is better at meeting personal needs than the one-size-fits-all CISD method (Varvel et al., 2007). An incident can be interpreted in different ways, depending on the significance a person attributes to it (De Soir, 2012; Dangermond et al., 2022b). Different interpretations in a fire service crew are associated with varying coping needs. Depending on the incident and their personal circumstances, firefighters look for informal peer support from the collective (the entire crew) and/or from individuals. This takes place when firefighters feel the need. Given these different interpretations and preferences, it is important that both formal and informal support is available. Third, firefighters experience the added value of support from their crew commander. This is in line with previous studies (Bernabé & Botia, 2015; Varvel et al., 2007; Birkeland et al., 2017). Nevertheless, some firefighters in this study indicated that they also valued the individual and/or collective support from their other colleagues just as highly or even more. The fact that firefighters are satisfied with the support they get from their colleagues is an important finding. Previous studies show that firefighters who are satisfied with the informal peer support they receive, experience less stress than those who aren't satisfied with it (Cowman et al., 2004).

Firefighters who have individually or collectively experienced an incident as critical can be reluctant to look for informal peer support because of the group culture. Similarly to what was found in an earlier study (Wilmoth, 2014), some firefighters indicated that they weren't keen on discussing their vulnerability because they feared it would make them come across as weak. Firefighters are socially trained and feel the need to control their emotions during first-response actions, so that they will be able to provide adequate assistance (Scott & Myers, 2005; O'Neill & Rothbard, 2017). Therefore, the processing starts as soon as the crew is in the fire appliance, with the doors closed. This is in line with a previous study into emotion suppression (O'Neill & Rothbard, 2017), which showed that firefighters do not find it appropriate to display emotions at the scene of an incident. Our study reveals that, besides individual interpretations, the impact of an incident on the individual is connected to group expectations, standards and culture relating to the critical incident. This is also in line with previous studies (Jeannette & Scoboria, 2008; Haverkamp, 2005).

The combination of working in what are usually fixed crews, the collectiveness of firefighters' work and the associated fire service culture are concepts that do not exist or are less prevalent among other first responders such as police or ambulance personnel. Because

of the differences in requirements and tasks, first responders experience a different range of critical incidents. A proper evaluation of critical incidents and how people cope with them would require studies on the individual professional groups (Halpern et al., 2009; De Soir, 2012). An understanding of the interaction between firefighters and their social work environment (the fire service culture) shows that resilience is influenced by both the person (firefighter) and the social cohesion within the crew or station. Given the importance of informal peer support in coping with critical incidents, strengthening internal cohesion and support among fire service crews should be promoted, as advocated previously by Sattler et al. (2014). Firefighters' good mental health not only serves their interests, but organizational and social interests as well.

Limitations and future research

Only Dutch firefighters were involved in this study. However, there is no reason to believe that the culture of Dutch firefighters is unique and differs on the dimensions investigated in this study with firefighters from other Western countries. A limitation is that this study only focused on the informal peer support given by colleagues, while other studies show that spouses also play an important role (Gulliver et al., 2019; Tamrakar et al., 2020). Furthermore, there are several suggestions for further research. First, given the small number of female firefighters in this study it was not possible to give a detailed description of the possible differences between men and women as to whether or not, and to what extent, informal peer support is experienced after critical incidents. Further studies should pay more detailed attention to gender. Second, future studies should also focus on crew commanders: how do they, given their hierarchical position and responsibility, experience coming to terms with critical incidents using formal or informal peer support? Third, informal peer support may be significant in the event of premeditated critical incidents, like terrorist attacks. In such situations, informal peer support should have the particular function of restoring feelings of trust and safety (Birkeland et al., 2017). It would be interesting to explore this further in follow-up research. Fourth, this study involved both career firefighters and noncareer firefighters. Besides similarities, there may also be differences between career firefighters and noncareer firefighters in experiencing critical incidents and opportunities for coping with these incidents. This topic will be examined in more detail in a follow-up study.

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Chapter 4

"If it stops, then I'll start worrying"

Humour as part of the fire service culture, specifically as part of coping with critical incidents.

Dangermond, K., Weewer, R., Duyndam, J. & Machielse, A. (2022). "If it stops, then I'll start worrying." Humour as part of the fire service culture, specifically as part of coping with critical incidents. *Humor: International Journal of Humor Research, 35*(1), 31-50. https://doi.org/10.1515/humor-2021-0106

Abstract

Firefighters are reluctant to talk about firefighters' humour with outsiders. This closed attitude has led to a lack of understanding of this important coping strategy in the outside world. It is not clear how firefighters experience humour and its role as part of the fire service culture and why they consider humour to be important when coping with critical incidents. Data has been collected by means of 20 participant observations and 72 interviews with Dutch firefighters from 37 different fire stations. Joking culture and joviality are important elements of the Dutch fire service culture. Firefighter humour usually creates unity, but can also lead to exclusion. Whether a joke is perceived as funny depends on who makes the joke, the moment, the content, and the frequency of the joke. Black humour is used as a means to start a conversation and, indirectly, to make it possible to discuss emotions and it tends to positively influence group dynamics. However, black humour is absent in the case of certain critical incidents because of personal boundaries and unwritten rules. The absence of humour is a sign for the crew commander to pay extra attention to coping.

Introduction

Humour is an important part of the culture of first responders (Charman, 2013). It plays a role in building group cohesion (Greatbatch & Clark, 2003) as well as defining group boundaries (Kuipers, 2009): only group members have the proper information (prior knowledge) to understand implicit references. Humour is likewise a coping strategy for first responders (Gross, 2009), especially when confronted during their work with incidents that relate to personal loss and a threat to their well-being. These incidents, also known as critical incidents, often lead to critical incident stress (Fraess-Philips et al., 2017). Not all types of humour are equally effective in processing critical incidents though (Strick, 2021). When coping with critical incidents, humour is described as black humour, also referred to as dark, gallows or cynical humour (Rowe & Regehr, 2010). Black humour concerns sinister topics such as death, disease, injury, and disfigurement which are discussed humorously with the aim of expressing the absurdity, callousness, and cruelty of the world (Willinger et al., 2017).

Because of variations in requirements and tasks, first responders experience a different range of critical incidents under different circumstances – such as working conditions (e.g., length of shifts), the frequency with which they are confronted with critical incidents, and collaboration with colleagues. A proper evaluation of critical incidents and how first responders cope with them therefore requires separate studies for different professional groups (Halpern et al., 2009). This article focuses on firefighters with an operational function in the fire service in the Netherlands; it discusses the role of humour as part of the Dutch firefighting culture in general, and specifically when dealing with critical incidents.

How firefighters cope with their emotions is, to a certain extent, influenced by the fire service culture they experience (Haverkamp, 2005). The culture present in the fire service organization affects firefighters' mental well-being and performance (Dangermond et al., 2022). Caused by its specific work that not only consists of fighting fires, but also rescuing people and animals, the fire service has a unique culture (Johnson et al., 2020) that is characterized by close cohesion and mutual trust (Varvel et al., 2007). Strong intra-group bonds are central to the functioning of firefighters (Johnson et al., 2020). A typical feature of the fire service culture is that it is an emotional culture, one in which the collective emotions of a group are key (O'Neill & Rothbard, 2017). As part of this emotional culture, joviality – "markedly good-humoured, especially as evidenced by jollity and conviviality" (O'Neill & Rothbard, 2017, p. 81) – plays an important role in the assumptions, values, norms, rituals, artefacts and practices of firefighters.

Humour is a significant part of the daily routines of the fire service culture (Thurnell-Read & Parker, 2008). This is also partly a joking culture: "a set of humorous references that are known to members of the group to which members can refer and that serve as the basis of further interaction" (Fine & De Soucey, 2005, p.1). Firefighters rely on each other in dangerous situations, which is why they test each other at the fire station. Through humour, their mental weaknesses, physical strength, and resilience are exposed and, especially for career firefighters, humour is used to prevent boredom during (quiet) 24-hour shifts (Ward & Winstanley, 2006).

The culture of firefighters may influence the impact of critical incidents, for example because of group expectations and standards applying to critical incidents (Jeannette & Scoboria, 2008). In stressful and often life-threatening situations, and when coping with these situations, firefighters use humour to express their feelings, to ensure social support by developing group cohesion, and to distance themselves from the situation to enable effective action (Rowe & Regehr, 2010). In brief, firefighters describe humour as an important coping strategy for dealing with stress and complex situations (Haslam & Mallon, 2003).

Although humour plays an essential role in how firefighters perform their work (Rowe & Regehr, 2010), it is not clear how they experience the role of humour as part of the fire service culture and why they consider it to be important or unimportant when coping with critical incidents. Firefighters' use of humour, specifically black humour, is not always understood or accepted by outsiders (Moran & Roth, 2013), and is considered "politically incorrect" and "unacceptable" (Goble, 2020, p.18). This has made firefighters reluctant when it comes to sharing information about the use of humour, which may be the reason why relatively few studies into this subject are available. Plus, firefighters are an under-researched group in academic literature anyway (Fraess-Philips et al., 2017).

More in-depth knowledge and a better understanding of the role and function of humour, including black humour, within the fire service is important in order to customize assistance and aftercare more accurately to the needs of firefighters. Hence, the question investigated in this article is: *What role does humour play as part of the fire service culture in general, and specifically when dealing with critical incidents?*

Research design

The study in this article is part of research in the Netherlands into the role of fire service culture in coping with critical incidents. An ethnographic field study of a highly exploratory nature was conducted in order to answer the main research question. The principle underlying ethnographic research is that groups of people, such as firefighters, live together for a certain period of time and develop their own cultures (Patton, 2015). Long-term participation in the world of firefighters – to build trust and to talk about their personal experiences and perceptions – is conducive to achieving a better understanding of the role of humour in coping with critical incidents and the interactions between firefighters and their group culture. This makes the present study a good complement to previous research into humour in fire service organizations (Fine & De Soucey, 2005; Moran & Roth, 2013; O'Neill & Rothbard, 2017; Rowe & Regehr, 2010; Sliter et al., 2013; Yoder & Aniakudo, 1996). An ethnographic field study is also the most appropriate design for the current study, as it focuses on a sensitive topic that may be considered taboo by those involved. Various studies have described how a cultural stigma hinder firefighters from discussing mental health issues (Gulliver et al., 2019; Henderson et al., 2016; Stanley et al., 2017; Tamrakar et al., 2020). Their use of firefighters' humour or black humour is not always understood or accepted by outsiders (Moran & Roth, 2013). Firefighters are reluctant and unable to provide information and engage in intensive interaction with researchers unless they trust the researcher.

An ethnographic field study offers more opportunities to discuss matters in confidence. An important fact in this study is that the first author works as a researcher at the Dutch Fire Service Academy, plus, belongs to a fire service family. She therefore can be seen as an insider researcher (Greene, 2014). Such researchers are more likely to be accepted by the population being studied and have relevant prior knowledge at their disposal, which makes it easier to ask more in-depth questions (Kniffin et al., 2015). However, insider researchers may encounter interviewer bias and ethical and moral dilemmas (Floyd & Arthur, 2012), for example because of personal or professional relationships with participants (Perryman, 2011; Vass, 2017). In this study, many participants indicated that they considered the researcher to be "part of the family."

Data collection

The visible part of the fire service culture, open behaviour, was described during participant observations. A total of 20 participant observations took place in six crews of career (professional or wholetime) firefighters from six fire stations. The researcher was present throughout several 24 h shifts per crew and participated in all activities (with the exception of providing aid during incidents). In addition, observations were made during evening trainings (with noncareer (volunteer or retained) firefighters). Observation reports were made during and immediately after each participant observation. In addition to listing some factual characteristics, these reports mainly contain descriptions of the atmosphere, the incidents (if any), special moments, crew commanders' roles, group dynamics, and informal aftercare. To deepen this descriptive behavioural level and to actually understand the culture, individuals' patterns of perceptions, thoughts, feelings, and experiences have also been studied by means of individual interviews (Schein, 1984). A total of 72 semi-structured in-depth interviews were held; participants were selected by means of theoretical sampling (Patton, 2015), a targeted selection based on considerations from the literature (e.g., firefighters with many or actually few years in the fire service, career and noncareer firefighters). The list of topics for the interviews was based on participant observations and relevant literature. The main themes in the list of topics are: a description of the fire station and the fire crew, sense of community, the crew commanders' roles, critical incidents, social support, and the role of humour. Participant observations as well as semi-structured in-depth interviews were conducted in each crew of career firefighters selected. This enabled observation results to be compared with the results from the semi-structured interviews (and vice versa), in order to supplement or correct them or add more in-depth details. The face-to-face in-depth interviews took place in fire stations, in public places, or at participants' homes. Each interview took one-and-a-half to 2 hour. All the interviews were taped on voice recorders and transcribed verbatim. All participants signed an informed consent statement in advance.

Sample

The Dutch fire service is made up of 23,570 firefighters (4,357 career firefighters and 19,646 noncareer firefighters) and 969 fire stations (Netherlands Institute for Safety, 2020). The study population comprised crew members, crew commanders and shift leaders: 40 career firefighters, 20 noncareer firefighters, and 12 participants who were both career and noncareer firefighters were involved – 5 women and 67 men, with an average age of 43 and an average length of service of 19 years. The participants represented 19 professional and 18 volunteer fire stations.

Analysis

The analysis was an iterative process alternating data collection, analysis, and theory formation processes. Induction and deduction took place simultaneously. The Atlas.ti qualitative analysis program was used to analyse the data. Three coding steps were applied: open, axial and selective coding (Patton, 2015). Open coding was mainly applied when analysing the interviews and participant observations (e.g., the codes: "fire service culture

humour," "group dynamic," and "formal/informal processing"). The data was axially coded in the next step. As part of this step, codes were validated by splitting, merging, and comparing codes, and identifying new codes (e.g., splitting the code "fire service culture humour" into the subcodes "humour-processing incidents," "humour-creating atmosphere" and "humour changed over time"). In addition, several codes were clustered into one or more group codes, based on detailed considerations (e.g., "stimulating" and "barriers" of humour in processing critical incidents). Lastly, individual and group codes were compared in order to analyse their correlation. Data was collected until the first signs of saturation appeared. The triangulation of methods added depth to the study results. The different forms of data collection enabled us to study the participants from different perspectives. Observations were conducted to chart what could be observed externally, interviews served to gather more in-depth knowledge. The combination of the prolonged participant observations, the many semi-structured in-depth interviews and the detailed, structured methods used to collect and analyse data enhanced the validity and reliability of the research and optimized the trustworthiness of the data. In all steps, the first author worked closely with an expert on the subject (second author) and two academic non-insiders (third and fourth authors) (researchers' triangulation) – from critically reading transcripts of the interviews to reviewing the codebook.

Results

The findings are clustered in themes and supported by quotes from the interviews. Quotes have been altered for editorial reasons and to safeguard the anonymity of participants.

Humour as part of the fire service culture

We first discuss how participants explain the role of humour as part of the fire service culture. The various types of humour and the times and occasions when humour is used were identified next. Lastly, we addressed humour that discriminates against certain people and excludes them.

The importance of humour as part of the fire service culture

Humour plays an important part in the fire service culture for several reasons. It is not only the joke itself that matters, but also the person who makes the joke (the joker), the person who is the subject of the joke and their reaction (the target), and the person(s) who are present during the joke (the audience).

Participants mentioned various reasons why they thought humour played an important role as part of the fire service culture and which functions humour serves. Firstly, humour produces a good atmosphere in the crew. A good balance and variation between serious firefighting and rescue activities on the one hand and light-hearted informal conversations on the other are valued. "Me saving someone doesn't concern me personally, it's my job. But the laughter here, that makes me feel happy" [R.57]. Secondly, it was indicated that, in the fire service, humour is seen as a means of communication. Jokes are used to indirectly

convey a message: "Often in the form of a joke, but always with a kernel of truth" [R.17]. Using humour in this way enables the informal hierarchy (positions) in a crew or station to be influenced. An example of this humour is jokes about mistakes people have made. "Like, 'hey, you couldn't do it, could you?' It is stated as a joke, but in this way the others will find out and you'll descend to a lower position in the pecking order. That's their intention" [R.9]. This may be due to conflict avoidance (because the paradigm states that conflicts do not belong in a well-functioning team), yet participants find it difficult to explain why they communicate their message in the form of a joke. "So that you won't have to comment on it directly. Ignorance as to how to communicate it differently I think, or maybe not wanting to start the conversation, being afraid of the other person's response. Maybe" [R.96]. Thirdly, humour is used in order to test each other: "Teasing each other in a fun way; it keeps us all alert, you get to know each other, it's about resilience and endurance. You know if you can rely on each other" [R.98]. Fourthly, humour relates to self-mockery: deliberately making jokes about oneself. For example, because someone doesn't want to be the target of someone else's joke, like this participant: "If I beat them to it, they'll be done. I make the joke myself, so that they can't do it anymore. They won't get the laughs because you were ahead of them" [R.21]. A lack of acceptance by the group also plays a role in self-mockery: "He's not accepted and he senses that too. He's always joking about it, so that others will not make those jokes" [R.96]. The fifth and final reason given is that black humour plays an important role in coping with critical incidents. This subject is further elaborated on in the next section.

Almost all participants have a colleague in their crew who takes the initiative to make jokes, "a first-class clown" [R.94]. An important condition for the acceptance of humour is that the joker is from one's own crew or station. It was often mentioned how jokers carefully considered who to tell the joke to and the possible reactions this might produce. "I pay attention to who's in the group. With some of them you factor in that what goes around comes around" [R.19]. And people in leadership positions are faced by a dilemma: should they joke, given their positions?

Almost all participants have been the target of a joke at one time or another. According to participants who feel that humour is an integral part of the fire service culture, it is an unwritten rule that colleagues are expected to be able to take a joke. Humour is often considered to be a selection criterion (test). "That's the culture in the fire service. Jokes will be made. Sometimes you're the laughingstock and the next time someone else is, and you just grin and bear it. Otherwise, I think you should go find another job" [R.61]. Participants indicated it is important that people handle this in a light-hearted way. A 'suitable' reaction is "to just go along with the joke" [R.51]. Someone who does not react appropriately will soon be the target again. "They do have a radar for that. If you don't handle jokes well, they're bound to make them" [R.23]. The importance of reciprocity was also mentioned several times in this context: "If I don't want to be the subject of a joke, I shouldn't make any myself. That's why I don't experience this as negative or annoying" [R.83]. There are extenuating circumstances that keep someone out of jokes way temporarily, especially if

they are having problems at home. “One member of our crew is going through a divorce. He’s really having a hard time, and has told the crew so. We keep it in mind. No bad jokes about this. Well, maybe a bit” [R.56]. Several participants said that being the target of a joke, if within proportions, was considered to be proof of being a fully-fledged member of the group. Never being the subject of a joke is actually perceived to be a problem. “Not having the mickey taken out of you is worse than if they’re taking the mickey out of you, because the mickey-taking actually means they have a certain bond with you” [R.94].

Humour in the fire service: differences and similarities

Participants indicated that the extent and type of humour differs per crew or per station: it depends on the group composition as crew members copy and influence each other’s behaviour. “We encourage each other. One person makes a comment, the next person will take it a step further and so on. Things can get pretty lively then” [R.9]. One moment this becomes visible is when people switch crews. The dynamics can also change when new colleagues, who people have been joking about, join the crew or the station, for instance, female colleagues or colleagues from other ethnic backgrounds. Participants also indicated that humour has a common denominator and is quite similar all over the country. As a participant from the Hague explained: “When I come to Amsterdam, I hear the same jokes within fifteen minutes. About the schedule, the B crew making jokes about the A crew, the C crew about the B crew. There is no way you can put an end to this. If it stops, then I’ll start worrying. It’s what we have in common. It’s a cultural thing” [R.2].

Humour during collective moments at the fire station or digitally

Humour occurs at or around the fire station during collective moments such as a 24-hour shift, an evening training, special occasions such as a colleague’s retirement or anniversary, and after a deployment (further elaborated in the next section). Many jokes that had been made following a preconceived plan were described during the individual interviews. The participatory observations made clear that also other, more subtle or more ad rem jokes are made as well, such as puns, one-liners and insider jokes.

Participants mentioned several moments when jokes were played on each other at the fire station. For example, during dinner: “Baking coffee filters into pancakes” [R.72]; while sleeping: “The bedrooms were one floor up, I was tired so I went upstairs. I opened my door and saw that my bed was gone. I found my motor bike in my room. So, I took for a spin, and drove it downstairs” [R.58]; during trainings: “Good fun, joking and goofing around a bit, and then it’s time for serious business” [R.43]; and on special occasions, such as celebrating an anniversary or when leaving the crew.

Jokes are also shared digitally, particularly via WhatsApp groups. In formal WhatsApp groups fire service related issues are discussed, but in the informal groups unofficial information is shared casually: “A lot of nonsense, jokes, pictures, video clips, sometimes quite obscene” [R.21].

Several participants had left the informal WhatsApp groups because they did not like the information that was being shared: "Some messages were quite filthy and that's not my cup of tea" [R.61]. Several participants indicated that humour had changed in recent years, specifically physical humour. Where, in the past, objects or inventory might be sacrificed for the sake of a joke, today that doesn't happen very often anymore. Participants attribute this to three reasons: 1. the arrival of mobile phones: "In the past there use to be a lot more making each other wet and throwing water, that's all become less, long live the mobile phone" [R.40]; 2. the fact that the old generation has left and a new generation has come in: "These traditions are gradually becoming less, people find it less important" [R.67]; and finally 3. because old, outdated fire stations are replaced by new fire stations and people are careful to keep them in mint condition: "I remember occasions when there was pudding all over the station walls, but this new station is difficult to clean" [R.71].

The downside of humour: exclusion and discrimination

Participants identified a negative side to humour. Some indicated that some jokes are perceived as hurtful. There are various reasons for this. Whether a joke is perceived as such depends on the actual moment, the content (especially if jokes are perceived as a mechanism for exclusion and discrimination), who makes the joke, and the frequency of the joke.

Not everyone in the crew or the station feels like humour at the same time, although there are certain expectations (unwritten rules) about how someone will react. "On the one hand it's all great fun and on the other hand it can be hard at times, if you're not in the mood" [R.50]. It was indicated that the dividing line between humour and being bullied can be very thin. "We can see something as humour, which is actually not that funny at all. And definitely not for the person whom it concerns. If they react in a way that the crew likes, it's still thought to be funny. And sometimes you decide not to show your true feelings, because things will even get worse then" [R.57]. Some participants mentioned examples of jokes that discriminated against them because they were 'different,' especially gays and lesbians, women and firefighters with an immigrant background. "I'm under a magnifying glass, women feel that problem as well. We have to do more to prove ourselves" [R.9]. One participant recounted that someone jokingly asked whether pink cakes should be ordered because the participant in question was gay. Other stations started calling his station the "gay station." "Those kinds of clichés. I think it's inherent in groups. Of course, they do it behind your back. It doesn't bother me personally, but in itself it is a problem, since it prevents other firefighters from being themselves" [R.19]. The use of clichés in the form of a joke was frequently mentioned, as was their trivialization. "Discrimination, but then in the form of a joke. It's less bad now. It used to be quite severe. The only thing you could do was grin and bear it. And then there's the denial. They don't see it, or they don't want to see it. But that's true for discrimination in general. I had to swallow a lot. And get angry. And wonder; don't they get it?" [R.9].

Most participants who experience discrimination in the form of jokes confront the joker(s) with their experience. However, it does make a difference here who the joker is, if it is someone from their own crew or someone outside the crew. "It depends on who's said it. You know each other, you sometimes joke and I know what I'm like and they know what I'm like. But it's something else if someone you don't know well makes such a joke. Who are you to judge me like that?" [R.58]. Some participants deliberately opt not to react, "I have become quite hardened over time and that's taught me that the wise thing to do is to keep my mouth shut" [R.55]. Confronting colleagues is not only the group's responsibility, it's also specifically the crew commanders' responsibility. To quote a crew commander: "Discrimination is a difficult issue. We've discussed it, everyone should feel at home. Joking is OK, but this shouldn't be the norm. It's still quite tricky. Some people get it; others say 'don't be a killjoy, it's just a joke'" [R.20].

And lastly, it was indicated that it's not only the content of a joke which can go too far, but also the frequency with which a joke is made, or both – a crew commander said: "I thought that conduct toward a certain colleague was improper. A certain kind of humour which I thought was going too far. The occasional joke is okay, but it has to stop at some point. The limit had been reached and I got them all together to discuss it" [R.12].

Black humour when coping with critical incidents

For most participants, humour plays an important part in coping with critical incidents. Participants refer to "black humour" in these cases, to distinguish it from the other (previously described) roles of humour. The section below explains what participants consider to be black humour and why they believe that this humour helps them to individually and collectively cope with critical incidents. The role that rituals play in here is presented next. The boundaries of black humour are subsequently discussed and it is explained why, according to firefighters, black humour is not intended for outsiders.

Examples of black humour

Some participants described humour when coping with critical incidents as "black humour, also sarcastic, gallows humour" [R.17]. Some jokes refer to the circumstances of an incident: "A resuscitation in a sushi restaurant, all you can eat. The gentleman didn't make it. On our way back one of our colleagues said: 'Well, that was all he could eat.' We couldn't stop laughing. It sure did take the tension away" [R.51]. Others mentioned black humour in connection with the specific physical situation of a casualty: "Someone had lost his foot in a serious accident. He was walking through a field. Then someone said 'well, he can always help the farmer plant potatoes, he'll be great at making the planting holes.' Rather black humour actually" [R.52].

Using and listening to black humour: the individual (joker) and the collective (audience)

Black humour is used in order to individually and collectively try to reduce the impact of a critical incident that has been experienced. Participants state that this type of humour is used as a means to start a conversation and to indirectly enable emotions to be discussed. Joking with other crew members while coping with such incidents generally has a positive influence on group dynamics. To them, additional information (for example "what happened, who did what and who didn't" [R.65]) is required after certain critical incidents before there is room for black humour as part of the coping process.

Almost all participants used black humour to cope with a critical incident; this type of humour is considered to be "crucial" [R.67] to the coping process. "Highly macabre jokes, that is how we cope" [R.2]. Joking usually starts immediately after an incident is over, upon leaving the scene of the incident: "to get rid of the tension, let off steam" [R.22], "to make things less intense, to put yourself in a rather more lighthearted mood" [R.67], "because it takes the edge off things a bit, it has a healing effect" [R.72], "it creates an opening for a discussion and everyone can share their thoughts" [R.50], "a sort of burden is lifted off you then, you shake it off and carry on" [R.62] and "it helps you put things in perspective, it becomes less heavy" [R.52]. Humour was often identified as an instrument to start a conversation: "humour is a good way to engage people. In a way, it lets others see that it's on your mind as well. It's an unintentional way of sharing that things gets to you as well" [R.3]. It breaks the silence, "altering people's mind set a bit" [R.26]. These quotes are examples of approach motives (goal-oriented behaviour). Examples of avoidance motives (constrained goal-oriented behaviour) are also mentioned, albeit to a lesser extent – for example: "humour distracts from what just happened" [R.65]. Humour can also be used because participants cannot or do not want to directly share their emotions after a critical incident, "If you add a humorous touch to it, you do manage to say things that could not to be discussed otherwise. You go through some very intense moments" [R.22]. Another reason is that colleagues do not always recognize and/or accept emotions. A joke can be a safe way to discuss an incident and its impact. "In our macho environment, you're not easily inclined to exclaim 'I find this scary or I don't like it.' People will then make fun of you. That's not what you want. So you make a joke or you change the subject to other incidents" [R.7].

Besides making jokes, listening to direct colleagues' jokes can also help when coping with an incident. It was indicated that the jokes that are shared among the crew tend to positively influence the group atmosphere. Humour creates unity among the crew, "It puts you back on the same wavelength. You can connect with each other again. We've been through something, it's open for discussion and we can laugh about it. That's what humour does, especially among the crew. It brings unity" [R.50]. This is also true if it has been a longer time since the incident, when sharing memories of past incidents with each other.

Rituals after a critical incident

Participants stated that they also used humour as a kind of ritual after a critical incident. This mainly concerned "first-time" incidents for colleagues, and the rituals very often involve or have some reference to food. For example, buying ice cream: "We had colleagues buy us a treat to commemorate their first fatality. Stop by at the ice cream shop, two scoops with whipped cream" [R.1]; or a bakery: "The first time is usually pastry. There's this one colleague who kept bringing cake every week. It was just a joke, but he thought we were serious" [R.51]. Jokes about dinner (such as spaghetti, steak tartare or spareribs), as a reference to the incident: "If you just had a casualty, there'll be spareribs for dinner. This is actually quite weird, but that's coping" [R.4].

The boundaries of black humour

Participants stated that with certain critical incidents no black humour comes into play, as people instinctively refrain from crossing certain boundaries. In such situations, humour is perceived as inappropriate. "It's always inappropriate, but that is really inappropriate. When it's painfully quiet in the back, you do have something to talk about afterwards" [R.72]. Participants found it hard to explain why they actually refrain from joking about certain critical incidents. "If you think about it, I wonder what's the reason? It must be a sort of unwritten rule. Or just a feeling that everyone shares" [R.84]. This holds specifically true for critical incidents involving children and young adults – it isn't only children who are victims, but their parents too. "This is so bad, you can't joke about it. The severity, the impact, not only for yourself but definitely also for the parents. You can imagine or sense what that must be like" [R.98]. And finally, the absence of humour has to do with the feeling of helplessness while rendering assistance. "Incidents can make you feel rather helpless. I haven't been able to do anything. None of us have been able to do anything, although we came here to rescue someone. You feel defeated then" [R.62].

A joke's timing plays a role in the context of coping. Although black humour often starts immediately after a critical incident, there are also critical incidents where no jokes are made until after the first debriefing or evaluation has taken place and it is clear how the emergency response devolved. "When all of you together fill in the picture, then the joking and goofing around starts, simply because it helps you cope" [R.62]. However, this timing is not the same for everyone. This is because black humour is not always helpful in coping with critical events at the same time for everyone on the crew. It depends on people's personal needs. Several participants (especially crew commanders) indicated that if colleagues do not laugh about the jokes, it is a sign for them that coping should be given some extra attention. "You can see it in their faces, if someone doesn't share in the laughter. It can be hard to identify this, because you want to cope with the incident in a light-hearted way as well. But you should realize that some people may handle it differently" [R.96].

Fire service humour and black humour are not intended for outsiders
Generally, participants find it hard to discuss the role of humour as part of the fire service culture and as part of coping with critical incidents with outsiders. They think that outsiders do not understand this. "We have a lot of humour but outsiders don't find it as funny as we do" [R.42]. Outsiders are not only non-firefighters (civilians), but sometimes also other firefighters from outside the crew or the fire station. They don't always get the inside jokes, nor are they expected to. "Crews have their own jokes that others don't understand at all. They are often in-jokes that you don't get until you've been part of the crew for some time" [R.72]. A substitute from another crew mentioned: "Making sarcastic jokes in your own crew is fine, because you know each other. But you don't do it there, with the other crew. People will then wonder what you're doing" [R.78].

Some participants also indicated that black humour after a major incident is not intended for people outside the fire service. "A decent person might think 'that's antisocial, why don't you behave normally.' But it is effective. You cannot label or identify it in advance either. It just happens. What's good and what's bad?" [R.17]. Although it was indicated that the use of humour is effective, it was also emphasized that humour is not intended to be disrespectful to potential casualties even though it might come across as such. "There are times when a joke might come across as being awfully disrespectful, to the casualty, to an outsider. I can definitely imagine that" [R.72]. This is why some feel that their humour should not be shared outside their crew or station. "Venting jokes in the vehicle, preferably with the windows closed, so no one can hear" [R.49].

Discussion

Firefighters are generally reluctant to talk about firefighters' humour with people outside their own firefighting crew or station. This study has shown why firefighters think humour plays an important role as part of the fire service culture in general and specifically when coping with critical incidents.

In line with previous studies (Fine & De Soucey, 2005; O'Neill & Rothbard, 2017), the results show that a joking culture and joviality are important elements of the Dutch fire service culture. Firefighters in our study indicated that humour creates a good atmosphere. It is considered to be a means of communication, a way to test each other, and humour in the form of self-mockery is used as a defense mechanism.

Lastly, humour is used in order to jointly cope with critical incidents. There are expectations about who the joker will be (someone from or outside the crew), who the joke will be about (the target), and how that person will react. In brief: jokes are made in a context in which unwritten rules play an important role.

Fire service humour plays a role in building group cohesion and defining group boundaries; these findings are consistent with previous research (Greatbatch & Clark, 2003; Kuipers, 2009). Although the results of this study describe how humour typically creates unity within the fire service crew or station, firefighters also noted the downside of humour. Several firefighters felt excluded as a consequence of humour in various ways. Firstly, and in line with other studies (Yoder & Aniakudo, 1996), humour (in the form of pranks) is used as a mechanism to exclude fellow firefighters who do not conform to the dominant norm at the station (such as gays, lesbians, women and firefighters with an immigrant background). Secondly, it appears that firefighters who are never the target of a joke do not feel part of the group. Thirdly, this is the first study to point out that there are different circumstances due to which some firefighters – contrary to a majority of their crew – do not always perceive humour as funny and thus are (or feel) excluded from the crew. This is particularly true if they fail to sufficiently recognize implicit references; the dominant group dynamics exceed one's personal boundaries with respect to making a joke and/or joining in the laughter; the target of a joke cannot laugh about it because of the timing, content and/or frequency of the joke; and humour in the form of self-mockery is used as a defense mechanism. Since firefighters do not always distance themselves from the group or respond in a socially desirable way if they are able to, humour that crosses boundaries is not always identified as such. Hence humour can bring unity to a crew yet can also divide crew members.

Black humour (e.g., in the form of puns and rituals) is a strategy that plays a crucial role when coping with critical incidents. Firefighters have experienced that black humour reduces the impact of negative experiences. Black humour is used as a safe way to express feelings and to obtain social support. It also enables firefighters to distance themselves from a situation (Rowe & Regehr, 2010). Firefighters have approach and avoidance motives for using humour, primarily for reasons related to coping with an incident. It is unclear whether they use black humour because it enables them to operate more effectively (Rowe & Regehr, 2010). Lastly, not only making jokes oneself but listening to immediate colleagues' jokes also helped people cope, mainly because this positively influences the group atmosphere and creates unity. This is an important finding, as previous studies show that informal peer support reduces the impact of critical incidents (Varvel et al., 2007).

The study reveals that a joke's timing is important in the context of coping. A correction to existing studies is that firefighters do not always use black humour collectively when coping because of the possible differences in how some crew members perceive an incident as critical (whereas others do not); and this leads to different needs as regards coping with the incident. Another new insight is that there is no black humour at all with certain critical incidents. This mainly concerns incidents involving children and young adults where the firefighters felt helpless. In such situations, the use of humour would cross personal boundaries and break unwritten rules. Humour can help identify problems; if, after a critical incident, no jokes are made by the crew and/or if a crew member of the crew does not laugh about the jokes, it is usually a sign for the crew commander to pay extra attention to coping.

Social support is one of the most effective ways to help people cope with high stress situations (Kim et al., 2008): it reduces the negative psychological impact (Varvel et al. 2007) and stimulates resilience (Bernabé & Botia, 2015). Firefighters use humour to ensure social support by developing group cohesion (Rowe & Regehr, 2010). Given the importance of social support and especially the role of humour in coping with critical incidents, the strengthening of social cohesion and support among fire service crews should be promoted (see also Sattler et al., 2014). However, firefighters are reluctant to discuss the role of firefighters' humour or black humour. This closed attitude has led to a lack of understanding of this important coping strategy in the outside world. Providing information on the role of humour in the fire service culture in general, and specifically when coping with critical incidents, enables managers and mental health professionals to gain a better understanding of this unique work culture, and assistance and aftercare to be better attuned to the needs of firefighters.

Strengths and limitations

Only Dutch firefighters were involved in this study. So far, the extent to which the results can be generalized to firefighters from other countries is unclear.

The vast majority of Dutch firefighters are white, heterosexual men. Real life is reflected in that minorities such as women, gays and lesbians, and individuals with a migrant background are underrepresented in this study. This explains why it wasn't possible to pinpoint differences, if any, in how these groups use and perceive humour.

Lastly, this study involved both career and noncareer firefighters. Besides similarities there may also be differences between how these two categories of firefighters experience critical incidents and their type and frequency; coping – and opportunities for coping – with such incidents; and the fire service culture. A follow-up study will examine this topic in more detail.

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Chapter 5

"The profession is just different"

Why noncareer and career firefighters have different experiences with critical incidents, and the role of informal peer support in processing them

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Abstract

The differences between noncareer firefighters and career firefighters are unclear when it comes to experiencing critical incidents and the role of informal peer support in the processing of such incidents. To investigate these differences, data was collected by means of 20 participating observations and 72 interviews with Dutch noncareer and career firefighters from 37 different fire stations.

The mindset with which they ride to an incident, the local bond between the involved firefighters, and previous experiences with critical incidents vary for noncareer firefighters and career firefighters, influencing how they experience and process critical incidents. During their service, career firefighters get support from their peers more readily than noncareer firefighters, who meet less often and for shorter periods. Management has less oversight on noncareer firefighters, making it harder to determine whether they need aftercare. The personal environment plays a larger role in the processing of incidents among noncareer firefighters than among career firefighters.

It is concluded that incidents are experienced as critical by both categories of firefighters, albeit for different reasons. Both impact and processing of incidents are related to the social ecology in which firefighters work. Insight into these differences helps optimize the help and aftercare for these first responders.

Introduction

Most studies on the mental health of firefighters and the experiences of firefighters with critical incidents – incidents that are specific, related to personal loss, unplanned and unexpected, life-threatening and take place within a particular period of time (Bacharach & Bamberger, 2007; Lewis, 2003; De Soir et al., 2012; Fraess-Philips et al., 2017; Monnier et al., 2002) – are limited to career (e.g., professional) firefighters (Milligan-Saville et al., 2018; Brazil, 2017). However, in many Western countries, most firefighting personnel consists of noncareer (e.g., volunteer) firefighters.

Studies focusing specifically on noncareer firefighters' experiencing of critical incidents (e.g., Bryant & Harvey, 1996; Brazil, 2017; Milligan-Saville et al., 2018), or on the impact of the firefighting profession on both career and noncareer firefighters (e.g., Dyregrov et al., 1996; Stanley et al., 2017; Pennington et al., 2021; Petruzzello et al., 2016), expose important differences between the two (Brazil, 2017). Dyregrov et al. (1996) concluded that, in specific incidents, Norwegian noncareer firefighters experience higher levels of posttraumatic stress than career firefighters. In an American study (Stanley et al., 2017), noncareer firefighters reported enhanced levels of suicidal symptoms (suicide plans and attempts), depression and posttraumatic stress than career firefighters. Additionally, noncareer firefighters experience greater structural hindrances to treatment in the mental health system (like costs, transportation and availability of resources). By contrast, career firefighters report

relatively high levels of problematic alcohol use (Stanley et al., 2017; Pennington et al., 2021). Another American study (Petruzzello et al., 2016) revealed there are differences in psychological reactions (such as distress and dysphoria) after firefighting duties performed by both noncareer and career firefighters, and that occupational status (noncareer or career) influences these reactions. The reason for this, however, remains unclear. There is little evidence that conclusions of research on career firefighters also apply to noncareer firefighters (Blaney et al., 2020). Research into the experiences of noncareer firefighters compared to those of career firefighters is therefore necessary (Sattler et al., 2014).

Both noncareer and career firefighters have to deal with critical incidents. They rely on formal (organized) and informal (organic) support to deal with these incidents. A prevalent example of formal peer support is Critical Incident Stress Debriefing (CISD), part of the overall trauma support model Critical Incident Stress Management (De Soir, 2012). In this intervention critical incidents and the stress reactions they induce are discussed collectively by direct crew members (peer group) and colleagues with specialist training in aftercare (Harris et al., 2002). Studies on CISD yield contradictory findings on its effectiveness (Devilly et al., 2006; Varvel et al., 2007; Johnson et al., 2020). Informal peer support involves the natural dialogue with colleagues who were present during the critical incident and involves interaction in pairs or small groups (Jeannette & Scoboria, 2008). This organic dynamic is a regularity amongst those who face tragedy and disaster uniquely as part of their profession, and is connected to the group cohesion they experience (Jeannette & Scoboria, 2008). The Dutch fire service guidelines on peer support make no distinction between noncareer and career firefighters.

Firefighters usually experience critical incidents as a collective because they tend to work in a crew (Haverkamp, 2005). Hence when processing critical incidents, the social support offered within the crew (peer support) is vital for coping with an incident (Dangermond et al., 2022a; Kim et al., 2008). Peer support reduces the negative psychological impact of a critical incident (Varvel et al., 2007) and helps firefighters deal better with stress and experience fewer adverse reactions (Bernabé & Botia, 2015). Multiple studies show that informal peer support is the most preferred support modality for firefighters (Jeannette & Scoboria, 2008; Dangermond et al., 2022a). It has not been investigated whether this preference applies to both noncareer and career firefighters.

The fire service culture likewise influences the experience and the processing of critical incidents (Haverkamp, 2005). Fire service culture is complex and dynamic (Thurnell-Read & Parker, 2008) and unique because of its specific duties (Johnson et al., 2020). It is characterized, among other things, by tight cohesion, mutual trust and strong intragroup bonds (Johnson et al., 2020; Varvel et al., 2007). Another aspect of fire service culture is humour, not only as part of fire service culture in general but also specifically when coping with critical incidents (Dangermond et al., 2022b). The firefighters' brotherhood (Crosby, 2007) can be considered a social ecology: an ecological approach of resilience in which the

mutual interaction between person and environment is central. In this approach, resilience develops through a positive bond between individuals and their environment, and is dependent on the social ecology the person is part of (Duyndam, 2016; Ungar, 2012; 2013). Social ecology is a bond between people that have to work together and be responsible for each other, and who display or achieve resilience within this social bond. Achieving resilience means that firefighters within a crew react to internal or external incidents or crises that threaten the cohesion of the crew or community in such a way that this cohesion is restored and perhaps even strengthened. Within a social ecology individuals draw resilience from this social cohesion, for example through the support received when processing critical incidents. This concept is relevant for research into firefighters' processing of critical incidents because the social cohesion within a firefighters' crew is an important precondition for the adequate processing of such incidents (Dangermond et al., 2022a). The mutual interaction and connectedness between firefighter peers therefore contributes not only to the resilience of individual firefighters, it can also reduce or mitigate the impact of critical incidents. The group expectations and the norms within the firefighters' collective play an important role in this process (Jeannette & Scoboria, 2008). The social ecology of noncareer and career firefighters is probably not the same, and intragroup relationships can strongly vary. However, current research makes no distinction between specific or general aspects of the fire service culture of noncareer and career firefighters (e.g., Varvel et al., 2007; O'Neill & Rothbard, 2017; Moran & Roth, 2013; Thurnell-Read & Parker, 2008), or does so only to a limited degree (e.g., Johnson et al., 2020; Ward & Winstanley, 2006).

The few studies that distinguish between noncareer and career firefighters show that differences exist between the two groups when it comes to the impact and processing of critical incidents. Against this background, the present article asks the following question: *What are the differences between noncareer firefighters and career firefighters in terms of experiencing critical incidents and the role of informal peer support in processing such incidents?* This research further elaborates on two studies that describe: 1. what makes firefighters experience certain incidents at work as so critical that the incidents impact them as well as the crew they are part of (Dangermond et al., 2022c), and 2. the role that informal peer support plays in the processing of critical incidents among firefighters (Dangermond et al., 2022a).

Research design

The study we report on in this article is part of wider research in the Netherlands into the role of fire service culture in the processing of critical incidents. It consists of ethnographic field research with a strong exploratory character. In the first place, this method is suited to obtain deeper insight into the relationships and the group culture among fire stations, by participating for extended periods in their reality, building trust, and talking about personal experiences and perceptions. Second, ethnographic field research fits the best because this study is aimed at the processing of critical incidents, which is a sensitive topic that may be considered taboo. Multiple studies describe how cultural stigma can inhibit firefighters from discussing mental health issues (Henderson et al., 2016; Stanley et al., 2017; Kim et al.,

2008; Pennington et al., 2021) or talk about their own vulnerability (Wilmoth, 2014). This closed attitude has led to a lack of understanding from the outside world of this group of first responders. Ethnographic field research offers more possibilities to develop trust in the researcher and discuss confidential matters.

An important fact in this context is that the investigator (first author) works at the Fire Service Academy and has several family members who work or have worked in the fire service, so she can be considered as an insider-researcher (Greene, 2014). Research by an insider eases access of the investigator to the research population. In addition, this investigator possesses a relevant background and current knowledge that facilitates asking questions (Kniffin et al., 2015). A possible drawback of an insider-researcher is interviewer bias. The investigator could also have to deal with ethical and moral dilemmas (Floyd & Arthur, 2012), for example if there is both a personal and a professional relationship with participants (Perryman, 2011; Vass, 2017). The participants in this study were aware of this insider position, and many indicated that they considered the investigator as "part of the family".

Sample

The fire service system in the Netherlands is made up of 23,570 firefighters (4,357 career firefighters and 19,646 noncareer firefighters), and there are 969 fire stations (Instituut Fysieke Veiligheid, 2020). Of these men and women, 4 percent work in both a career and a noncareer capacity: in addition to their 24-hour shifts as career firefighters they also perform noncareer service (in their town of residence). The research population consisted of active firefighting personnel: crew members, crew commanders and shift leaders. This study included both career and noncareer firefighters: 40 career firefighters (11 of whom had also been noncareer firefighters in the past), 20 noncareer firefighters, and 12 participants that work in both capacities.

Selection of participants for the interviews took place using theoretical sampling (Patton, 2015), a targeted selection based on considerations from the literature: both noncareer and career firefighters because there are important differences between the two groups in terms of the impact and processing of critical incidents (e.g., Sattler et al., 2014); firefighters with various years of service because of the possible effect on the intensity of exposure of critical incidents and of experiencing social support (Regehr et al., 2003; Sluiter & Frings-Dresen, 2007); and both men and women because female firefighters describe critical incidents differently than their male colleagues (Jacobsson et al., 2015). The participants' group consisted of 5 women and 67 men, with an average age of 43 and an average 19 years of service. Participants came from 19 different career stations and 18 noncareer stations. All participants have at least followed secondary vocational education (a requirement to join the fire service). Most participants (66) were married; 6 participants are single or divorced.

Data collection

Data collection took place through participating observations and semi-structured in-depth interviews. A total of 20 participating observations took place describing open behaviour (the visible part of fire service culture): throughout several 24-hour shifts per crew, the researcher participated in all activities (with the exception of providing aid during incidents for career firefighters) and training evenings (noncareer firefighters). An observation report was made during and directly after each participating observation. Besides an overview of some factual characteristics (e.g., date, day of the week, description of the fire station/building), this report mainly contains descriptions of the atmosphere during the observation (e.g., are crew members closed or easy going?); incidents (if applicable); valuable moments according to firefighters (exercise, cook, watch a movie together); role of management (before, during and after incidents); group dynamics (hierarchy, role of humour in communication, informal leadership); and informal peer support (when, how and with whom is support given).

To delve deeper into this descriptive behavioural level, and to really understand the culture, 72 semi-structured in-depth interviews were also held with noncareer and career firefighters. These interviews focused on perceptions, thoughts, feelings and experiences of the individual (cf. Schein, 1984). The list of topics for the interviews is based on the findings of the participating observations. Main themes of the list of topics are: personal characteristics and motivation (e.g., age, marital status, years of service, reason for becoming a firefighter); the fire station (most common incidents); fire crew composition (ages, personalities, member interaction, number of firefighters and crews); sense of community (members' feeling of belonging to the crew and station); role of management (position, quality, responsibility and influence of the crew leader); critical incidents (which incidents are experienced as critical for what reason and what impact this has on the individual and the crew); formal social support (experiences with CISD); informal social support (support of the crew and/or individual: when, why and how); and moments when support is given or not (rituals, traditions, barriers).

Participating observations as well as interviews were conducted in every selected crew of career firefighters. In this way, results from the observations could be compared with the results of the interviews in order to supplement, delve more deeply or make corrections. The interviews took place at fire stations, public places or participants' homes, and lasted one and a half to two hours. All interviews were taped with a voice recorder and transcribed verbatim. Participants in the observations and interviews signed an informed consent document beforehand.

Analysis

Thematic analysis (Braun & Clarke, 2012) was used to analyse the data set. Themes (patterns of meaning) in the data set were identified and organized in six phases: becoming familiar with the data (phase 1); generating initial codes (phase 2); searching for (phase 3), reviewing (phase 4) and defining (phase 5) themes; and finishing the report (phase 6).

The analysis was an iterative process, alternating processes of data collection, analysis and theory formation. Induction and deduction took place simultaneously. The analysis program Atlas.ti was used to thematically analyse and code the data. Three coding steps were applied: open, axial and selective (Patton, 2015). Open coding took place primarily when analysing the participating observations and the open interviews (e.g., the codes "fire service culture", "critical incidents" and "processing"; phases 1 and 2). In the subsequent step the data was axially coded. In this step codes were validated by splitting, merging and comparing them, and designating new codes. In addition, various codes were clustered into one or several group codes, based mainly on substantive considerations (the analysis of the interview reports, but also statements/observations of participants). These are some of the group codes created: "critical incident: career-specific", "critical incident: noncareer-specific", "processing: career-specific", "processing: noncareer-specific". Codes clustered in these group codes related to experiences with critical incidents and their processing which apply specifically to career firefighters ("24-hour shift", "bonds with local community") or noncareer firefighters ("other obligations", "involved with partner/family"). Lastly, based on comparison of the group codes the connection between group codes was analysed (selective coding; phases 3, 4 and 5), after which the report was completed (phase 6).

The method triangulation led to further deepening in the research results. The different forms of data collection elucidate various perspectives of the research object: by means of observations, that which is observable on the outside is mapped out, while the interviews gather more in-depth knowledge. After each coding step, the preliminary results were tested during observations and interviews, until the first signs of saturation appeared. The large number of participating observations and the semi-structured in-depth interviews, combined with the detailed, structured data collection and analysis method, strengthen the validity and reliability of the study. There was also the researcher's triangulation. In all phases of the study, the first author worked closely together with a content expert (second author) and two academic non-insiders (third and fourth authors).

Results

Dutch noncareer and career firefighters follow the same training and have the same range of duties: to provide assistance to people and animals in all kinds of incidents and events, such as automobile accidents, fires and floods. There are however differences between the two capacities. Noncareer firefighters are not in service full-time and have another, main job, whereas for career firefighters it is their main job. Another difference is that career firefighters usually have 24-hour shifts, while by contrast noncareer firefighters are alerted while at work or during their free time. The composition of the crew a noncareer firefighter serves with varies, as it depends on who can get to the fire station on time; career firefighters go on a call with their (usually) regular crew. Career firefighters have 24-hour shifts in towns where they do not necessarily reside, noncareer firefighters do live in the areas they service. This information is important when interpreting the differences (between

the two groups) that play a role in the experiencing of critical incidents and their processing through informal peer support. The following findings are illustrated by quotes; they have been editorialized to protect the anonymity of participants.

Different experiences of noncareer and career firefighters with critical incidents

There are differences between noncareer and career firefighters when it comes to mindset during the ride to an incident and how and when the mindset switches, the local bond between the firefighters involved, and their previous experiences with critical incidents. These differences offer insight into why noncareer firefighters and career firefighters experience an incident as critical for different reasons.

Mindset and switching moments

When there is an alert, career firefighters are normally present at the fire station and get into the fire engine within a few minutes. Noncareer firefighters are alerted at home or at work, and rush to the fire station after a call. They subsequently ride to the incident location where the relief is taking place. Because of this, career and noncareer firefighters ride to incidents with different mindsets. The mental preparation for career firefighters is usually shorter than for noncareer firefighters. A difference is experienced in the switching from "rest" or "standby" to "provide help" between the two categories of firefighters. At the start of their 24-hour shift career firefighters ready themselves to the possibility that "anything" can happen, in contrast to noncareer firefighters, for whom incidents can "hit harder" because of the switch between a "safe environment" and directly getting "into action" [R.40]. "As a professional, you say 'I'm going to my work' with a specific mindset. I know that things can happen there, but that affects you differently than if I as a regular citizen had to provide first aid all of a sudden" [R.51]. But sometimes switching mindset can also be hard on those who work in both volunteer and career capacities: "If I'm coming from home I have a few minutes to prepare mentally and I more or less know where we're going to and can make some kind of plan. But here [at the station] I am in the vehicle within a minute or two, and that's more difficult" [R.44].

Because noncareer firefighters are more likely to reside in the area where they serve, it happens regularly that, while they are on their way to the station with their own transportation after getting a call, they will drive by the incident for which they have been alerted. Then firefighters face the dilemma: provide rescue services immediately or keep driving to the station? A few participants have experienced this dilemma multiple times. "An accident, an overturned car, nearby the fire station, with a woman and a child in it. I didn't keep driving, I could not bring myself to do that, I immediately went to help them. At such moments you have to follow your instinct" [R.65]. In such cases noncareer firefighters switch (even more quickly than usual) from citizen to first responder. The absence of colleagues, preparation time and the right rescue tools and protective gear are listed as reasons why noncareer firefighters experience these incidents as critical.

The local bond: it's a small town

Incidents that involve people they know are experienced by firefighters as critical. Because noncareer firefighters in the Netherlands live (or work) in the town where they serve, chances are greater that they will have to deal with incidents in which they know those involved. "You often run into someone you know, or it is their father or mother or grandmother, those are things that really impact you" [R.52]. Such incidents are experienced as critical mainly because of the people they happen to. Career firefighters are not required to live in the town where they work as firefighters, therefore they do not know most of the victims.

Noncareer firefighters are also confronted with the incident location much more often than career firefighters, both during the performance of their firefighting duties and in private situations. Sometimes an incident makes such an impression that the responder avoids the location afterwards, also in their private time. "I have not gone back to the location in months, maybe almost a year. We once had an outdoor fire in the neighbourhood. And so we of course had to go there. It was crazy" [R.51]. There is an added impact if casualties are commemorated at the site. "There are flowers and a RIP in that tree. If we pass by that scene as part of a training … it was really terrible with that fellow. That we couldn't do anything" [R.42].

Experience and the cumulative effect

The first time a firefighter is confronted with a certain type of incident or with a fatality, or goes on call working in a new function, is experienced as critical. Career firefighters usually experience more incidents than the average noncareer firefighter, and this has both positive and negative consequences. What is positive is that the previous experience can be useful in a new situation. Thanks to such experiences career firefighters state that they are calmer when riding to the incident location, and are less prone to experience incidents as critical. "Because you're a professional and have already gone through so much, you experience the work differently. I notice that you stay calmer or relativize things more easily, you are less rattled in the engine, because you have more baggage" [R.68]. The negative is that this is experienced as critical when several (serious) incidents take place within a certain amount of time. This is known as the cumulative effect. Those who are both career and noncareer firefighters end up dealing with this cumulative effect sooner – they simply have to deal with more incidents in both capacities.

After completing service at the incident location, the firefighting crew goes back to the station. Normally speaking, career firefighters continue their duties and noncareer firefighters go back to their private or work situation, unless this was a critical incident and there is a need for informal peer support and/or CISD (formal peer support).

Different experiences of noncareer firefighters and career firefighters with informal peer support when processing critical incidents

Noncareer and career firefighters have different experiences when it comes to informal peer support. These differences relate to the number of contact moments and the degree to which people know each other, visibility to management, and the role of the personal environment. Such differences explain why informal peer support is experienced differently by noncareer and career firefighters.

Contact moments and knowing each other

Both career and noncareer firefighters attach great value to having a good rapport with their peers. Career firefighters usually work with a more or less steady, relatively small team of colleagues, whereas noncareer firefighters often serve with a changing composition of colleagues from the station. Career firefighters also have 24-hour shifts, in contrast to noncareer firefighters. These shifts strengthen relationships. "You are with each other for 24 hours straight, you sleep, you eat, you take a shower and play sports with each other. You run into each other once every three days" [R.18]. When processing incidents, the combination of a steady crew of peers and spending longer periods of time with each other is experienced by career firefighters as having added value. "You are with each other a lot, you have a lot of time to talk to each other. And because you work with each other so much, at a certain point you get to know each other really well. So you really know what someone is about" [R.78].

Although most noncareer firefighters admit to knowing each other fairly well, they tend to see each other less often. "It's easy to say that 'we keep an eye on each other', but you only see each other on training evenings and occasionally when there is a call. You don't get to see how someone sleeps. You don't get half of the story. Someone can put on a happy face for an hour and then be completely down in the dumps. That's the difference with being a career firefighter, and that you are breathing down each other's necks 24/7" [R.13].

In addition, specifically for noncareer firefighters – although incidents and the post-incident talks for both career and noncareer firefighters can take place at "inconvenient" times (for example in the middle of the night) – formal or informal talks cannot always take place, at least not immediately. Whereas a career firefighter can be more or less obligated to participate in a post-incident talk later in the shift, this is less binding for noncareer firefighters because they have to go or return to their job, or may have other personal obligations. The talks are thus postponed to a different moment. "Then you think 'okay we're going home', but that actually isn't so good" [R.69].

Visibility to management

Together with the crew, management determines whether aftercare is needed and what type. This is established during the incident, although it can also take place based on the atmosphere during the ride back to the station and/or after arriving there. Management acknowledges that with noncareer firefighters it is more difficult to gauge whether someone

needs aftercare, certainly if the person doesn't indicate so herself. This has to do, among other things, with the number of contact moments, which are fewer for noncareer than for career firefighters. "If you don't see it in someone's face or they are good at keeping up appearances, that's something we all do sometimes. But then you don't see each other, and as someone in a leadership position I also feel I'm failing. Because that image isn't there. But for career firefighters it's a different story: you are together, you see each other again, you spend the whole day with each other. You see abnormal behaviour, and then as management you can anticipate on that. That is a lot harder for a noncareer firefighter" [R.55]. For the management of noncareer firefighters it is more difficult to get a feel for how someone is doing, although to some degree this also applies to career firefighters, specifically to those who sub during a shift or are also active in a noncareer capacity. Participants indicate that in such cases it is important for all those in charge to be brought up to date of the critical incident and its impact – all the more so because career firefighters who also serve in a noncareer capacity can experience a barrier to appearing vulnerable to noncareer firefighters: "It is rather a problem than an advantage. With career firefighters you can be more yourself than with noncareer firefighters, to them you are 'professional', and then status and jealousy come into play" [R.15]. The opposite also applies: "Career firefighters keep an eye on you, because you also used to be a noncareer firefighter. Everything you do gets questioned. As a noncareer firefighter you have to prove to yourself that you can also interact with career firefighters" [R.18].

Role of personal environment in processing incidents

Most firefighters prefer to discuss critical incidents with their immediate firefighter peers. They use their own crew for informal support because they do not have to explain anything to the crew members, they understand each other better than an outsider would. Firefighters usually do not want to burden their partner, friends or family with the details of an incident, and only share general details about events. "I don't believe my partner needs to know all the crazy things I get to see. Even I don't feel the need to. I can vent enough with my colleagues" [R.48]. Still, especially for noncareer firefighters the personal environment – such as partner, family and friends, and even victims and their families – play a larger role in the processing.

The personal environment and the local bond impacts noncareer firefighters differently when processing critical incidents. First of all, the partner of a noncareer firefighter usually knows that he or she has been called to an incident. "You go out in the middle of the night, and she asks 'what's going on?'. And then you're going to sum things up differently than the way you do with your colleagues" [R.17]. In contrast with career firefighters, noncareer firefighters say that their family or friends sometimes follow the incidents too: "My father follows what we do fanatically. If he has the impression that 'oh, that was probably heavy', I get a text message from him. If it's really serious, then I call him. It is more because of their interest than a need of mine. It happens within these four walls [of the station, ed.] and that's enough for me" [R.63]. Partners or family members of career firefighters have less of an insight into their duties.

Secondly, firefighters can also be confronted with incidents and their aftermath even outside the context of the firefighting service. In addition to the previously described confrontations with the incident location, noncareer firefighters are sometimes approached by people in the neighbourhood because of an incident, even if they weren't present. "You run into them the next day at the grocery store − were you there too?" [R.48].

Lastly, because of their local bonds noncareer firefighters get to find out more – whether they ask or not – about victims' personal circumstances. Such information is experienced both positively and negatively; it depends on the need of the noncareer firefighter and the type of incident. "It was suicide or alcohol or drugs. It lasts a whole week, everyone is talking about it and has an opinion about it. That's what you have in a village. It's how it is. And that is positive, but can also be negative" [R.65]. It also happens that noncareer firefighters run into a victim long after the incident: "I got a severely injured young man about my age out of the car and now I run into him at a party. And I see him walking and I immediately picture how he was lying in the car" [R.63]. Whether people need information about how things turned out varies per individual and situation: "Do you want to know or not? That depends: sometimes I think 'just let me do my work', but sometimes I'm also curious, for example with resuscitation, did they make it?" [R.22]. For both noncareer and career firefighters, things are particularly experienced as critical when they do not want to know that information but receive it nonetheless, for instance when victims or family themselves contact the fire station. Although this is appreciated − "these are also precious moments in fact, all that appreciation, but also the feeling that we did well together" [R.70] − not everyone wants to know this information. "We resuscitated a youngster, who made it. We got a card and some candy. But no one is sitting around waiting for it. We did our best, and as far as we're concerned that's the end of it" [R.56].

Discussion

Most studies on the mental health of firefighters are limited to career firefighters, despite the fact that in many western countries the majority of firefighting personnel consists of noncareer firefighters. However, the social ecology and intragroup relationships of these two categories of firefighters differ. This study illustrates why a noncareer or a career capacity influences the psychological reactions of firefighters by describing: 1. that noncareer and career firefighters experience incidents as critical for different reasons, and 2. how informal peer support differs between noncareer firefighters and career firefighters.

Although Dutch noncareer and career firefighters both follow the same training, and despite the fact that they usually have the same tasks package and provide assistance in similar incidents, there are different reasons why they experience incidents as critical:

> Mindset and switching moments. The context in which noncareer firefighters and career firefighters receive notice of an incident and then come into action (ride to the incident) is different, thus potentially affecting the impact of an event (stress reaction) (Dangermond et al., 2022c). This is in line with the speculation of Stanley et al. (2017)

that the immediate switch from civilian life to the first responder condition may generate a more shocking experience.

> Local bond. Noncareer firefighters are more likely to personally know a victim (and their social environment). They also come into contact with the victim, their next-of-kin or acquaintances, and/or the incident location, as a result of which they are confronted with the incident in a private context. Previous research shows that incidents are experienced as critical when, for example, acquaintances are involved in the incident (personal loss) (Dangermond et al., 2022c).
> Experience. In this study career firefighters indicate that because of their experience they are less predisposed to experience incidents as critical. Previous research shows that career firefighters have greater exposure rates to critical incidents than noncareer firefighters, which results in fewer stress reactions for career firefighters (Dyregrov et al., 1996). However, incident-related stressors (e.g., type of critical incident) and personal circumstances (both at work and at home) are also strong predictors of mental health problems (Fraess-Phillips et al., 2017; Dangermond et al., 2022c). Repeated exposure to trauma can have a cumulative impact on the psychological well-being of firefighters (Jahnke et al., 2016; Milligan-Saville et al., 2018). There is a tipping point: if several, serious incidents take place within a certain period of time, this can be experienced as critical (cumulative effect) (Dangermond et al., 2022c). The present study evidences that career firefighters who are also active in a noncareer capacity are more prone to having to deal with this cumulative effect.

Informal peer support is essential to processing critical incidents (Jeannette & Scoboria, 2008; Dangermond et al., 2022a). A strong mutual bond among the fire crew at the fire station makes the collective a social ecology in which the mutual interaction between person and environment produces informal peer support. This is important to the processing of critical incidents (Dangermond et al., 2022a). However, the emergence and continuation of mutual bonds among noncareer and career firefighters varies, depending on the frequency and duration of meetings and the composition of participants in these meetings. It is usually easier for career firefighters to receive peer support during a 24-hour shift, as they tend to spend longer periods of time with a more or less regular crew of peers that know each other well. Although noncareer firefighters also have a good rapport, they meet less frequently, for shorter periods, and often in different compositions.

Additionally, for both groups, management plays an important role in the processing of incidents. Due to the minimal number of contact moments, it is harder for the management of noncareer firefighters to determine whether someone needs aftercare and how the processing is going, especially if the person in question doesn't indicate it herself. Lastly, for noncareer firefighters – more than for career firefighters – their local bond causes the personal environment to play a role both in the experiencing of incidents as critical and in the processing of such incidents. This study likewise reveals that the social ecology, and consequently its impact on the processing of critical incidents, differs for noncareer and for career firefighters.

Practical implications

The insights from this study help develop specific interventions that are necessary toward strengthening the mental health of noncareer and career firefighters. Besides incident-related stressors and personal circumstances, organizational stressors (e.g., shift patterns, work culture and workload) have an impact on the mental health of firefighters (Duran et al., 2018). Organizational distinctions between career and volunteer fire services should therefore be acknowledged (Stanley et al., 2017). Information on the influence of a noncareer or a career capacity on the experiences of firefighters with critical incidents and on the role of informal peer support in processing them, provides a better understanding of firefighters' unique work culture. This allows mental health professionals to better tailor their assistance and aftercare to the needs of these firefighters (see also Johnson et al., 2020). Given the importance of peer support in coping with critical incidents, strengthening internal cohesion and support among fire service crews should be stimulated (Dangermond et al., 2022a; Sattler et al., 2014). The focus of interventions needs to lie on specific stressors for noncareer and career firefighters – like mindset, local bond, experience – and on strengthening their social ecology rather than on universal stress reduction interventions and comprehensive measures. To further develop the resilience of firefighters, social-ecological theory should be practised in resilience programs as well as in empowering firefighters and their station and organization (as previously argued by Ghazinour and Rostami (2021) for increasing the resilience of police officers). Good mental health serves not only firefighters' interest, but also organizational and social interests.

Limitations

This study had some limitations. It is not investigated to what degree the participants had developed severe psychological problems as a result of a critical incident and sought professional help for that reason.

Given the small number of female firefighters in this study, it was not possible to describe the potential differences between men and women as to how informal peer support is experienced after critical incidents. Future studies should pay attention to gender, as a previous study (Jacobsson et al., 2015) has shown that female firefighters describe critical incidents differently than their male colleagues. This may have consequences for the way women cope with such incidents.

This study only involved Dutch firefighters. It remains unclear to what degree the results can be generalized to other countries. Other countries – within and outside Europe − have both noncareer and career firefighters, yet there are major differences in training, description of functions, tasks packages, and obligations. Regarding the culture of Dutch firefighters, however, there is no reason to believe that it differs substantially from that of firefighters elsewhere in the West.

Last, it also remains unclear to what degree the results can be generalized to other first responder organizations that have noncareer and career staff (as is the case with the police in the Netherlands). The desirability of such a comparison is another point of discussion. Although there is overlap between the various service functions, there is also large cultural diversity (Jahnke et al., 2016). First responders such as firefighters, police officers and emergency medical services personnel experience a distinctive range of critical incidents because of their different requirements and tasks (Halpern et al., 2009), their proximity to diverse elements of the incident (e.g., differences in life threat and contact with injured or deceased victims) (De Soir et al., 2012) and their work culture. And compared to other first responders – firefighters are confronted with critical incidents more often and more intensively (Lee et al., 2016). A proper evaluation of critical incidents and how people cope with them would require research on the individual professional groups (Halpern et al., 2009).

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Chapter 6

Summary and General discussion

Introduction

While performing their duties, firefighters must deal with incidents that strongly affect their lives and well-being. Because they mostly experience critical incidents collectively, the culture within the fire crew or station is crucial to processing such incidents. This dissertation research focuses on the role of fire service culture in firefighters' processing of critical incidents, where the resilience potential of fire service culture is seen in relation to the concept of social ecology. We investigated which incidents firefighters experience as critical, the contextual factors that are important in this process and their impact, the role that informal social support plays within the fire station when processing critical incidents, the role of humour, and the differences between noncareer and career firefighters that affect the processing. This dissertation research is based on ethnographic field research with a strong exploratory character that is centred on the perspective of firefighters themselves and offers insightful knowledge about fire service culture and the complex reality in which firefighters work. The research also produced knowledge that will serve to improve the support of firefighters after critical incidents.

This chapter answers the sub-questions set out in the Introduction, followed by a reflection on the methodology, implications for practice and suggestions for follow-up research. The concluding remarks lead to a general conclusion.

Answer to the sub-questions

The four sub-questions are answered in this section (see Table 6.1 for a summary).

Table 6.1 Findings of the four sub-questions

Sub-question	Main results
Why do firefighters experience specific incidents that occur during their work as so critical that these incidents affect them and their crew?	Whether an incident is experienced as critical depends on the type of incident, the circumstances of the incident and the personal situation. Directly or indirectly, experiencing a critical incident impacts firefighters during and after, both professionally and personally. Experiencing critical incidents affects crew dynamics.
What role does informal peer support play in helping firefighters cope with critical incidents?	Firefighters will turn to informal peer support to cope with critical incidents provided that facilitating circumstances are present and there is adherence to certain implicit rules. The collective sharing of memories, whether immediately post-incident or over time, helps firefighters process critical incidents and promotes unit cohesion. Most firefighters reported preferring these informal debriefings to formal sessions. By comparison, a minority of firefighters reported that they did not benefit from the informal interactions at all.

Sub-question	Main results
What role does humour play as part of the fire service culture in general, and specifically when dealing with critical incidents?	Joking and joviality are important elements of Dutch fire service culture. Firefighter humour usually creates unity but can also lead to exclusion. Whether a joke is perceived as funny depends on who makes the joke and the moment, content and frequency of the joke. Black humour is a way to start a conversation and make it possible to discuss emotions indirectly. It tends to positively influence group dynamics. However, black humour is absent from certain critical incidents because of personal boundaries and unwritten rules. The absence of humour is a sign for the crew commander to pay extra attention to coping.
What are the differences between noncareer firefighters and career firefighters in terms of experiencing critical incidents and the role of informal peer support in processing such incidents?	Incidents are experienced as critical by both categories of firefighters, albeit for different reasons. Both impact and processing of incidents can be understood in relation to the social ecology in which firefighters work. The mindset with which noncareer and career firefighters ride to an incident, the local bond between the involved firefighters, and previous experiences with critical incidents vary. During their service, career firefighters get support from their peers more readily than noncareer firefighters. Management has less oversight of noncareer firefighters, making it harder to determine whether they need aftercare. Personal environment plays a larger role in the processing of incidents among noncareer firfeighters than among career firefighters.

Why firefighters experience certain incidents as critical and the impact of such incidents on individual firefighters and fire crews

Firefighters inevitably encounter critical incidents as part of their work. Most studies do not investigate why firefighters experience or perceive an incident as critical and which personal and contextual factors play a role, and limited research has been conducted into the impact of critical incidents on firefighters' private and working lives, as individuals (as first responders and private citizens) and as a collective (the fire crew). This study (described in Chapter 2) provides a more in-depth understanding of this issue.

Incidents described as critical

Consistently with existing research, in this study firefighters describe as critical severe traffic incidents, drownings, cardiopulmonary resuscitations (CPR), suicides and uncommon fire scenarios (Monnier et al., 2002; Beaton et al., 1999; Van der Velden et al., 2006; Jacobsson et al., 2015). Incidents are also perceived as critical when firefighters are confronted with injury or death, know the victim personally, consider the first response to have failed, experience life-threatening situations, have to lend assistance to children (Beaton & Murphy, 1993; Green, 1985; McCammon, 1996; Ørner, 1995), and colleagues are threatened or die (Beaton et al. 1999).

Why and when these incidents are experienced as critical depends on the individual, their circumstances both at work and at home, their work experience, and the specifics of the incident. In addition to other findings (especially American studies) is that in this study firefighters mention six circumstances that determine whether an incident is perceived as critical and therefore has an impact during and after the incident. The first three circumstances apply to the work field, the last three to the private sphere: 1. death of a casualty during the first response; 2. witnessing casualties while the firefighter has no role to play in the first response; 3. presence of bystanders and specifically next of kin; 4. first turnout for a certain type of incident and/or the first time in a new job; 5. incident seriousness plus frequency and timing in which the same or different types of incidents take place; and 6. firefighters' circumstances, which make them feel consciously or subconsciously more vulnerable, and/or personal associations during incidents. These factors and circumstances are not exclusively related to the work of the fire service but are probably recognisable to other first responders such as police officers and ambulance workers.

Another addition to the existing literature is that the results of this study clarify how CPR deserves special attention because it can be perceived as critical due to an accumulation of circumstances: the casualty is thought to have died and their body needs to be touched in order to provide assistance, CPR often takes place in the casualty's home environment and there is a greater probability of bystanders and/or next of kin adversely influencing the response effort because of emotions and/or threats, and the frequency of CPR interventions experienced by firefighters. Knowledge from our research about this impact is necessary to tailor help and aftercare more effectively to firefighters' processing needs.

Impact of critical incidents on firefighters and their crew

Consistent with previous research (Murphy et al., 2004), firefighters mentioned feeling immediately overwhelmed by a critical incident at the scene, to such a degree that they cannot always fulfil their task as first responders. A new insight from this study is that an impact is experienced when firefighters believe they might know the casualty, even if it becomes clear at the scene of the incident that this assumption was false.

In contrast to previous research (Kehl et al., 2014), firefighters in this study did not identify post-traumatic growth as a direct, one-to-one consequence of a single critical incident. However, they did indicate that the fire service profession had led to personal growth, the ability to put things into perspective, more awareness of the dangers in daily life, and an appreciation of the fragility of life.

An important new finding relates to the impact of critical incidents at the collective level. Critical incidents particularly influence the dynamics within a fire crew. A positive effect described at the collective level is that bonds were strengthened: a stronger group feeling, camaraderie and togetherness. This effect can be of both a long-term and a short-term nature. A negative impact is experienced if mistakes were made during the incident. Because

of the collective nature and significance of some incidents, firefighters can also be exposed to a critical incident afterwards, when sharing their traumatic experiences with peers who were not at the scene.

The role of informal peer support in helping firefighters cope with critical incidents

Many firefighters prefer informal peer support to help them cope with critical incidents (see e.g., Jeannette & Scoboria, 2008), but existing research does not clarify enough how such support is given. This study (described in Chapter 3) provides initial evidence of the role of informal peer support in how firefighters cope with critical incidents. Insight is given into why informal peer support is experienced as a supplement to or replacement of a critical incident stress debriefing (CISD) session; how informal peer support is perceived at different times and varies per person and crew; how support is received from the collective, an individual colleague (including the crew commander) or a combination of the two; and the different reasons why firefighters do not experience any informal support.

Informal peer support – preferences

In line with other research, our results clarify that informal peer support reduces the impact of a critical incident (Varvel et al., 2007) and confirm that when coping with an incident firefighters prefer informal over formal peer support such as CISD (Jeannette & Scoboria, 2008). This study reveals three benefits of informal peer support. First, experiences and emotions are shared, with no further explanation required, with crew members who had the same and/or similar experiences and know each other personally. Second, depending on the significance someone attributes to it an incident can be interpreted in different ways, hence coping needs vary. Informal peer support is better directed at meeting personal needs than the one-size-fits-all CISD method (Varvel et al., 2007). Third, firefighters experience the added value of support from their crew commander (in line with Bernabé & Botia, 2015; Varvel et al., 2007; Birkeland et al., 2017), yet some firefighters in this study indicated that they also valued the individual and/or collective support from their other colleagues just as high or even more. Firefighters are content with the support they get from their colleagues. This is an important finding because firefighters who are satisfied with the informal peer support they receive experience less stress than non-satisfied responders (Cowman et al., 2004).

Inhibiting factors and the role of fire service culture

Firefighters who have individually or collectively experienced an incident as critical can be reluctant to look for informal peer support because of the group culture. Some firefighters expressed not being keen on discussing their vulnerability because they feared it would make them come across as weak (see also Wilmoth, 2014). Firefighters are socially trained and feel the need to control their emotions during first-response actions, in order to provide adequate assistance (Scott & Myers, 2005; O'Neill & Rothbard, 2017). The processing starts once the crew is in the vehicle and the doors are closed. This concurs with a study into emotion suppression (O'Neill & Rothbard, 2017), showing that firefighters do not find it

appropriate to display emotions at the scene of an incident. With a new in-depth insight complementing other research (Jeannette & Scoboria, 2008; Haverkamp, 2005), our study reveals that the impact of an incident on the individual transcends individual interpretations and is connected to group expectations, standards and culture.

Humour as part of the fire service culture, specifically as part of coping with critical incidents

Although it is common knowledge that humour plays an essential role in how firefighters perform their work (Rowe & Regehr, 2010), it is not clear how they experience the role of humour as part of fire service culture and why they might consider it important when coping with critical incidents. Firefighters are reluctant when it comes to sharing information about the use of humour, which may be why relatively few studies on this subject are available. Our study (described in Chapter 4) shows why and how firefighters think humour plays an important role as part of fire service culture in general, and specifically when coping with critical incidents. The first part of our study discusses how firefighters explain the role of humour as part of fire service culture, the various types of humour, the times and occasions when humour is used, and when and how humour discriminates against certain people or excludes them. The second part explains what firefighters consider to be black humour, and why they believe this humour helps them to individually and collectively cope with critical incidents. Further, it explains the role humour plays in rituals, the boundaries of black humour, and why firefighters do not see their black humour as intended for outsiders.

Humour in the fire service

In line with other research (Fine & De Soucey, 2005; O'Neill & Rothbard, 2017), our results show that joking and joviality are important elements of fire service culture. Fire service humour plays a role in building group cohesion and defining group boundaries (Greatbatch & Clark, 2003; Kuipers, 2009). Adding to this existing knowledge, in our study firefighters reported that humour creates a good atmosphere; that it is considered a means of communication and a way to test each other; and that it is used as a defence mechanism in the form of self-mockery and to jointly cope with critical incidents. There are expectations about who the joker will be, who the joke will be about, and how that person will react. Jokes are made in a context in which unwritten rules play an important role. Although humour typically creates unity, firefighters also noted the downside of humour and mentioned feeling excluded because of it. An important new insight is that, since firefighters do not and cannot always distance themselves from the group or respond in a socially desirable way, humour that crosses boundaries is not always identified as such.

Black humour when coping with critical incidents

For most firefighters, humour plays a crucial role in coping with critical incidents. Firefighters refer to black humour in these cases, to distinguish it from other types of humour. Black humour (e.g., in the form of puns and rituals) is a strategy that plays such a role, reducing the impact of negative experiences. This study reveals why a joke's timing is important in the context of coping. A nuance versus existing studies is that firefighters do not always

use black humour collectively when coping because of the possible differences in how some crew members perceive an incident as critical (whereas others do not); this leads to different needs for coping with the incident. Other new insights are that there is no black humour in critical incidents involving children and young adults, where the firefighters felt helpless, and that humour can help identify problems. If, after a critical incident, no jokes are made, it is usually a sign for the crew commander to pay extra attention to coping.

Why noncareer and career firefighters have different experiences with critical incidents, and the role of informal peer support in processing them

Most studies on firefighters' mental health and experiences with critical incidents are limited to career firefighters (Milligan-Saville et al., 2018; Brazil, 2017), or at least make no distinction between noncareer and career firefighters (e.g., Varvel et al., 2007; O'Neill & Rothbard, 2017; Moran & Roth, 2013; Thurnell-Read & Parker, 2009). In many Western countries, however, the majority of firefighting personnel consists of noncareer firefighters. Studies focusing specifically on noncareer firefighters' experiencing of critical incidents (e.g., Bryant & Harvey, 1996; Brazil, 2017; Milligan-Saville et al., 2018) or on the impact of the firefighting profession on both categories of firefighters (e.g., Dyregrov et al., 1996; Stanley et al., 2017; Pennington et al., 2021; Petruzzello et al., 2016) show important differences between the two (Brazil, 2017). Our study (described in Chapter 5) illustrates why a noncareer or a career capacity affects the psychological reactions of firefighters by describing that both experience incidents as critical for different reasons, and how informal peer support differs between the two categories.

Experiencing critical incidents for different reasons

Although Dutch noncareer and career firefighters both follow the same training, and although they usually have the same tasks and assist in similar incidents, this study is the first to provide in-depth insight into the different reasons they experience incidents as critical: 1. the context in which noncareer and career firefighters receive notice of an incident and then come into action (ride to the incident) is different, thus potentially affecting the impact of an event (stress reaction); 2. noncareer firefighters are more likely to know a victim (and their social environment) and come into contact with the victim, their next of kin or acquaintances, and/or the incident location, hence they could also be confronted with the incident in a private context; and 3. career firefighters indicate that because of their experience they are less predisposed to experience incidents as critical, although incident-related stressors (e.g., type of critical incident) and personal circumstances (both at work and at home) are also strong predictors of mental health problems (e.g., Fraess-Phillips et al., 2017). Career firefighters who are likewise active in a noncareer capacity are more prone to having to deal with this cumulative effect.

Social ecology differs for noncareer and career firefighters
Thanks to a strong mutual bond among the firefighting crew at the station, the collective can be considered a social ecology – a unique approach to fire service culture applied in our study – in which the mutual interaction between a person and their social environment produces informal peer support. This is important to the processing of critical incidents. Our study describes why the emergence and continuation of mutual bonds among noncareer and career firefighters varies, depending on the frequency, duration and group composition of meetings. It is usually easier for career firefighters to receive peer support during a 24-hour shift, as they tend to spend longer periods with a more or less regular crew of equals that know each other well. Although noncareer firefighters also have a good rapport, they meet less frequently, for shorter periods, and often in different compositions.

For both groups, management plays an important role in the processing of incidents. A new insight is that due to the minimal number of contact moments, it is harder for the management of noncareer firefighters to determine whether someone needs aftercare and how the processing is going, especially if the person does not imply or reveal it themselves. Last, for noncareer firefighters – more than for career firefighters – their local bond causes the personal environment to play a role both in the experiencing of incidents as critical and in the processing of such incidents.

Methodological reflection

To answer the research questions, ethnographic field research with a strong exploratory character was conducted. The data collection consisted of open interviews, participating observations and semi-structured in-depth interviews. The present section reflects on this methodology in relation to the aim of the research, starting with strengths and followed by limitations.

Strengths

One strength of this study is that method triangulation led to the further deepening of the research results. The different forms of data collection elucidated various perspectives of fire service culture: that which is observable on the outside was mapped out by means of observations while the interviews gathered more in-depth knowledge.

A second strength is the researcher triangulation. During the study, the researcher worked closely with a substantive expert (co-supervisor Dr. Ricardo Weewer) and two academic non-insiders (supervisor Prof. Anja Machielse and supervisor Prof. Joachim Duyndam). Observation reports and interview reports were discussed during monthly meetings of the research team.

A third strength is that the participants came from 19 career stations and 18 noncareer stations in 12 safety regions. The large number of participating observations from various fire stations and the open and semi-structured in-depth interviews combined with the

detailed, structured data collection and analysis method enhanced the validity and reliability of the study.

A fourth strength is that the researcher herself comes from a firefighter family and works as a researcher at the Fire Service Academy (the current Netherlands Academy for Crisis Management and Fire Service). She can therefore be considered as an insider researcher (Greene, 2014). An important advantage was that, because of this position, it was easier to gain access to and maintain contact with the research population. The position of insider researcher also contributed to the collection of data from a usually closed fire service culture. Participants trusted the researcher, felt she would understand them, and were therefore willing to tell more to her than to someone unfamiliar with the world of the fire service.

> *"I am not keen on telling details to an outsider, they won't understand anyway. In the beginning – and that really made me nuts – I'd be at a birthday party and everybody would ask me about my work. Not that I'm not proud of it, but I don't always want to be talking about work, certainly not in detail. But I find this useful, because you will be doing something with it." [R.2]*

Being an insider researcher can also have drawbacks. One disadvantage lies in moral dilemmas, another in possible bias.

One moral dilemma was the lack of consistent, clear demarcation between the researcher's personal and professional relationships with participants. To illustrate: after the participant observations and the in-depth interviews, contact also took place in the private sphere, at the initiative of the researcher or the participants. Hence, the researcher received – during drinks or dinner – additional information and insights about the research themes. The researcher was aware of her insider position from the start of the study, and to avoid misunderstandings she discussed with the participants to what extent the information was confidential. The non-confidential information was used subsequently in the study (for example as a case study during an observation or interview).

The researcher's insider position could cause a biased perception, as she may not be distanced enough from the culture to raise critical questions (e.g., at informal moments, while meeting with participants the research progress was being discussed) and because she could be projecting her views (influenced by being a member of a firefighting family) onto participants and the analysis (Greene, 2014). The risk of researcher bias was reduced by thoroughly discussing and reflecting on the research design, data collection and analysis with the research team (consisting of an expert and two academic non-insiders). Thus, a one-sided interpretation of the results was avoided as much as possible. Last, the risk of participant bias (participants who adjust their answers to what they think the researcher

wants to hear) was diminished by the large number of interviews with a variety of firefighters from different stations – resulting in a dataset consisting of diverse experiences, opinions and perspectives – combined with method triangulation.

Limitations

Alongside these strengths, the study has limitations. First, it was conducted in the Netherlands and only involved Dutch firefighters. Still, there is no reason to assume that Dutch fire service culture is so unique that it would differ from that in other Western countries when it comes to the investigated dimensions. Firefighters work mostly collectively in groups, have similar tasks (in a nutshell, 'to save people and animals'), and follow a hierarchical structure within a crew and a fire station. Also, in the Netherlands as in many other countries, the fire service is made up of both career and noncareer firefighters.

Most of the Dutch fire service corps consists of white, heterosexual men. A second limitation of this study is that women and minorities – like homosexuals or persons with a migration background – are underrepresented in the research population. It was not possible to describe differences between these minority groups and the dominant group of white males in terms of the impact and processing critical incidents (including the role of humour). Although in this study there was saturation of research results and despite the fact that firefighters from 37 stations were interviewed, findings on firefighters from these minority groups might differ.

As this study focuses on firefighters, a third limitation is that it remains unclear to what degree the results can be generalised to other first responders who are confronted with critical incidents. Whether such a comparison would be desirable is another point of discussion. Despite the overlap between the various service functions (Geuzinge et al., 2020), the individual diversity factors of firefighters and their specific culture should be taken into consideration (Jahnke et al., 2016). First responders such as firefighters, police officers and emergency medical services personnel experience a distinctive range of critical incidents because of their different requirements and tasks (Halpern et al., 2009), their proximity to diverse elements of the incident (e.g., differences in life threat and contact with injured or deceased victims) (De Soir et al., 2012) and their work culture. And compared to other first responders, firefighters are confronted with critical incidents more often and more intensely (Lee et al., 2016).

Practical implications for the fire service

This dissertation research offers insightful knowledge about fire service culture and the complex reality in which firefighters work. The research also produced knowledge on firefighters' processing of critical incidents. This knowledge is needed to better coordinate help and aftercare to the needs of firefighters: more understanding of the unique work culture and the complexity of the fire service profession, both within the fire service

(safety regions and fire service crews and stations) and outside it (e.g., with mental health professionals), will benefit the personal well-being of firefighters and the firefighting organisation in general (see also Johnson et al., 2020).

Research results on aftercare and group cohesion (which are interrelated) have several practical implications for professionals inside and outside the fire service, both general and specific.

General implications

> Our study upheld the insight (Isaac & Buchana, 2021; Jeannette & Scoboria, 2008) that firefighters prefer processing critical incidents through informal peer support. Peer support when processing critical incidents is also important, as is the cohesion between firefighter crews and stations that underlie it. It is key to know beforehand – preventively – how firefighters experience the support and internal cohesion of their crew or station and to stimulate or strengthen it as needed.

> Due to the different preferences for processing, the availability of both formal and informal support is essential. Despite the need for formal aftercare, firefighters sometimes feel resistance against this form of processing because of negative past experiences (see p. 57). To optimise formal aftercare it is crucial to discuss such negative experiences with them, and to remove their resistance so they will not feel inhibited to engage and/or participate in such help.

> Firefighters prefer to seek mental health professionals who are competent in firefighting culture. Given that organisational stressors (e.g., crew shifts, work culture and work pressure) affect firefighters' mental health (Duran et al., 2018), the differences between noncareer and career firefighters must be acknowledged by professionals (Stanley et al., 2017). The focus of interventions should lie on specific stressors for noncareer and career firefighters – like mindset, local connectedness and experience – and on strengthening their social ecology instead of enacting universal stress-reducing interventions.

> Throughout their careers, firefighters may experience critical incidents on a weekly basis. This frequency makes it essential to keep developing practical coping strategies that firefighters can practice during their shifts or training evening to manage their health and wellbeing.

> To further develop firefighters' resilience, it is important to implement the socioecological theory in programmes for resilience and when bolstering firefighters and their crew, station and organisation. Lessons can be drawn from various practical experiences and implementations of the social ecology of resilience. Because officers are usually not part of this social ecology, it is important to provide this specific group of firefighters with dedicated support and processing.[2]

2 A commanding officer is called to a major incident. He or she has final responsibility for the deployment of the firefighter crew(s) and the safety of the firefighters. The officer is also responsible for the collaboration and coordination with partners like police, ambulance services and the municipality. The officer is not part of the fire service crew (which consists of a crew commander, a driver and four crew members).

Specific implications

> The unnecessary exposure of firefighters to severe physical injuries and deaths (retinal pollution) must be prevented. Due care is required when firefighters are present at the incident location but have no role in the first response.
> In some safety regions the 'rule of seven' applies: requesting formal aftercare for the fire crew is standard procedure for seven types of incidents.[3] However, whether incidents are experienced as critical and how they are processed differs per individual. Aftercare should likewise be customised: firefighters feeling forced to participate in formal interventions, even if they do not need it or feel resistance against this processing modality, should be avoided.
> Special attention should be given to the processing of firefighters who work in both noncareer and career capacities, to firefighters experiencing a certain type of incident for the first time, and after giving CPR (particularly if family or friends are present at the incident location and/or when multiple CPRs are given within a short period of time).

Follow-up research

Scientific research into the impact of critical incidents on firefighters, processing strategies and the role of fire service culture is scarce (also compared to similar organisations like the military and police). Our research could inspire others to conduct research on and especially with the fire service.

This study brings forth several new questions that could – and should – be further investigated.

> Social support from the private network and that of colleagues sometimes overlap because colleagues can also be family or friends who meet outside work. In this study, we chose to describe only the support of direct firefighter peers. Follow-up research could also investigate other types of informal support and/or the interrelation between the two modalities.
> Because of the limited number of female firefighters in this study, it was not possible to describe differences between men and women in experiences with informal peer support after critical incidents. Follow-up research could emphasise gender differences, as other studies (Jacobsson et al., 2015) evidence that female firefighters describe critical incidents differently than their male peers. This might affect the processing of such incidents.
> Those in a leadership position (crew commander, shift leader or commanding officer) could be experiencing a lack of space for their own processing. They themselves are often the ones who conduct the formal or informal processing, as a result of which they do not always feel it is the moment or take the opportunity to share their own experiences and emotions. Besides, after the incident and after discussing it, officers are no longer part of

3 1. Accidents with serious injury, death or mutilation; 2. serious injury, death and resuscitation of children; 3. situations involving acquaintances of firefighters; 4. situations in which there is powerlessness on the part of the firefighters; 5. crimes; 6. violence against/harassment of firefighters; 7. all situations in which firefighters themselves identify a need for formal care.

the collective (the firefighter crew). The question is how those in a leadership position, given their hierarchical rank and responsibility, experience the processing of critical incidents using formal or informal peer support.

- The level of psychiatric morbidity under retired firefighters in Australia is extraordinarily high (Harvey et al., 2016). The loss of social support from peers may be playing an important role here. It is not yet known whether this morbidity also applies to retired Dutch firefighters. Research into this phenomenon is therefore desirable, specifically whether there is a difference between retired career and noncareer firefighters.
- Literature on moral injury – which may arise, for example, in incidents where first responders are confronted with complex life-and-death decisions that contravene or challenge their personal morals (Litz et al., 2009) – has primarily focused on military issues (Griffin et al., 2019), yet this is a more widespread phenomenon. Moral injury should therefore be understood in terms of the different contextual occupational factors of first responders (Lentz et al., 2021), such as firefighters. For example, what experiences do firefighters have with incidents where their own moral boundaries are transgressed? And to what extent are morally injurious experiences and moral injury comparable with critical incidents and critical incident stress?
- Research on social ecology has been conducted on health (Earls & Carlson, 2001; Grzywacz & Fuqua, 2010), minority youth (Newman & Fantus, 2015) and police resilience (Ghazinour & Rostami, 2021). In our research, the concept of social ecology was applied for the first time in relation to fire service culture. This concept should be further explored in relation to the fire service and other first responders. Because of the differences in requirements and tasks, different groups of first responders experience a gamut of critical incidents; to fully understand the experiences and how they are processed, research into the separate professional groups is needed (Halpern et al., 2009; De Soir, 2012). This could elucidate to what degree the fire service profession and its culture are unique and what are the commonalities with other first-responder instances like the police, ambulance services or other organisations in which the collective plays an important role, like the military. The same applies to organisations that provide assistance jointly with volunteers, such as the Red Cross, the Royal Netherlands Sea Rescue Institution (KNRM) and the Dutch Rescue Brigade (KNBRD).
- When coping with an incident firefighters prefer informal over formal peer support, such as CISD. Furthermore, informal peer support reduces the impact of a critical incident. There are indications that informal peer support is especially important in premeditated critical incidents, such as terrorist attacks. Spreading terror, fear and mistrust are the foremost goals of terrorists (Rudenstine & Galea, 2015); in such cases, informal peer support has a special function of restoring feelings of trust and safety (Birkeland et al., 2017). It would be interesting for follow-up research to investigate this, also given the establishment of quick response teams (QRT), where firefighters are deployed in situations of existing or impending brutal and extreme violence (including terrorism).

> Due to the sensitivity of the topics for follow-up research, more use of qualitative research methods is recommended for such studies. Qualitative scientific research into the fire service is a relatively unexplored terrain, yet our study has evidenced its value. It is especially the combination of observing and interviewing participants which deserves recommendation, as the various results make it possible to compare, combine, nuance and reflect on what participants share with the researcher at a specific moment in time.

Conclusion: how fire service culture affects the processing of critical incidents as described by firefighters

Firefighters experience critical incidents as a collective because they are part of the fire crew and station. The culture within the crew or station affects how these incidents are experienced and processed. To generate in-depth insight into the role of fire service culture when firefighters collectively process critical incidents, the resilience potential of fire service culture is researched in relation to the concept of social ecology. This research focused on four themes about the fire service culture that are important for the handling of critical incidents: (1) contextual aspects that are important in experiencing incidents as critical, (2) the role informal peer support plays when processing critical incidents, (3) the role of (black) humour in this process, and (4) which differences in ecology between noncareer and career firefighters affect the processing.

Mutual trust, tight cohesion, shared history and loyalty are characteristics of the fire service culture that are important when experiencing and processing critical incidents. This culture varies per fire crew or station. Due to group expectations, standards and norms that apply to the interpretation and processing of critical incidents, the culture within a crew or station can influence the impact of such incidents. Fire service culture can also be interpreted and experienced differently per individual: why and when firefighters experience incidents as critical also depends on the individual, their professional and personal circumstances, their work experience and the specific characteristics of the incident. Conversely, critical incidents influence the culture within a crew or station: jointly experiencing and processing a critical incident generally has a positive effect because mutual bonds are strengthened, but there can also be negative consequences if mistakes were made during the incident.

A strong mutual bond among the fire crew at the fire station makes that the collective can be considered a social ecology in which the mutual interaction between a person and their social environment produces informal peer support. While processing critical incidents, firefighters prefer this kind of support. Although due to the group culture firefighters can be reticent to seek support from colleagues, most firefighters are satisfied with and derive resilience from the support they receive from their immediate peers, with the important added value of getting support from their crew commander or shift leader. Given the

diverging interpretations of incidents as critical and the variety of preferences for processing such incidents, it is important for firefighters to also be able to use support outside their social ecology – such as formal peer support or professional individual care.

Humour plays an important role in fire service culture in general, and specifically as a coping mechanism to process critical incidents. Black humour strengthens resilience: it plays a role in building group cohesion and social support and positively influences the group atmosphere. Although humour generally unites, when implicit rules are not followed – and given people's different processing needs ¬– it can also be alienating and divisive. In this sense, the use of black humour demonstrates that the social cohesion or bond within a crew or station cannot be taken for granted.

Insight into the interaction of firefighters within their social ecology shows that resilience is influenced by both the individual firefighter and the social cohesion between the crew or station. The social ecologies of noncareer and career firefighters do differ though: the two groups experience incidents as critical for different reasons and there are also differences in the nature and degree of informal peer support. The emergence and continuation of mutual bonds vary between the two capacities, depending on the frequency and duration of meetings and the composition of participants in these meetings. Organisational distinctions between career and noncareer fire services should therefore be acknowledged and mental health professionals can tailor their assistance and aftercare to the needs of firefighters.

Using the deepening insights from this research about fire service culture and the complex social reality in which firefighters work, help and aftercare for firefighters could be better fitted to their needs, and their support system following critical incidents could and should be improved. Adequate mental health of firefighters serves not only their interest and sustainable deployability, it is also important for the fire service organisation and society.

> *"Sometimes you have to evaluate things with the crew after a serious incident. You then have to evaluate it technically, and sometimes you should just leave it at that. Processing is something very different than technical evaluation. You can have difficulty with something during an incident even when the incident isn't that exciting. Some days I feel like doing a CPR, other days I don't. The flexibility should be there, instead of trying to fit it all into a mould. It's not practical. People can be unaffected by things and still be okay." [R.20]*

List of abbreviations

CISD - critical incident stress debriefing
CPR - cardiopulmonary resuscitation

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Summary

Introduction

While performing their duties, firefighters deal with incidents that are dramatic and potentially traumatic. Usually, firefighters experience critical incidents as a collective, because they almost always work in a crew which in turn is part of a larger whole – the fire station. The culture within the crew and the fire station affects how these incidents are experienced and processed, and it has a major impact on firefighters' well-being and functioning. Regarding the processing of critical incidents, it is unclear how this is being affected by the fire service culture. This dissertation research aims to generate insight into the role of fire service culture when firefighters process critical incidents.

Since little research has been done on the role of fire service culture in handling critical incidents, an inductive exploratory study of fire service practice was conducted prior to the actual dissertation research. This preliminary study – aimed to identify themes emerging in fire service practice concerning fire service culture in general and the processing of critical incidents in particular – revealed four themes about firefighter culture that are important for the subsequent dissertation research: 1. Aspects of experiencing incidents as so critical that these incidents have an impact on firefighters and their crew; 2. Informal peer support from colleagues in the crew or station; 3. The role of humour; and 4. The differences between noncareer and career firefighters in experiencing critical incidents and the role of informal peer support in processing them. These themes provided the basis for the research questions of the dissertation. Furthermore, during the preliminary study, the suggestion arose that the concept of social ecology might be appropriate to gain more insight into the significance of fire service culture in processing critical incidents for individual firefighters, particularly for understanding their resilience against the impact of critical incidents. For this reason, in this research fire service culture is understood in relation to social ecology.

The main question of the dissertation reads:

> ***How does fire service culture as described by firefighters affect the processing of critical incidents?***

To answer this main question, the following sub-questions were posed:

1. Why do firefighters experience specific incidents that occur during their work as so critical that these incidents affect them and their crew?
2. What role does informal peer support play in helping firefighters cope with critical incidents?
3. What role does humour play as part of fire service culture in general, and specifically when dealing with critical incidents?
4. What are the differences between noncareer firefighters and career firefighters in terms of experiencing critical incidents and the role of informal peer support in processing such incidents?

To answer the research questions, ethnographic field research was conducted with an exploratory character that centred on the perspective of the firefighters themselves. A total of 88 participants were interviewed, and 20 participating observations took place with six fire crews. Participants came from 19 career stations and 18 noncareer stations in 12 safety regions.

Why firefighters experience certain incidents as critical and the impact of such incidents on individual firefighters and fire crews

Firefighters inevitably encounter critical incidents as part of their work. Most studies do not investigate why firefighters experience or perceive an incident as critical and which personal and contextual factors play a role. Furthermore, little research has been conducted into the impact of critical incidents on firefighters' private and working lives, as individuals (as first responders and private citizens) and as a collective (the fire crew). This first study provides a more in-depth understanding of this issue.

Whether an incident is experienced as critical depends on the type of incident, the circumstances of the incident and the personal situation. Directly or indirectly, experiencing a critical incident impacts firefighters during and after, both professionally and personally. Experiencing critical incidents affects crew dynamics.

The role of informal peer support in helping firefighters cope with critical incidents

Many firefighters prefer informal peer support to help them cope with critical incidents, but existing research does not clarify enough how such support is given. This second study provides initial evidence of the role of informal peer support in how firefighters cope with critical incidents. Insight is given into why informal peer support is experienced as a supplement to or replacement of a Critical Incident Stress Debriefing (CISD) session; how informal peer support is perceived at different times and varies per person and crew; how support is received from the collective, an individual colleague (including the crew commander) or a combination of the two; and the different reasons why firefighters do not experience informal support at all.

Firefighters will turn to informal peer support to cope with critical incidents provided that facilitating circumstances are present and there is adherence to certain implicit rules. The collective sharing of memories, whether immediately post-incident or over time, helps firefighters process critical incidents and promotes unit cohesion. Most

firefighters reported preferring these informal debriefings to formal sessions. By comparison, a minority of firefighters reported that they did not benefit from the informal interactions at all.

Humour as part of the fire service culture, specifically as part of coping with critical incidents

Although humour plays an essential role in how firefighters perform their work, it is not clear how they experience the role of humour as part of the fire service culture and why they might consider it important when coping with critical incidents. Firefighters are reluctant when it comes to sharing information about the use of humour, which may be why relatively few studies on this subject are available. This third study shows why and how firefighters think humour plays an important role as part of fire service culture in general, and specifically when coping with critical incidents. The first part discusses how firefighters explain the role of humour as part of fire service culture, the various types of humour, the times and occasions when humour is used, and when and how humour discriminates against certain people or excludes them. The second part explains what firefighters consider to be black humour, why they believe this humour helps them to individually and collectively cope with critical incidents, the role that black humour plays in relation to rituals, the boundaries of black humour, and why firefighters consider that their black humour is not intended for outsiders.

Joking and joviality are important elements of Dutch fire service culture. Firefighter humour usually creates unity but can also lead to exclusion. Whether a joke is perceived as funny depends on who makes the joke and the moment, content and frequency of the joke. Black humour is a means to start a conversation and to make it possible to discuss emotions indirectly, and tends to positively influence group dynamics. However, black humour is absent from certain critical incidents because of personal boundaries and unwritten rules. The absence of humour is a sign for the crew commander to pay extra attention to coping.

Why noncareer and career firefighters have different experiences with critical incidents, and the role of informal peer support in processing them

Most studies on firefighters' mental health and experiences with critical incidents are limited to career (i.e., professional) firefighters or at least make no distinction between noncareer and career firefighters. In many Western countries, however, the majority of firefighting personnel consists of noncareer (i.e., volunteer) firefighters. Studies focusing specifically on noncareer firefighters' experiencing of critical incidents or on the impact of the firefighting profession on both categories of firefighters show important differences between the two. The fourth and last study illustrates why a noncareer or a career capacity affects the psychological reactions of firefighters by describing that both experience incidents as critical for different reasons, and how informal peer support differs between the two categories.

Incidents are experienced as critical by both categories of firefighters, albeit for different reasons. Both impact and processing of incidents can be understood in relation to the social ecology in which firefighters work. The mindset with which noncareer and career firefighters ride to an incident, the local bond between the involved firefighters, and previous experiences with critical incidents vary. During their service, career firefighters get support from their peers more readily than noncareer firefighters. Management has less oversight of noncareer firefighters, making it harder to determine whether they need aftercare. Personal environment plays a larger role in the processing of incidents among noncareer firefighters than among career firefighters.

Conclusion

Firefighters experience critical incidents as a collective because they are part of the fire crew and station. The culture within the crew or fire station affects how these incidents are experienced and processed. To generate in-depth insight into the role of fire service culture when firefighters collectively process critical incidents, the resilience potential of fire service culture is researched in relation to the concept of social ecology.

Insight into the interaction of firefighters within their social ecology shows that resilience is influenced by both the individual firefighter and the social cohesion between the crew or station.

> Due to group expectations, standards and norms that apply to the interpretation and processing of critical incidents, the culture within a crew or station does influence the impact of critical incidents. Conversely, critical incidents influence the culture within a crew or station.
> A strong mutual bond among the fire crew at the fire station makes that the collective can be considered a social ecology in which the mutual interaction between person and social environment produces informal peer support. While processing critical incidents, firefighters tend to prefer this kind of support. Given the diverging interpretations of incidents as critical and the variety of preferences for processing such incidents, it is important for firefighters to also be able to use support outside their social ecology – such as formal peer support or professional individual care.
> Through (black) humour resilience is strengthened: it plays a role in building group cohesion and social support and positively influences the group atmosphere. Although humour generally unites, it can also be alienating and divisive.
> Insight into the interaction of firefighters within their social ecology shows that resilience is influenced by both the individual firefighter and the social cohesion between the crew or station. The social ecologies of noncareer and career firefighters do differ though: the two groups experience incidents as critical for different reasons and there are also differences in the nature and degree of informal peer support. The emergence and continuation of mutual bonds vary between the two capacities, depending on the frequency and duration of meetings and the composition of participants in these meetings.

Practical implications for the fire service

This dissertation research offers insightful knowledge about the fire service culture and the complex reality in which firefighters work. The research produced knowledge regarding the processing of critical incidents by firefighters. This knowledge is needed to better coordinate help and aftercare to the needs of firefighters: more understanding of the unique work culture and the complexity of the fire service profession, both within (safety regions and fire service crews and stations) and outside the fire service (e.g., with mental health professionals) will benefit the personal well-being of firefighters and the firefighting organisation in general.

In the area of aftercare and group cohesion (which are interrelated), research results have several general and specific practical implications for professionals in- and outside the fire service regarding prevention, the availability and resistance against formal peer support, the importance of customising, practical aftercare, the focus on specific stressors for noncareer and career firefighters and unnecessary exposure to severe physical injuries and deaths.

Samenvatting *(in Dutch)*

Inleiding

Tijdens de uitvoering van hun werkzaamheden krijgen brandweermensen te maken met incidenten die sterk ingrijpen op hun levens en hun welbevinden. Brandweermensen ervaren deze ingrijpende incidenten meestal als collectief, de cultuur binnen de brandweerploeg of het brandweerkorps is dan ook van groot belang bij het verwerken ervan. Onduidelijk is echter hoe de brandweercultuur de verwerking van ingrijpende incidenten beïnvloedt. Het doel van dit promotieonderzoek is het genereren van inzicht in de rol van de brandweercultuur bij de verwerking van ingrijpende incidenten door brandweermensen.

Omdat nog weinig onderzoek is gedaan naar de rol van brandweercultuur bij de verwerking van ingrijpende incidenten is voorafgaand aan het eigenlijke promotieonderzoek een inductief verkennend vooronderzoek uitgevoerd. Dit vooronderzoek omvatte een kwalitatief empirisch onderzoek bestaande uit een groot aantal open interviews met sleutelfiguren binnen de brandweerorganisatie. Uit dit vooronderzoek kwamen vier thema's over brandweercultuur naar voren die van belang zijn voor een verdiepend onderzoek naar de verwerking van ingrijpende incidenten: 1. Omstandigheden die maken dat incidenten impact hebben op brandweermensen; 2. Informele collegiale steun van collega's in de ploeg of het korps; 3. De rol van humor; en 4. De verschillen tussen brandweervrijwilligers en beroepsbrandweermensen bij het ervaren van ingrijpende incidenten en de rol van informele collegiale steun bij het verwerken ervan. Deze vier thema's vormden de basis voor de onderzoeksvragen van het promotieonderzoek. Daarnaast ontstond tijdens het vooronderzoek de gedachte dat het concept 'sociale ecologie' geschikt zou kunnen zijn om meer inzicht te krijgen in de betekenis van brandweercultuur bij het verwerken van ingrijpende incidenten door brandweermensen, in het bijzonder in hun weerbaarheid met betrekking tot de impact van ingrijpende incidenten. Om die reden wordt brandweercultuur in dit onderzoek begrepen in relatie tot sociale ecologie.

De hoofdvraag van dit onderzoek luidt:

> ***Hoe beïnvloedt de door brandweermensen omschreven brandweercultuur de verwerking van ingrijpende incidenten?***

Om de hoofdvraag te beantwoorden zijn de volgende deelvragen gesteld.

1. Wat maakt dat brandweermensen bepaalde incidenten die zich in hun werk voordoen, als zo ingrijpend ervaren dat ze impact hebben op henzelf en op de ploeg waarvan zij deel uitmaken?
2. Welke rol speelt informele collegiale steun bij de verwerking van ingrijpende incidenten door brandweermensen?
3. Welke rol speelt humor binnen de brandweercultuur in het algemeen en specifiek bij het verwerken van ingrijpende incidenten?
4. Welke verschillen bestaan er tussen brandweervrijwilligers en beroepsbrandweermensen met betrekking tot het ervaren van ingrijpende incidenten en de rol van informele collegiale steun in de verwerking?

Om de onderzoeksvragen te beantwoorden is een etnografisch veldonderzoek uitgevoerd met een sterk exploratief karakter, waarbij het perspectief van de brandweermensen zelf centraal stond. In totaal zijn 88 participanten geïnterviewd en vonden er 20 participerende observaties plaats bij zes verschillende brandweerploegen. De participanten zijn afkomstig van 19 beroepsbrandweerposten en 18 vrijwillige brandweerposten uit 12 veiligheidsregio's.

Waarom brandweermensen bepaalde incidenten als ingrijpend ervaren en de impact daarvan op henzelf en op de ploeg

De meeste studies naar de ervaring van ingrijpende incidenten door brandweermensen beschrijven niet waarom brandweermensen een incident als ingrijpend ervaren en welke persoonlijke en contextuele factoren daarbij een rol spelen. Daarnaast is er weinig onderzoek gedaan naar de impact van ingrijpende incidenten op het werk- en privéleven van brandweermensen. Het eerste deelonderzoek van dit promotieonderzoek maakt duidelijk waarom brandweermensen bepaalde incidenten als ingrijpend ervaren en wat de impact van dergelijke incidenten is op individuen (als hulpverlener en persoon) en het collectief (de brandweerploeg).

Ingrijpende incidenten

Brandweermensen noemen een aantal incidenten die ze als ingrijpend ervaren, zoals ernstige verkeersincidenten, verdrinkingen, reanimaties, suïcides en voor brandweermensen ongebruikelijke brandscenario's. Daarnaast ervaren ze incidenten als ingrijpend als er sprake is van fysiek letsel of overlijden van het slachtoffer, als ze het slachtoffer persoonlijk kennen, ze de hulpverlening als mislukt beschouwen, levensbedreigende situaties meemaken, er kinderen bij betrokken zijn en als collega's worden bedreigd of sterven.

Waarom en wanneer incidenten als ingrijpend worden ervaren, hangt af van het individu, de omstandigheden op het werk en thuis, werkervaring en de omstandigheden van het incident. Brandweermensen noemen zes omstandigheden die bepalen of een incident als ingrijpend wordt ervaren en impact heeft tijdens en na het incident: 1. het overlijden van een slachtoffer tijdens de hulpverlening, 2. het (onnodig) blootgesteld worden aan (zwaar) lichamelijk letsel of een overleden slachtoffer terwijl de brandweerman of -vrouw geen rol heeft bij de hulpverlening ("netvliesvervuiling"), 3. de aanwezigheid van omstanders en specifiek nabestaanden, waardoor brandweermensen afgeleid, belemmerd en/of bedreigd worden tijdens de hulpverlening, 4. de eerste uitruk voor een bepaald type incident en/of de eerste keer in een nieuwe functie, 5. de mate van ernst, de frequentie en tijdsperiode waarin (dezelfde of verschillende soorten) incidenten plaatsvinden, en 6. privéomstandigheden van brandweermensen waardoor zij zich bewust of onbewust kwetsbaarder voelen en/of persoonlijke associaties hebben tijdens incidenten.

Brandweermensen geven aan dat reanimaties vaak extra ingrijpend zijn vanwege een opeenstapeling van omstandigheden. Allereerst speelt mee dat het slachtoffer (in eerste instantie) overleden is en dat het lichaam aangeraakt moet worden om hulp te verlenen. Daarnaast vinden reanimaties vaak plaats in de persoonlijke leefomgeving van het slachtoffer en is er in vergelijking met andere hulpverleningstaken een grotere kans dat omstanders en/of nabestaanden de hulpverlening negatief beïnvloeden (bijvoorbeeld vanwege bedreigingen).

Impact van ingrijpende incidenten op brandweermensen en hun ploeg

Brandweermensen kunnen al tijdens de melding en het aanrijden een impact (stressreactie) ervaren. Dat is tevens het geval bij het vermoedelijk kennen van het slachtoffer, ook als ter plaatse duidelijk wordt dat dit vermoeden niet klopt. Brandweermensen geven aan dat ze direct, op de incidentlocatie, overweldigd worden door een ingrijpend incident. De impact kan dermate aangrijpend zijn dat ze niet altijd in staat zijn om hun rol als hulpverlener te vervullen.

Uit eerder onderzoek blijkt dat het meemaken van ingrijpende incidenten ook een positieve impact kan hebben, zoals post-traumatische groei. Deze groei is door de brandweermensen in dit onderzoek echter niet benoemd als direct, een-op-een-gevolg van een ingrijpend incident. Wel is aangegeven dat het brandweervak in het algemeen heeft geleid tot persoonlijke groei, relativeringsvermogen, veiligheidsbeleving en kwetsbaarheid van het leven.

Ingrijpende incidenten kunnen ook invloed hebben op de dynamiek binnen de ploeg. De brandweermensen in dit onderzoek beschrijven een positieve invloed op het collectief in termen van een versterkt groepsgevoel, kameraadschap en saamhorigheid en kan zowel lang- als kortdurend van aard zijn. Een negatieve impact wordt ervaren als tijdens het incident fouten zijn gemaakt. Daarnaast kunnen brandweermensen vanwege de collectieve aard en betekenis ook achteraf invloed ervaren van een ingrijpend incident, met name als collega's hun (traumatische) ervaringen delen met elkaar en met collega's die niet aanwezig waren bij het incident.

De rol van informele collegiale steun bij de verwerking van ingrijpende incidenten door brandweermensen

Bestaand onderzoek laat zien dat brandweermensen doorgaans de voorkeur geven aan informele collegiale steun bij de verwerking van ingrijpende incidenten, maar niet hoe dergelijke steun wordt gegeven. Het tweede deelonderzoek is gericht op de rol is van informele collegiale steun bij de verwerking van ingrijpende incidenten door brandweermensen. Het maakt duidelijk waarom informele collegiale steun wordt ervaren als belangrijke aanvulling op of vervanging van een Critical Incident Stress Debriefing (CISD) sessie; hoe informele collegiale steun op verschillende momenten wordt ervaren, afhankelijk van de persoon en de ploeg; hoe informele steun wordt ervaren vanuit het collectief (de ploeg), een individuele collega (inclusief de bevelvoerder) of een combinatie van beiden; en de verschillende redenen waarom brandweermensen geen informele collegiale steun ervaren.

Informele collegiale steun – voorkeuren

Informele collegiale steun is volgens brandweermensen effectief vanwege drie voordelen. Allereerst worden ervaringen en emoties gedeeld, zonder verdere uitleg, met ploegleden die dezelfde en/of vergelijkbare ervaringen hebben gehad en elkaar persoonlijk kennen. Ten tweede sluit informele collegiale steun beter aan bij de verschillende behoeften van brandweermensen. Incidenten kunnen namelijk op verschillende manieren worden geïnterpreteerd, afhankelijk van de betekenis die iemand eraan toekent zijn er verschillende behoeften qua verwerking. Informele collegiale steun is meer gericht op het voldoen aan deze persoonlijke behoeften dan de one-size-fits-all CISD-methode. Ten derde heeft steun van hun bevelvoerder (leidinggevende) voor brandweermensen een toegevoegde waarde, hoewel brandweermensen aangeven evenveel waarde te hechten aan de individuele en/of collectieve steun van hun andere collega's. Dat brandweermensen tevreden zijn met de steun die ze krijgen van hun collega's is een belangrijke bevinding, omdat uit eerder onderzoek is gebleken dat zij minder stress ervaren dan degenen die er niet tevreden over zijn.

Belemmerende factoren en de rol van brandweercultuur

Brandweermensen die individueel of collectief een incident als ingrijpend hebben ervaren, kunnen vanwege de groepscultuur terughoudend zijn met het zoeken naar informele steun van collega's. Ze geven aan niet graag over hun kwetsbaarheid te praten omdat ze bang zijn als zwak over te komen. Brandweermensen zijn sociaal getraind en voelen de behoefte om hun emoties te beheersen tijdens de hulpverlening zodat zij adequate hulp kunnen bieden. De verwerking start pas op de terugweg van het incident, als de ploeg in de tankautospuit zit en de deuren gesloten zijn. Deze 'emotieonderdrukking' hangt samen met het feit dat brandweermensen het doorgaans niet gepast vinden om emoties te tonen op de incidentlocatie. Hoe brandweermensen omgaan met hun emoties, wordt (deels) beïnvloed door de ervaren brandweercultuur, groepsverwachtingen en normen met betrekking tot het ingrijpende incident.

Brandweerhumor als onderdeel van de brandweercultuur en specifiek bij de verwerking van ingrijpende incidenten

Hoewel humor een essentiële rol speelt in de manier waarop brandweermensen werken, is niet duidelijk hoe zij de rol van humor als onderdeel van de brandweercultuur ervaren en waarom zij dit belangrijk vinden bij de verwerking van ingrijpende incidenten. Brandweermensen zijn terughoudend als het gaat om het delen van informatie over het gebruik van humor, er zijn dan ook relatief weinig studies over dit onderwerp beschikbaar. Dit derde deelonderzoek beschrijft vanuit het perspectief van brandweermensen waarom en hoe volgens hen humor een belangrijke rol speelt als onderdeel van de brandweercultuur in het algemeen, en in het bijzonder bij de verwerking van ingrijpende incidenten. In het eerste deel leggen brandweermensen uit welke rol humor heeft als onderdeel van de brandweercultuur, de verschillende soorten humor, de tijden en momenten waarop humor

wordt gebruikt, en wanneer en hoe humor brandweermensen discrimineert of uitsluit. Ook wordt uitgelegd wat brandweermensen als zwarte humor beschouwen, waarom zij geloven dat deze humor hen helpt bij het individueel en collectief verwerken van ingrijpende incidenten, welke rol rituelen daarbij spelen, wat de grenzen van zwarte humor zijn en waarom brandweermensen vinden dat zwarte humor niet bedoeld is voor buitenstaanders.

Humor bij de brandweer

Grappen en jovialiteit zijn belangrijke elementen van de brandweercultuur. Brandweerhumor speelt een rol bij het opbouwen van groepscohesie en het definiëren van groepsgrenzen. Humor schept volgens brandweermensen een goede sfeer, wordt beschouwd als een communicatiemiddel en een manier om elkaar te testen, het wordt gebruikt als verdedigingsmechanisme in de vorm van zelfspot en om gezamenlijk ingrijpende incidenten te verwerken. Er zijn verwachtingen over wie de grappenmaker is, over wie de grap wordt gemaakt en hoe die persoon ('het slachtoffer') reageert. Grappen worden gemaakt in een context waarin ongeschreven regels een belangrijke rol spelen. Hoewel humor eenheid schept, merken brandweermensen ook de keerzijde van humor op, namelijk de mogelijkheid zich buitengesloten te voelen. Doordat brandweermensen zich niet altijd willen distantiëren van de groep en sociaal wenselijk reageren indien zij daartoe in staat zijn, wordt grensoverschrijdende humor niet altijd als zodanig bespreekbaar gemaakt.

Zwarte humor bij de verwerking van ingrijpende incidenten

Voor de meeste brandweermensen speelt humor een cruciale rol bij de verwerking van ingrijpende incidenten. Ze verwijzen daarbij gevallen naar zwarte humor, om zo het onderscheid te maken met andere vormen van humor. Door het gebruik van zwarte humor (bijvoorbeeld in de vorm van woordspelingen en rituelen) wordt de impact van negatieve ervaringen verkleind. De timing van een grap is daarbij van belang. Of brandweermensen collectief zwarte humor toepassen bij hun verwerking van incidenten, hangt af van (mogelijke) verschillen binnen de ploeg wat betreft de interpretatie van een incident en de (verschillende) behoeftes qua verwerking. Bij bepaalde ingrijpende incidenten is zwarte humor helemaal niet aanwezig. Het betreft dan voornamelijk incidenten met kinderen en jong volwassenen en incidenten waarbij brandweermensen zich machteloos voelen. Het gebruik van humor overschrijdt in dergelijke gevallen persoonlijke grenzen en ongeschreven regels. Als er na een ingrijpend incident geen grappen worden gemaakt door de ploeg en/of als een ploeglid niet meelacht met de grappen, is dit voor de leidinggevende doorgaans het teken om extra aandacht te geven aan de verwerking.

Waarom brandweervrijwilligers en beroepsbrandweermensen verschillende ervaringen hebben met ingrijpende incidenten en de rol van informele collegiale steun in de verwerking

De meeste onderzoeken naar de mentale gezondheid van brandweermensen en ervaringen met ingrijpende incidenten beperken zich tot beroepsbrandweermensen of maken geen onderscheid tussen beroepsbrandweermensen en brandweervrijwilligers. In veel westerse landen bestaat het grootste deel van het brandweerpersoneel echter uit brandweervrijwilligers. Studies die zich specifiek richten op het ervaren van ingrijpende incidenten door brandweervrijwilligers of op de impact van het brandweervak leggen belangrijke verschillen tussen beide groepen brandweermensen bloot. Dit vierde en laatste deelonderzoek beschrijft om welke redenen brandweervrijwilligers en beroepsbrandweermensen incidenten als ingrijpend ervaren en welke verschillen er zijn in de informele collegiale steun.

Het ervaren van ingrijpende incidenten om verschillende redenen

Hoewel Nederlandse brandweervrijwilligers en beroepsbrandweermensen dezelfde opleiding volgen, doorgaans dezelfde taken hebben en hulp verlenen bij vergelijkbare incidenten, zijn er verschillende redenen waarom zij incidenten als ingrijpend ervaren. Ten eerste verschilt de context waarin brandweervrijwilligers en beroepsbrandweermensen de melding van een incident ontvangen en vervolgens in actie komen. Dit heeft invloed op de impact ervan aangezien brandweermensen al tijdens de melding en het aanrijden een impact (stressreactie) kunnen ervaren. Ten tweede hebben brandweervrijwilligers een grotere kans dat zij vanwege hun lokale verbondenheid het slachtoffer van een incident kennen. Ze komen vaker in aanraking met (nabestaanden of bekenden van) het slachtoffer en/of de incidentlocatie waardoor zij (ook privé) geconfronteerd worden met het incident. Ten derde geven beroepsbrandweermensen aan dat zij vanwege hun ervaring incidenten minder snel als ingrijpend ervaren dan brandweervrijwilligers, hoewel voor beiden geldt dat incidentgerelateerde stressoren (bijvoorbeeld het soort ingrijpend incident) en persoonlijke omstandigheden (zowel op het werk als thuis) sterke voorspellers zijn van mentale gezondheidsproblemen. Tenslotte krijgen beroepsbrandweermensen die tevens actief zijn als brandweervrijwilliger sneller te maken met het opstapeleffect.

De sociale ecologie is voor brandweervrijwilligers en beroepsbrandweermensen verschillend

De onderlinge verbondenheid binnen brandweerploegen is doorgaans sterk, dat geldt zowel bij brandweervrijwilligers als bij beroepsbrandweermensen. Het collectief is dan ook op te vatten als een sociale ecologie, waarin de wederzijdse interactie tussen persoon en omgeving informele collegiale steun oplevert die van belang is voor het verwerken van ingrijpende incidenten. De totstandkoming en continuering van de onderlinge verbondenheid tussen brandweervrijwilligers en beroepsbrandweermensen is verschillend vanwege de frequentie

en tijdsduur van ontmoetingen en de samenstelling van de ploeg tijdens deze ontmoetingen. Het is voor beroepsbrandweermensen doorgaans eenvoudiger om steun te ontvangen tijdens een 24-uursdienst , omdat zij frequent langere tijd met elkaar doorbrengen met een (min of meer) vaste ploeg collega's die men goed kent. Hoewel brandweervrijwilligers ook een goede band met elkaar hebben, ontmoeten zij elkaar minder frequent, korter en vaker in wisselende samenstellingen.

Verder geldt voor beide groepen dat de leidinggevende een belangrijke rol speelt bij de verwerking van ingrijpende incidenten. Vanwege het geringe aantal contactmomenten, is het voor leidinggevenden van vrijwilligers echter lastiger om vast te stellen hoe de verwerking verloopt en of iemand behoefte heeft aan nazorg, met name als de betreffende persoon dit niet zelf aangeeft. Tot slot geldt voor brandweervrijwilligers, meer dan voor beroepsbrandweermensen, dat vanwege hun lokale verbondenheid de persoonlijke omgeving een rol speelt in zowel het ervaren van incidenten als ingrijpend als in de verwerking ervan.

Conclusie

Brandweermensen ervaren ingrijpende incidenten als een collectief omdat ze deel uitmaken van een brandweerploeg en -korps. De cultuur binnen de ploeg of het korps is van groot belang bij de verwerking van ingrijpende incidenten. Dit promotieonderzoek biedt diepgaand inzicht in de rol van brandweercultuur bij het collectief verwerken van ingrijpende incidenten door brandweermensen. Een sterke onderlinge band in de ploeg en het korps maakt dat het collectief kan worden beschouwd als een sociale ecologie waarin de onderlinge interactie tussen persoon en sociale omgeving informele collegiale steun oplevert.

Waarom en wanneer brandweermensen incidenten als ingrijpend ervaren hangt af van het individu, persoonlijke omstandigheden (zowel op het werk als privé), hun werkervaring en de specifieke kenmerken van het incident. Brandweermensen geven bij de verwerking van ingrijpende incidenten doorgaans de voorkeur aan informele collegiale steun. Hoewel brandweermensen terughoudend kunnen zijn in het zoeken van steun bij collega's, zijn de meeste brandweermensen tevreden over de steun die zij ontvangen van hun directe collega's – waarbij de ondersteuning door hun bevelvoerder of ploegchef een belangrijke toegevoegde waarde heeft.

Kenmerken die van belang zijn bij het ervaren en verwerken van ingrijpende incidenten zijn wederzijds vertrouwen, hechte samenhang, gedeelde historie en loyaliteit. Ook groepsverwachtingen, -standaarden en normen die gelden voor de interpretatie en verwerking van ingrijpende incidenten, hebben invloed op de cultuur binnen een ploeg en korps en daarmee op de impact van ingrijpende incidenten. Het gezamenlijk ervaren en verwerken van een ingrijpend incident heeft meestal een positief effect doordat onderlinge banden worden versterkt, maar kan ook negatieve consequenties hebben als er tijdens het incident fouten zijn gemaakt. Andersom hebben ingrijpende incidenten invloed op de cultuur binnen een ploeg of korps.

Humor speelt een belangrijke rol bij het versterken van de veerkracht van een ploeg of korps. Het speelt een rol bij het opbouwen van groepscohesie en sociale steun en heeft een positieve invloed op de groepssfeer. Hoewel humor doorgaans zorgt voor eenheid kan het in het geval van het niet naleven van ongeschreven regels en het hebben van andere verwerkingsbehoeften ook zorgen voor uitsluiting en verdeeldheid. Het gebruik van zwarte humor illustreert dat de sociale cohesie binnen een ploeg of korps niet vanzelfsprekend is.

De sociale ecologie van brandweervrijwilligers en beroepsbrandweermensen verschillen van elkaar en tussen beide groepen zijn er verschillen in de wijze en mate van informele collegiale steun. Het ontstaan en bestendigen van onderlinge banden varieert voor beroepsbrandweermensen en brandweervrijwilligers en is afhankelijk van de frequentie en duur van de ontmoetingsmomenten en de samenstelling van de deelnemers aan deze momenten. Organisatorische verschillen tussen brandweervrijwilligers en beroepsbrandweermensen moeten daarom worden erkend en professionals in de geestelijke gezondheidszorg hun hulp en nazorg beter kunnen afstemmen op de behoeften van brandweermensen.

Met behulp van de verdiepende inzichten uit dit promotieonderzoek over de brandweercultuur en de complexe sociale realiteit waarin brandweermensen werken, kan de hulp en nazorg aan brandweermensen beter worden afgestemd op hun behoeften en de ondersteuning van brandweermensen na ingrijpende gebeurtenissen worden verbeterd. Een goede geestelijke gezondheid van brandweermensen dient niet alleen het belang en de duurzame inzetbaarheid van brandweermensen, maar ook het belang van de brandweerorganisatie en de maatschappij.

Implicaties voor de brandweerpraktijk

Dit onderzoek geeft inzicht in de brandweercultuur en de complexe realiteit waarin brandweermensen werken. Het onderzoek heeft kennis opgeleverd over de verwerking van ingrijpende incidenten door brandweermensen. De onderzoeksresultaten hebben praktische implicaties voor professionals binnen en buiten de brandweer, zowel op het gebied van nazorg als van groepscohesie (die onderling samenhangen).

Algemene aanbevelingen

> De resultaten onderstrepen het inzicht dat de voorkeur van brandweermensen bij de verwerking van ingrijpende incidenten doorgaans uitgaat naar informele collegiale steun. Collegiale ondersteuning bij de verwerking van ingrijpende incidenten is dan ook van belang, evenals de cohesie binnen brandweerploegen en -korpsen die hieraan ten grondslag ligt. Het is daarom van belang om collegiale steun en interne cohesie van een ploeg of korps te faciliteren en waar nodig te versterken.

> Vanwege uiteenlopende interpretaties van incidenten als ingrijpend en verschillende voorkeuren voor de verwerking van dergelijke incidenten is het van belang dat brandweermensen ook gebruik kunnen maken van formele collegiale steun, zoals zoals

CISD of professionele individuele hulp. Ondanks de behoefte aan formele nazorg voelen brandweermensen soms weerstand tegen deze vorm van verwerking vanwege negatieve ervaringen in het verleden (bijvoorbeeld ontevredenheid over de begeleiding tijdens de formele nazorg van eerdere incidenten). Voor het optimaliseren van de formele nazorg is het van belang dergelijke negatieve ervaringen bespreekbaar te maken, zodat hun weerstand wordt weggenomen en zij zich niet belemmerd voelen om dergelijke hulp in te schakelen en/of eraan deel te nemen.

> Brandweermensen zoeken bij voorkeur hulp bij professionals in de geestelijke gezondheidszorg die bekend zijn met de brandweercultuur. Organisatorische stressoren, zoals ploegendiensten, werkcultuur en werkdruk kunnen een impact hebben op de mentale gezondheid van brandweermensen. Deze stressoren verschillen echter tussen brandweervrijwilligers en beroepsbrandweermensen. Van professionals wordt verwacht dat ze deze verschillen (h)erkennen. De focus van interventies dient verder te liggen op specifieke stressoren voor brandweervrijwilligers en beroepsbrandweermensen – zoals mind set, lokale verbondenheid en ervaring – en op het versterken van hun sociale ecologie in plaats van op universele stressverminderingsinterventies.
> Brandweermensen kunnen gedurende hun hele loopbaan frequent ingrijpende incidenten meemaken. Vanwege deze frequentie is het van essentieel belang dat er binnen de brandweerorganisatie praktische verwerkingsstrategieën worden ontwikkeld die brandweermensen tijdens hun dienst of oefenavond kunnen oefenen om hun gezondheid en welzijn op pijl te houden.
> Om de veerkracht van brandweermensen verder te ontwikkelen, is het van belang het concept van sociale ecologie toe te passen in programma's voor veerkracht en in het versterken van brandweermensen, hun ploeg, korps en organisatie. Hierbij kunnen lessen worden getrokken uit diverse praktijkervaringen en -toepassingen van de veerkracht van de sociale ecologie, ook elders, in andere beroepsgroepen. Omdat officieren meestal geen deel uitmaken van deze sociale ecologie (brandweerploeg), is het van belang om aandacht te besteden aan de verwerking van deze specifieke groep brandweermensen.[1]

1 Een officier van dienst wordt opgeroepen bij grote incidenten. Hij of zij is eindverantwoordelijk voor de inzet van de brandweerploeg(en) en de veiligheid van de brandweermensen. De officier is ook verantwoordelijk voor de samenwerking en afstemming met partners zoals politie, ambulancediensten en de gemeente. De officier maakt geen deel uit van de brandweerploeg (bestaande uit een bevelvoerder, een chauffeur en vier bemanningsleden).

Specifieke aanbevelingen

> Voorkomen moet worden dat brandweermensen onnodig worden blootgesteld aan ernstig lichamelijk letsel en aan (het van nabij meemaken van) overlijden van slachtoffers (netvliesvervuiling). Zorgvuldigheid is geboden wanneer brandweermensen aanwezig zijn op de plaats van het incident, maar geen rol hebben bij de hulpverlening.

> In bepaalde veiligheidsregio's geldt de 'regel van zeven', dat wil zeggen dat bij zeven soorten incidenten standaard formele nazorg wordt aangevraagd voor de brandweerploeg.[2] Het al dan niet ervaren van ingrijpende incidenten en de verwerking ervan is echter persoonsafhankelijk. Nazorg vraagt dan ook om maatwerk: voorkomen dient te worden dat brandweermensen zich gedwongen voelen deel te nemen aan formele interventies, ook als ze daar geen behoefte aan hebben of weerstand voelen tegen deze manier van verwerken.

> Er dient speciale aandacht te zijn voor de verwerking van brandweermensen die vrijwilliger én beroeps zijn, aan brandweermensen die voor het eerst een bepaald type incident meemaken en na het geven van reanimaties (in het bijzonder als familie of vrienden aanwezig zijn op de plaats van het incident en/of wanneer er in korte tijd meerdere reanimaties plaatsvinden).

2 Ongevallen met ernstig letsel, overlijden of verminking; 2. Ernstig letsel, overlijden en reanimatie van kinderen; 3. Situaties waarbij bekenden van brandweermensen betrokken zijn; 4. Situaties waarbij sprake is van onmacht bij brandweermensen; 5. Misdrijven; 6. Geweld tegen/intimidatie tegen brandweermensen; 7. Alle situaties waarin brandweermensen zelf signaleren behoefte te hebben aan formele zorg.

Dankwoord *(in Dutch)*

Zes en een half jaar heb ik er op moeten wachten, maar ik kan het eindelijk zeggen: dit brandje is geblust.

En dat kon ik niet doen zonder de hulp van velen.

Op 3 januari 2016 stuurde ik vanaf een zonnig Vietnamees strand een mail naar Ricardo Weewer, met daarin de mededeling dat ik graag wilde promoveren. Hoewel de mogelijkheden daartoe binnen het instituut destijds beperkt waren, reageerde je direct enthousiast. Je enthousiasme, maar zeker ook je vakkennis maken je niet alleen tot een waardevolle steun en toeverlaat, maar ook een fantastische collega en de beste co-promotor die ik mij kan wensen. Dank je wel! Daarnaast wil ik het NIPV bedanken – in het bijzonder Wim Beckmann en Annemieke Hendriks – voor de mogelijkheid (in tijd en financiën) om aan mijn onderzoek te werken. Mijn collega-onderzoekers wil ik ook bedanken, voor het luisteren, het meedenken, het stellen van kritische vragen en het delen van eigen ervaringen en anekdotes.

Er is weinig literatuur beschikbaar over de Nederlandse brandweercultuur. De literatuur die er is, wilde ik dan ook graag bemachtigen. Dat gold ook voor het veel geciteerde, maar lastig te vinden boekje *Hulpverlener en brandweerman*, geschreven door Burggraaf in 1989. En bij wie moet je dan zijn? Bij historicus Gerard Koppers. Met het boekje onder de arm heb ik mijn eerste (open) interviews gehouden, nog steeds blader ik het af en toe door. Bedankt Gerard dat je mij dit waardevolle boekje – inclusief bijbehorend nieuwsbericht – hebt geschonken.

Na het lezen van stapels literatuur brak veruit het allermooiste onderdeel van dit onderzoek ("werkstuk") aan, namelijk het voeren van gesprekken met (oud-)brandweermensen. Zonder jullie medewerking was dit onderzoek niet mogelijk geweest. In een rumoerige tijd waarin de term 'brandweercultuur' een negatieve lading had, durfden jullie met mij het gesprek hierover aan te gaan. Jullie gunden mij niet alleen inzicht in jullie leefwereld tijdens interviews, maar ook tijdens 24 uursdiensten en oefenavonden. Ik kan nooit genoeg boterkoeken, kokosmakrons, chocolade cakes en appeltaarten bakken om mijn dankbaarheid te uiten. Dank jullie wel! Daarnaast wil ik de veiligheidsregio's waar ik onderzoek heb mogen doen bedanken voor de vrijheid die ik kreeg. Speciale dank gaat daarbij uit naar de veiligheidsregio's Haaglanden, Utrecht, Drenthe en Rotterdam-Rijnmond.

En toen moest ik weer terug achter de computer. Jullie hebben mij vaak een tikje chagrijnig zien kijken, Anja en Joachim, met name tijdens het bespreken van jullie feedback op de artikelen. Maar wat was het fijn samenwerken met jullie. Anja, ik heb ontzettend veel aan jou te danken. Dat je naast een inspirerende onderzoeker – op inhoud én op methodologie – ook een gezellig en fijn mens bent wist ik al uit mijn tijd bij LESI, maar nu weet ik ook hoe fantastisch je als promotor bent. Geduldig, scherp, betrokken, nauwkeurig. Ik vond het fantastisch om (weer) samen met jou te werken. Joachim, je was meer dan een waardevolle

aanvulling met je frisse blik en focus op het theoretisch kader. Jullie blijvende verwondering over mi. doodnormale brandweerzaken vond ik ontzettend leerzaam. Bedankt voor jullie geduld!

Hoe cliché, maar waar: een foto zegt meer dan 1000 woorden. Na een oproep op sociale media waarin ik vroeg naar "fotogenieke brandweerposten en dito brandweermensen" stroomden de enthousiaste reacties binnen. Arjan Bruinstroop bedankt voor het maken van de fantastische foto's in dit proefschrift, en de brandweermensen van de posten Mijdrecht en Houten bedankt voor jullie gastvrijheid: jullie staan er prachtig op! Ook wil ik Margriet Elbersen bedanken voor de stijlvolle opmaak van dit proefschrift en Yvonne Stassen voor de fantastische communicatie rondom dit proefschrift.

Eigenlijk zou ik pas een nieuwe hobby zoeken als mijn proefschrift helemaal af was. Maar die hobby openbaarde zich al bij het schrijven van de discussie, wat een liefdesgeluk. Stephan, het ging op de ASW 901 vaak over de brandweer en het zal nog vaak over de brandweer gaan, bedankt voor het (geduldig) luisteren. Ze zoeken nog vrijwilligers bij de brandweerpost om de hoek, wist je dat?

Selma en ("ben jij familie van") Erik ("?"), als alles meezit staan we straks samen op het podium en is de cirkel (voor mij) weer rond. Van een vaag idee aan jullie keukentafels, tot aan uitgebreide gesprekken over bevindingen, voorlopige conclusies, geschikte titels van dit proefschrift en de beste feestlocaties voor het promotiefeest. Ik kan met een gerust hart flauwvallen. Het is een eer dat jullie mijn paranimfen willen zijn, dank jullie wel.

Gekscherend zei ik tijdens kennismakingsgesprekken met brandweermensen dat ik lange tijd het zwarte schaap van de familie was omdat ik – in tegenstelling tot mijn broers Erik en Lowie – nooit de ambitie heb gehad om bij de brandweer te werken. Nu hoor ik er een beetje bij (hoop ik) en neemt broer Jorit ("ik heb gewoon niets met de brandweer") de honneurs in zijn eentje waar. Bedankt voor het samen ophalen van herinneringen aan de brandweer, en de correcties op mijn herinneringen (ook daar is familie voor). Dit proefschrift startte ik met jeugdherinneringen aan mijn vader, en eindig ik met een citaat van mijn moeder: "De hele familie is en was brandweer. Eigenlijk kan ik er een boek over schrijven!" Helemaal mee eens.

PS Nu ik toch je aandacht heb: na het lezen van dit proefschrift sta je natuurlijk te trappelen om ook brandweerman of -vrouw te worden. Wist je dat het werken bij de brandweer als vrijwilliger prima te combineren is met je baan? Informeer eens bij je brandweerkazerne in de buurt, de koffie staat klaar (neem koek mee, succes gegarandeerd). Wie weet start jij je eigen familietraditie…

The author

Karin Dangermond, born in 1987, spent most of her childhood in Enkhuizen. Together with her brothers she grew up in a firefighter family. After her Gymnasium diploma she moved to Utrecht to study Interdisciplinary Social Sciences. In 2010 she graduated with the master's degree Multiculturalism in comparative perspective (Utrecht University) and in 2011 with the master's degree Holocaust and Genocide Studies (University of Amsterdam).

The most interesting part of her university education was doing research. After her studies, Karin started as a researcher at LESI, a scientific knowledge institute that stimulates reflection on social intervention practices. Here she became colleagues with her former teacher and promoter prof. dr. Anja Machielse. During this period she conducted research regarding loneliness and social isolation among the elderly. She combined this job with the editorship of Journal of Social Intervention: Theory and Practice. Interested in one of the darkest pages of Dutch history, the Second World War, she also worked at the NIOD, Institute for War, Holocaust and Genocide Studies as a research assistant.

Until in 2014, when she saw a vacancy for editor at the Dutch Fire Service Academy. Although this institute was unknown to her until then, it felt immediately 'familiar'. After two years she decided to combine her editorship and she started the graduate school of the University of Humanistic Studies in Utrecht for this PhD (part-time).

Her dissertation research further fuelled her interest in research, so she has been working as a researcher since 2019 at the Netherlands Institute for Public Safety (NIPV). Her work focuses on the human side of the fire service. Important topics are leadership, organization and culture of the fire service, and recruitment and retainment of noncareer firefighters.

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Appendix 1

Topics list of open interviews

No.	Main theme	Subtheme
1	Introduction	> Proposal round > Aim of dissertation > Aim of this open interview
2	Personal background	> Age, civil status, place of residence > Started/ended service (number of service years, as applicable) > Motivation to become a firefighter > Task/function description
3	Fire service culture	> Description of fire service culture > Mentality within the fire service > > Processing of critical incidents > Comradery/group of friends > Unwritten rules > Social control > Firefighting as a social club > Firefighting as a vehicle to make/maintain business contacts > Contact outside the fire service (as friends, family, neighbours, etc.)
4	Formal and informal leadership	> What makes a firefighter leader a good leader? > Management hierarchy and workplace – in cold and warm phases
5	Conclusion	> Questions, suggestions, tips?

Appendix 2

Observation scheme

No.	Theme	Points of attention
1	Name of person observed	
2	How/via whom we came into contact with the crew	
3	Remarks when making the appointment	
4	Date	
5	Day of the week	
6	Observation number	
7	Region, station, crew	
8	Description of station	> Surface area and layout, especially common and private spaces > Location > Specialism > Contact with daytime service/office > Status > Image
9	Who is present?	> Name > Function > Sex > Age > Years of service > Ethnic background > Are there subs? > Also noncareer besides career?
10	Duration of the observation	
11	Atmosphere	Brief description of the atmosphere during the observation
12	Trajectory of the observation	Attitude of crew (open, nervous, talks easily, etc.)
13	Brief description of observation	> Things that stand out > Topics the crew kept coming back to > In uniform or not
14	Total number of service calls during observation	Including priority calls and brief description
15	Daily schedule	> Global timeline > Group vs individual activities

16	Reactions/questions/ remarks of crew during observation	
17	Description of valuable moments	> Cooking/dinner > Sports > Watching TV > Being together > Compliments > Enthusiasm > Sharing emotions > Good disposition > Showering
18	Role of crew commander within crew	> During incident vs during shift > Status within crew > Calling someone on their behaviour
19	Group dynamics	> Generation > Hierarchy > Humour > Informal leadership > Topics of discussion
20	Informal aftercare	> Motivation why > Humour > Processing > Description of moments when back (in the car/ having coffee/ taking a shower/ during clean-up duty/ during sports) Group vs individual
21	Formal aftercare	> Motivation why > Before > During > After

Appendix 3

Topics list of semistructured in-depth interviews

No.	Main theme	Subtheme
1	Personal characteristics + motivation	> Name > Age > Civil status > Children > Highest educational level > Noncareer and/or career > Current firefighter function > Other function (or for noncareer: current function) > Safety region > Fire station > Crew + number of years > Number of years as firefighter (career and/or noncareer) > How did you end up as a firefighter? And why?
2	Description of station and crew	> Description of station (history, building, crew system, etc.) > Description of crew (sex, educational level, age, ethnic background, years of experience, how long has this group been around, career and noncareer?) > Subs/rotation + effect
3	Role of crew commander	> Position of crew commander within crew [hierarchy] > Responsibility of crew commander within crew > Qualities of a good crew commander > Influence of crew commander on group dynamics [social cohesion]
4	Sense of community	> Bond with the crew + change > Acceptance within crew > Valuable moments > Difficult moment for crew > Stopping by [loyalty] > Interactions outside work > Use of social media

5	Social needs from the crew	> Attachment: feelings of safety and security with a tight emotional bond > Social integration: interests and concerns are shared by others > Reassurance of worth: skills and capacities are recognised and valued by others > Reliable alliance: the assurance that tangible solidarity is available if needed > Guidance: the availability of authority figures to give advice > Opportunity for nurturance: the feeling of being needed by others
6	Critical incidents	> Incidents or events that made an impression [description + directly/indirectly experienced] > Experience with critical incidents > Link personal experiences to incident > Link personal circumstances to incident > Physical or psychological threat > Loss of control > Feeling vulnerable > Feeling helpless > Feeling guilty > Shame > Transgressing one's own moral boundaries
7	Circumstances of critical incidents	> Influence of time of the incident [night/day/weekend/weekday] > Influence of riding time > Negatively surprised versus mentally prepared
8	Processing: support from crew	> Emotional support: love, affection and sympathy > Instrumental support: concrete help with daily activities, appreciation > Informative support: receiving advice and information > Count on everyone for support? > Moments/opportunities of experienced support [formal and informal, e.g., during sports, cooking, eating, watching TV, training evening, drinks after training evening, parties, private moments, social media, etc.] > Role of humour > Tradition after a first critical incident > Colleague sharing critical incident

9	Processing: coping strategy	Active (seeking social support, expressing emotions) Passive (avoidance, keeping it inside)
10	Processing: collective vs individual	> Talk with entire crew or specific colleagues > Deciding whether to discuss critical incidents: > general: group composition (including informal management) > presence of woman > subs/rotation > presence of sub
11	Processing: hindrances	> Talking easily versus feeling inhibited > Hiding emotions [from citizens, management, peers, family] > Good firefighter (m/f) showing vulnerability > Present versus past [changed organisation, spirit of the times, function, personal] > Regularity
12	Processing: formal support	> Experience with formal aftercare (TCO, BOT, reception/aftercare team) > Added value compared to informal processing
13	Processing: support at home	> Talking with partner/friends/family > Preference: colleagues or partner/friends/family > Switch between firefighting and home life
14	Short-term impact of critical incident	> What happened when, after the incident, you: > got back in the car > got to the station > and then went home > during the next shift/training evening > Did you talk with anyone about it? (formal BOT/COT and/or informally with crew and/or privately, need to process immediately/later)
15	Long-term impact of critical incident	> Effect [personal and as firefighter + time period] > Effect of sharing emotions when processing > Changed person [second injury] > Changed crew bond [as firefighter] > Changed crew interactions [social cohesion, loyalty, comradeship, fragmentation, etc.]
16	Conclusion	> Best firefighter joke? > Do you have any questions? > What did you think of this talk? Have you ever talked in this way about your profession?

17	Description of valuable moments	> Cooking/dinner > Sports > Watching TV > Being together > Compliments > Enthusiasm > Sharing emotions > Good disposition > Showering
18	Role of crew commander within crew	> During incident vs during shift > Status within crew > Calling someone on their behaviour
19	Group dynamics	> Generation > Hierarchy > Humour > Informal leadership > Topics of discussion
20	Informal aftercare	> Motivation why > Humour > Processing > Description of moments when back (in the car/ having coffee/ taking a shower/ during clean-up duty/ during sports) Group vs individual
21	Formal aftercare	> Motivation why > Before > During > After

Appendix 4

Informed consent

Declaration of participation in study

I, ……., hereby declare:

> I understand what the goal is of the dissertation research that the investigator, Karin Dangermond, has asked me to participate in.
> I am participating in this study voluntarily.
> I am aware of the option to discontinue my own participation in the study at any moment.
> If applicable, I give consent to the investigator to record the interviews.
> I understand that the results of this study can be used for scientific purposes and may be published.
> My name will not be published, and the data will be processed confidentially and anonymously within each phase of the study.
> I know that for questions, complaints or additional information about the study I can contact the investigator at karin.dangermond@nipv.nl or (06) 4031 5552.
> We have gone through this declaration together verbally. I was given the opportunity to ask the investigator questions about the content of this declaration and the study, and these questions were answered satisfactorily.

Date: …… Location: ……

Name and signature of interviewee:

……

While performing their duties, firefighters must deal with incidents that strongly affect their lives and well-being. Because they mostly experience critical incidents collectively, the culture within the fire crew or station is crucial to processing such incidents. This dissertation research focuses on the role of fire service culture in firefighters' processing of critical incidents, where the resilience potential of fire service culture is seen in relation to the concept of social ecology.

We investigated which incidents firefighters experience as critical, the contextual factors that are important in this process and their impact, the role that informal social support plays within the fire station when processing critical incidents, the role of humour, and the differences between noncareer and career firefighters that affect the processing.

This dissertation research offers insightful knowledge about fire service culture and the complex reality in which firefighters work. The research also produced knowledge that will serve to improve the support of firefighters after critical incidents.

Karin Dangermond is senior researcher at the Netherlands Institute for Public Safety (NIPV). Her work focuses on the human side of the fire service. Important topics are leadership, organization and culture of the fire service, and recruitment and retainment of noncareer firefighters.

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