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Emotional responses to potentially traumatic events: An interpretative qualitative analysis of high-risk professionals in relation to their social structures

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ABSTRACT

Background: Professionals in emergency-focused environments are taught to prioritize emergencies over their own emotions and trained to suppress their own emotional reactions. High-risk professionals in a vertical social structure, such as police officers, military personnel, career firefighters, and perioperative nurses, also tend to develop an us-versus-them mentality with emotional distance from patients or civilians.

Objective: This study explores emotional reactions of police officers, military personnel, firefighters, paramedics, and specialized nurses (emergency room nurses, operating room nurses, and intensive care nurses) to past and present potentially traumatic events. We aim to understand how a social environment that reinforces suppression of emotional reactions and fosters emotional distance from patients and civilians influences their emotional responses.

Methodology: We analyzed fieldnotes from ethnographical research, encompassing 332 h of observations and 71 in-depth interviews with professionals from eight occupational groups. We identified meaning units that were interpreted through the lens of literature on etiology and treatment of trauma-related mental health problems.

Findings: High-risk professionals in a vertical social structure experience unexpected moments of identification with victims or patients, which leads to personal distress and has lasting emotional impact. For those in horizontal social structures, such as paramedics and specialized nurses, we did not observe these sudden, intense emotional reactions. Instead, they seem to experience increased emotionality and exhaustion over the course of their careers.

Conclusion: While emotional distancing may be functional during emergencies, it likely increases the risk of traumatization. This risk is amplified when ingrained during early socialization.

1. Introduction

High-risk professionals, those who by the nature of their work, are more frequently exposed to potentially traumatic events (American Psychiatric Association, 2022; Kilpatrick, 2022) than the general population, face an elevated risk of developing trauma-related mental health problems (Jones, 2017; Lee et al., 2020; Matthews et al., 2022; Petrie et al., 2018; Wagner et al., 2020). This category commonly includes police officers, firefighters, paramedics, and military personnel (Geuzinge et al., 2020). However, exposure to potentially traumatic events is not limited to these occupations. Hospital-based professionals,

such as emergency room and operating room nurses, routinely encounter patients with severe injuries. Likewise, intensive care nurses, though less exposed to visible wounds, are regularly confronted with deeply distressing narratives of suffering and loss. Systematic reviews confirm that these specialized nurses experience a high prevalence of mental health challenges, including symptoms of burnout (de Boer et al., 2014; Hyman et al., 2011; Li et al., 2018; Meeusen et al., 2010; Moss et al., 2016).

Despite these risks, exposure to these events does not inevitably lead to pathological reactions (Yehuda et al., 2015). How do these professionals maintain emotional and psychological equilibrium? At first

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sight, one might assume that professionals working in emergency-focused environments are relatively invulnerable to emotions when faced with the distress of others, as if they are mentally armored against human suffering. The following excerpt from the fieldnotes of our study illustrates how professionals can emotionally distance themselves from patients while working:

In the ORs [operating rooms] lounge, with our back towards the entrance to the hallway, my colleague and I relaxed after just finishing an ankle [surgery on a patient with an ankle fracture]. The hallway ends in the corner with the emergency elevator, a direct route from the emergency department to the long hallway with numerous operating rooms. We heard the opening of the elevator doors. We knew that the other team [also on-call that night] was about to start with an emergency job: a rupture of an abdominal aortic aneurysm. We turned around to see the image linked to the noises coming out of the elevator; beeps, shouts, and barking commands, the blowing of a balloon pump, and the well-known sound of a rhythmic squeaky chest. We could just see a glimpse of a wheeled stretcher with obviously a patient, but not a visible person, four professionals running alongside, one squeezing the breathing pump, others holding several intravenous drips in the air. A fifth person, her legs spread to either side, on top of the patient, rhythmically compressing the chest. This dramatic scene lasted just a few seconds as they wheeled the patient into the prepared OR. We calmly turned back to our coffee, took a sip, and concluded: 'hopeless attempt ...'.

Then, all of a sudden, it crossed my mind that the patient might be someone I know. What if it's my dad? If that were the case, fear and panic would overwhelm me – a completely different state than the calm one we were in. This thought, or the thought that this person was someone else's father, that the patient's family is in the emergency department waiting in distress for the surgeon's conclusive words, all those thoughts were unthinkable. It would make our work impossible. [Wilma, 58-years-old Former perioperative nurse, fieldnotes from our study]

This account is an example of how professionals maintain emotional distance by the way they emotionally relate to patients. What appears as emotional detachment might be a necessary psychological adaptation or mental stance. This relationality seems to be influenced by the social environment of the professional group, which will be further explained beneath.

1.1. Social environment: vertical versus horizontal social structures

Although many high-risk professionals are often lumped together in research, Geuzinge and colleagues found in their analysis of the social environment of various high-risk professional groups, that the social structures of these occupational groups are fundamentally different. For police officers, military personnel, career firefighters, and perioperative nurses, group formation and interpersonal connections are based on individuals' situational position in a set place or context (a *frame*). For example, belonging to the military or to the firefighter-'family' (Geuzinge, Visse, Vermetten, & Duyndam, 2024). Members of these professional groups put more weight on connections within, rather than outside their organization or team. This social structure is defined as a vertical social structure, characterized by strong group cohesion and hierarchical relationships within organizational boundaries. This stands in contrast to horizontal social structures found in many other occupations in society where group formation and interpersonal connections transcend organizational boundaries (Geuzinge, Visse, Duyndam, & Vermetten, 2024). For these professionals, connections are based on individuals' common characteristics (an *attribute*), which are often acquired through universal education, such as being a 'neurologist' or 'accountant'. Highly specialized professionals may not only feel connected with peers in their own organization, but also with peers with the same attribute in other organizations. This horizontal social structure allows individuals to belong to multiple groups simultaneously. An

example among high-risks professionals are volunteer firefighters who feel strongly connected to their local volunteer firefighters' group but also feel connected to persons in a social network around their (paid) job such as running the bakery in their village or being concierge at the local primary school. Another example is nurse anesthetists who, although working in the operating room alongside perioperative nurses, tend to have a horizontal social structure in contrast to their perioperative colleagues (Geuzinge, Visse, Duyndam, & Vermetten, 2024).

1.2. Vertical social structure: us versus them

The social structure influences the professionals' way of being in their social world, i.e., their way of relating to others (Geuzinge, Visse, Duyndam, & Vermetten, 2024). It is known that the professional training of police officers, for example, fosters a closed social world with a clear distinction between us, the police, and them, civilians (Chappell & Lanza-Kaduce, 2010; McCartney & Parent, 2023). People outside their groups are viewed as members of a 'generalized other' from which they wish to distinguish themselves (Hogg & Reid, 2006). This us-versus-them mentality (Elliott, 1986) is frequently established and reinforced through various methods, including profanity and cynical and gallows humor, as observed among military personnel (Verey & Smith, 2012), firefighters (Dangermond et al., 2022), and police officers (Charman, 2013). Some nuances exist as research shows that paramedics and medical personnel also tend to use cynical humor (Alnasser, 2018; Clompus & Albarran, 2016; Fox, 1992). On the one hand humor can create feelings of belonging to the in-group. Having insider-knowledge and 'being in on the jokes', strengthens existing bonds (Fine & Corte, 2017), and reinforces camaraderie or group cohesion (Kuipers, 2009). On the other hand, this kind of humor is also often used to exclude people outside a team or organization i.e., an out-group. Secret language, jargon, cynical and sarcastic jokes, which can be denigrating, derogatory, and sometimes even 'dehumanizing' (Hofer et al., 2021; Koch, 2010), all have the function to create and maintain group distinctiveness (Ferguson & Ford, 2008). Among these boundary-making practices, profanity takes a central role in what Fine and Corte (2024) term 'obscenity factories' –workgroup cultures where shared transgressive language becomes a defining feature of group membership and professional identity.

For many professionals working in emergency focused environments, these boundary-making practices might be one of the ways to maintain emotional detachment from patients and civilians. They can be seen as a socialization practice to suppress emotional reactions.

1.3. Suppressing emotional reactions

Although organizational culture is an intangible phenomenon, a shared belief is that the work environments of all these professionals are associated with 'macho' attitudes and masculinity. Firefighters, police officers, and military personnel have all discursively crafted their job as highly masculine (Brough et al., 2016; Green et al., 2010; Jakubowski & Sitko-Dominik, 2021a; Pogrebin & Poole, 1991; Sitko-Dominik et al., 2025). While ambulance paramedics may often display a 'feminine demeanor' when meeting victims (front stage), when they work in a male-dominated organization, the backstage culture remains masculine (Boyle, 2005) Although there are female professionals, including those in leadership roles, the term 'masculinity' is not about the gender that professionals identify with. In this context, stereotyped masculinity means staying calm in the face of hardship and, above all, suppressing and controlling emotions.

Additionally, students or recruits are repeatedly exposed to procedures to acquire, through practice and by observing their senior role models, the necessary skills and develop a task-oriented focus. This repetition of skill-based training procedures enables them to act automatically and eventually leads to habituation, i.e., to progressively weaken emotional reactions to exposed stimuli (i.e., emotionally

charged events) until “It’s old news” (Ashforth & Kreiner, 2002; Scott & Myers, 2005, p. 79), and “things you get used to” it (Friedman & Higson-Smith, 2003, p. 109). Gradually increasing exposure to real-life situations, such as death, graphic scenes, or military personnel to combat experiences can lead to desensitization (Ashforth & Kreiner, 1999; Baykan et al., 2021). Habituation and desensitization are processes of adaptation that occur over time when increasing familiarity with stimuli tends to blunt the emotional impact.

Some high-risk professionals utilize buffering skills to set aside emotionally disturbing stories related to their work when they are off duty. They may leave their unpleasant feelings and associations about work with the uniform, when they take it off, to avoid mentally contaminating their home environments, or spilling their experiences onto family members (Armstrong et al., 2015; Koch, 2010). However, memories of distressing experiences do not simply vanish on their own. Rather, like data buffering in computer science, memories are often temporarily stored into a reserved area of the mind to be retrieved and processed later.

1.4. Regulating strategies: affective avoidance, alcohol, and spillovers

In the research literature we find the tendency among police officers (Koch, 2010), firefighters (Jakubowski & Sitko-Dominik, 2021b), and paramedics (Boyle, 2005; Lawn et al., 2020) to mentally shift or emotionally distance themselves from memories of distressing experiences. However, empirical studies among high-risk professionals and their mental health demonstrate that affective avoidance over an extended period of time is significantly related to higher levels of psychological distress (Brown et al., 2002; Gershon et al., 2009; Serrano-Ibáñez et al., 2022) and is correlated with the severity of posttraumatic stress disorder (PTSD) (Carlier et al., 1997; Clohessy & Ehlers, 1999; Hoyt et al., 2010; Lowery & Stokes, 2005; Pogrebin & Poole, 1991). A functionalist view of emotion underscores the need to recognize, process, and express emotions to facilitate healthy integration of distressing experiences (Austenfeld & Stanton, 2004; Greenberg, 2021). Trauma experts claim that affective avoidance or inhibition in expressing or talking about distressing or overwhelming experiences influences the ability to successfully integrate these experiences into existing conceptions of one’s self and the world (Moskowitz et al., 2019).

Additionally, the mental effort of avoiding memories of distressing experiences lowers, what Janet calls, the mental level, which is fundamental to one’s capacity to integrate experiences (Janet, 1904; Van der Hart et al., 2006). A low mental level makes it more likely that an individual falls back on regulating strategies that require less mental energy. These strategies are often accepted in their social environment, such as the use of harmful levels of alcohol among police officers (Ballenger et al., 2011), military personnel (Du Preez et al., 2012; Jacobson et al., 2008), and firefighters (Bing-Canar et al., 2019; Gallyer et al., 2018; Tomaka et al., 2017; Zegel et al., 2019). It is well known in clinical practice that many traumatized people turn to alcohol in search of relief, and that it is often a prelude to developing PTSD (van der Kolk, 2000). There is indeed substantial empirical support for the link between problematic alcohol use and posttraumatic stress disorder (Balan et al., 2013; Ballenger et al., 2011; Fetzner et al., 2011; Tomaka et al., 2017; Zegel et al., 2019).

Another low mental level regulating strategy is the spilling over of work-related stress and frustration into the family domain. This is especially prevalent when there is significant duty-related exposure to violence, such as in police work (Johnson et al., 2005), and military deployment (Byrne, 1996). Posttraumatic stress symptoms cannot be taken off like a uniform and are known to cause problems in interpersonal relations. Aggression towards family members, especially an intimate partner, is not uncommon among police officers (Anderson & Lo, 2011; Gershon et al., 2009), and military personnel (Taft et al., 2011).

1.5. Focus of this research

Professionals working in emergency-focused environments are trained and socialized to suppress emotional reactions (Austenfeld & Stanton, 2004; Boyle, 2005; Brown et al., 2002; Bull & FitzGerald, 2006; Koch, 2010; Scott & Myers, 2005). Professionals in a vertical social structure are additionally socialized to maintain emotional distance from patients or civilians. Geuzinge and colleagues found that, due to the horizontal social structure wherein paramedics and other specialized nurses function, their way of relating to others differs from occupations in a vertical social structure. Their way of being in the social world is more open, and patients or civilians are potentially seen more akin to oneself (Geuzinge, Visse, Duyndam, & Vermetten, 2024). In this paper we focus on high-risk professionals in both social structures, though we use data from high-risk professionals in a horizontal social structure primarily for a comparison with those in vertical social structures.

2. Method

2.1. Aims & objectives

We explored the emotional reactions of police officers, military personnel, firefighters, paramedics, and specialized nurses (emergency room nurses, operating room nurses and intensive care nurses) to past and present potentially traumatizing events. We aimed to understand how a social environment that encourages suppression of emotional reactions and fosters emotional distance from patients and civilians, influences their emotional responses to such events.

2.2. Methodology

The data of this study were acquired from ethnographic research, in which we examined the role of the social environment in the risk of traumatization for police officers, firefighters, paramedics, military personnel, and specialized nurses working in emergency rooms, operating rooms, and intensive care units (Geuzinge, Visse, Vermetten, & Duyndam, 2024). The primary researcher (RG) conducted observational fieldwork and interviews in emergency service organizations and in hospitals in the Netherlands. In reporting this qualitative research, we were guided by the Big Q Qualitative Reporting Guidelines (BQQRG) (Braun & Clarke, 2025).

2.2.1. Researcher’s positionality

Qualitative research acknowledges the positionality of the researcher who conducts the study, emphasizes the importance of self-reflexivity to enhance rigor and accounts for how subjectivity shapes the inquiry (Olmos-Vega et al., 2023). The primary researcher is a clinical psychologist and person-centered experiential psychotherapist with extensive expertise in diagnosing and treating individuals with (complex) post-traumatic stress disorder. Therefore, professionals’ emotional expressions and their visible methods of regulating their emotions prompted the researcher to reflect deeply on both the interpersonal and intrapersonal processes occurring within the various high-risk professional groups. One example is the following fieldnote on an observation at an operating room center:

I was invited to observe in another operating room where resuscitation had just been performed on an elective (planned) 4-year-old patient. When I entered, the situation appeared to have stabilized. The anesthesiologist and surgeon were still fairly focused on their thinking and actions. The two perioperative nurses present seemed to be attending to the scrub nurse, a young trainee. She said, visibly distressed: “I didn’t know what to do.” Jack, her trainer, then said: “we need to pay attention to my trainee.” He proceeded to do this himself by hugging her and regularly asking how she was doing. She became emotional after this attention but held back her tears. He suggested she “go get something to drink” and told

her "you don't need to clean up." But she "wanted to stay for the emergence [when the child comes out of anesthesia] and see how things went with the girl." [While Jack offered physical comfort and practical relief, his responses remained surface-level.]

In accordance with the Dutch national guidelines, an operational debriefing followed in a separate room, led by the anesthesiologist. The trainee mentioned during the final round that she "maybe could have pulled the sheets off the child faster" [this refers to the decision to prioritize resuscitation over sterility of the surgical field], but no one responded to this comment before the discussion moved on. [When the trainee voiced her self-critical concern about potentially delaying resuscitation efforts—a comment revealing underlying guilt and self-blame—the silence that followed left her emotional needs unaddressed. I noticed the contrast between the trainer's stated intention ("we need to pay attention to my trainee") and the actual outcome (failing to respond to her most vulnerable moment). As an observer, and as a psychotherapist, I felt a strong urge to validate her remark and the underlying feelings of perhaps fear, regret, or guilt, but as a researcher, I did not want to disturb the social setting, so I bit my tongue.] (Operating room observation, fieldnotes).

2.2.2. Data collection

Participant observation, covering 332 h over a 12-month period, took place in organizations where police officers, firefighters, ambulance paramedics, and military personnel work. We included three distinct hospital units where specialized nurses work: emergency rooms, operating rooms, and intensive care units (Table 1 Units and methods per setting). In the selection of the settings and its participants, we sought maximum variation (purpose sample (Patton, 2015);) and therefore selected organizations and hospitals that are evenly distributed over the regions of the Netherlands, as well as over urban and rural regions.

Initial access to the settings was usually obtained quickly through the organizations' administrators, who were requested to participate in research regarding the risk of traumatization. After a first interview and their approval of the study, practical arrangements (e.g., uniforms, access codes/passes, and information about regulations or procedures governing work rules) were made with an assigned contact person at the department. To gain access to the police departments and their employees, investigation of antecedents and a 3-month screening process was required. The resulting 'internship agreement' with the police academy made all Dutch police departments accessible and open to the researcher.

The primary researcher participated in and followed the professionals in their daily activities (Bernard, 2018), conducted in-depth interviews with administrators or chiefs in each organization, and interviewed trainers and teachers at academies for each distinct occupational group (a total of 71 interviews). The selection of interview participants was based on an iterative process, that is, purposeful sampling (Creswell & Creswell, 2023). We enriched the data by conducting observations and interviews, performing preliminary analysis, and then selecting more respondents to address emerging questions (Crabtree & Miller, 2023). To maximize variation and even further enrich the data we also selected participants located at other settings than where the fieldwork to place. The interviewer invited the interviewed professionals to express their ideas concerning the research topics: dealing with traumatizing experiences, stress, and support. Questions were initially broad and open-ended, with the interviewer maintaining a non-directive attitude. For example: What do you think contributes to maintaining mental health? How do professionals deal with traumatizing events? What do you do to support professionals in dealing with critical incidents? The researcher kept the focus on the original research questions while allowing flexibility in the direction the interviews might take (See Supplementary 1: Interview guide). The duration of the interviews varied from 30 min to 1 h, often depending on how much time the interviewee had available.

Formal interviews were recorded and transcribed by the interviewer. Throughout the entire fieldwork period, a continuously updated reflective journal was used for notetaking of feelings, thoughts, and to document new insights or questions to pursue, such as follow-up inquiries on participant responses that required further consideration. The researcher used the research aim and self-conscious reflection to guide observations and analysis, to identify what qualified as collectively significant. One example is the following reflection on an observation at an emergency department of a large hospital:

Another incident this evening: A father came, unannounced, running into the department with an apparently lifeless toddler in his arms: "He isn't breathing!" Impressively quickly, about 8 professionals gathered around, ready for resuscitation. I stood in a corner of the room and watched. After about a few minutes, it turned out to be less serious than it appeared, and the child soon began crying again. As quickly as they came, the staff dispersed again. Nurse E. mentions without not much emotion in her [monotone] voice "Yeah, it was quite a scare because sometimes children are brought in who have been dead for a couple of hours." After that she never mentioned the incident again. (Personal note: But I actually just want to cry a little. I compose myself and go on with the observation of E.'s work. As I organize my notes right now, I can still vividly see the image of the father and child, and feel the tendency to shed some tears of ... maybe relief? Theoretical note: Why don't I see empathy in E.? Does she not know how this parent feels because she is so young and doesn't have children herself? Methodological note: Try to find other older colleagues and observe how they respond to similar situations). (Excerpt from fieldnotes)

This activity, of observation and reflection, provided the primary researcher with insights into the context as well as the social and cultural conditions within organizations or departments. After eleven months the data collection provided similar rather than dissimilar information and was deemed to have reached saturation. Because the initial aim of our ethnographic research was broad and it contained multiple different occupational groups, we wanted to make sure that we had enough 'information power' (Malterud et al., 2016). Therefore, we decided to continue the data collection, i.e., added further observations and sampling of interview participants in every professional group, for another month to ensure data saturation was achieved. However, no further insights were identified, and data began to repeat, which signified the attainment of an adequate sample size. Consequently, further data collection became redundant (Hennink et al., 2017; Kuzel, 1999).

The study also included an examination of selected (non-confidential) documents, such as texts, autobiographies, and documentaries. Since no fieldwork (participant observation) was carried out in settings with active military personnel, additional data from these types of documents were included to learn of socialization practices, education, and training.

2.2.3. Data analysis

For this study, we used an interpretative qualitative analysis approach as outlined by Morehouse (2012). For this analysis, we had much more data at our disposal than we needed for the research question in this study. In reading the fieldnotes, the first and second author focused on the professionals' emotional reactions and expressions to present or past potentially traumatic events and identified initial meaning units (See Supplementary 2: Example of coding meaning units). Those meaning units were then clustered into four themes, which we interpreted in the light of existing literature on etiology and treatment of trauma-related mental health problems.

2.2.4. Ethical considerations

Formal ethical approval of the study was obtained from the Ethics Review Committee of the University of Humanistic Studies in Utrecht. Written permission was secured from the administrators of all involved organizations and departments. Additionally, employees were informed

Table 1
Units and methods per setting.

Setting: Firefighters	Observation (hrs.)	Formal interviews (nr)
Academies & National Center		M Administrator F01 (2x) F Human Resource Manager F02 M + F National Resilience Focus Team F03 (4x)
Professional station city R (3 ladders)	72	M Director R01(3x) M Peer Support Coordinator R02 (2x)
Professional station city A	9	M Director A01 M Chief A02 M Chief A05 M Senior Chief A03 M Chief A04 F Firefighter A06 F Firefighter A07
Professional station city N		M Sport instructor N01 F Human Resource Manager N02 M Firefighter Commander/Chief E03
Professional station city E		
Volunteer station village W	3	
Volunteer station village L	3	
Dispatch Center	5	
Total:	92	15
Setting: Ambulance	Observation (hrs.)	Formal interviews (nr)
Assessment Center	16	F Assessment specialist T04
Station city N	16	M Administrator/Chief T01 (2x) M Paramedic T03 Coordinators/Administrators M & F T05 M Driver T08
Station T		M Paramedic T09 M Paramedic T06 M Driver T07
Station village M	8	M Director/Chief T02
Station village L		M Chief Dispatch center (2x) T03
Mobile Trauma Team	4	
Dispatch Center	7	
Total:	51	8
Setting: Police	Observation (hrs.)	Formal interviews (nr)
Academies/Assessment Center		M Instructor Police Academy P02 M Dean P03
Resilience training (3 days)	21	2 M Coordinators, P01 M Dog trainer/officer P16 F Resilience trainer P08
Station city A	9	M Chief officer P04 F officer P05 M officer P06
Station city B	9	F Officer in Charge P09 M officer P13 M Officer motor P10 M (intermediate) officer P11 M (intermediate) officer 12
Station town C	9	M Chief P07 F officer P14 M officer P15
Dispatch Center	7	
Total:	57	16
Setting: Military	Observation (hrs.)	Formal interviews (nr)
Academies/Assessment Center	24	F Assessment psychologist M4 F Administrator/psychologist M3
National Center for Veterans		F Administrator/psychologist M1 M Veterans reintegration coordinator M2 M Veteran and psychologist M5
Total:	24	5
Setting: Hospitals	Observation (hrs.)	Formal interviews (nr)
Nursing Academy		F Coordinator School SN01 F Coordinator Teachers SN16
Academy Operating Room Nurses		F Coordinator Perioperative nurse SN02 F Coordinator Nurse Anesthetists (NA) SN03 M Skills-lab trainer SN12
Academy Emergency Room Nurses		F Coordinator ER nurses in training SN17 F Coordinator Teachers SN19 F Trainer SN18
Academy Intensive Care Unit Nurses		M Teacher ICU- nurses and former NA-nurse SN04
Hospital X Emergency Room	16	M Manager ER-Rooms SN14 F Team Coordinator SN18

(continued on next page)

Table 1 (continued)

Setting: Hospitals	Observation (hrs.)	Formal interviews (nr)
Hospital X Operating Rooms	54	F Trainer ER-nurses SN10 F Social Worker ER SN25 F ER-nurse and peer support SN24 M Administrator (2x). SN05 F Coordinating Trainer Perioperative nurses SN06 F Trainer & selection Perioperative nurse SN15 M Occupation physician SN07 F Coordinator Nurse Anesthetists SN13 F Coordinating Trainer Nurse Anesthetists SN08 F perioperative nurse SN20 F trainer perioperative nurses SN21 F Perioperative nurse SN22
Hospital Z Operating Rooms	16	M Chef (2x) SN09
Hospital X Intensive Care Units	12	F Nurse manager + F M.D. manager & SN11 F Coordinator ICU-nurses SN23 M ICU-nurse SN25
Hospital Z Intensive Care Units	12	M Team coordinator SN26
Total:	110	26
Total:	130	71

M = male; F = female; all are seniors (+5 work experiences); Intermediate = 2–5 work experiences.

in advance about the study, ensuring the voluntary nature of participation in informal interviews that took place during observation.

3. Findings and interpretation

During the interviews, professionals tended to spontaneously share their own perspectives on the risk of traumatization with the researcher. Their perspectives often represented general assumptions about the personal characteristics of professionals, and about the general need for 'backup' or social support from the organization. When professionals started to talk about personal experiences, certain topics, related to emotional responses to past potentially traumatic events, came up frequently: Stronger realization than victim; Children; When it hits close to home; Human context; Humanizing moments; Emotional distancing; Overwhelming emotions; and Aging (See Supplementary 2: Example of coding meaning units). We clustered these meaning units into four themes: When reality hasn't hit yet: unable to help (3.1); When it could be your own: humanizing moments (3.2); You can't take it personally: avoiding identification (3.3); The weight of the years: the cumulative impact. In the following paragraphs we will describe these themes with illustrative quotes from our data, followed by an interpretative analysis in which we integrate the data with existing literature.

3.1. When reality hasn't hit yet: unable to help

When firefighters spoke about the stories of which they said they would "never forget", we identified a common factor: In putting their selves in the victim's shoes, they were able to fully realize the drama of a situation, while a victim, still in a survival mode, had not yet fully realized and processed what just had happened:

- "We needed to extract this woman out of her car who was in a severe state, but she insisted that we should not ruin her new dress. Five minutes later she was dead." (Senior firefighter, Fred, City R, Interview A03)

- "The mother of a toddler stuck under a truck, the body in smithereens, kneeled down with her other child, next to what was left of the little body, holding the hand and with a soothing voice saying: 'mommy is here'." (Informal interviews with a group of firefighters during observation, City R, Ladder A, Fieldnote)

- "The woman in the car was obviously dead. But her husband sat next to her, stroking her back saying: 'everything is going to be okay'." (Informal interviews with a group of firefighters during observation, City R, Ladder A, Fieldnote)

Such an out-of-reality comment of the victim is also what devastated

a 42-year-old perioperative nurse Lora:

"We needed to operate a man with a broken arm, a trauma from a car accident that morning in which he lost his wife. When he was wheeled in, his jolliness reverberated through the operating room: 'Yeah, we just left for our vacation, and now look what I've got!'. We were all dumb-founded." (Lora, Informal interview during observation, Fieldnote)

Dispatch center personnel operate within small, team-based contexts that involve close cooperation between on-duty personnel at local stations. Though operating from a distance, a senior dispatcher from a paramedic team told me about a past event that stuck in his memory:

"It was CPR on a small child. It didn't work, they wanted to give up [to stop the resuscitation attempts]. Then the mother says: 'No! We now just put her as quick as possible in the car [the ambulance] and take her to X [City with a specialized children's hospital, a 2 hours' drive]. There they can help her!' But the child was already dead. [aware of his bodily reactions] I still get goose bumps." (Senior dispatcher paramedic team, Informal interview during observation, Fieldnote)

Interpretative analysis: This disconnect between professional medical knowledge and family hope regarding resuscitation reflects broader patterns in emergency medicine, where CPR often serves symbolic rather than strictly medical functions for families (Timmermans, 1999). What all the stories above have in common is the incongruency between the professionals' clear understanding of the situation and the victim's protective disconnection from reality. While professionals can empathically understand the victim's situation, they are unable to make an emotional connection with the victim, leaving them feeling powerless to help. Feelings of helplessness and diminished feelings of competence increase the risk of traumatization for the professional (Figley, 1995).

3.2. When it could be your own: humanizing moments

Events seem to have more emotional impact if the victim was contextualized in relation to important others, e.g., seeing emotional relatives of patients. As an ambulance driver articulated:

"Often, it's just a doll, so to speak, but everything around it makes it more difficult, their homes, the family, and their emotions" [Ambulance driver, ZN, 7 years on the road, informal interview during observation, City N, Fieldnote].

The death of a child is probably one of the few instances when emergency responders feel strong emotional reactions are acceptable. "When a two-year old dies, everybody here is crying". (Senior firefighter Neo, coordinator peer support team, City R, interview R02). When 'the

innocence of the young' is a victim of a disaster situation, it often strikes a responsive chord. Senior police officer, Ben, talked about his experiences of an airplane disaster:

"Finding a piece of burned flesh is dramatic, it's real, then you don't know where to look, people pick it up and throw it in a bin, but if that piece of flesh is in the shape of a leg, you get teary, if there's a shoe attached to it, you definitely are sobbing, and if the shoe is four and a half inches you just totally collapse." [56-year-old police officer Ben, Visual document]

Just as most parents occasionally worry that something disastrous could happen to their children, professionals can sometimes vividly replace the severely wounded or dead child with the image of their own beloved child. In our data we repeatedly identified stories about such situations when professionals were reminded of their own children:

"You see the duvet cover of 'your daughter' hanging in the tree" says police officer Ben recalling his experiences of an airplane disaster. [56-year-old police officer Ben, visual document]. A firefighter got emotional telling me about a dead child he found at an accident scene. The boy had the same blond hair as his then six-year-old son [Firefighter Marc, City A, informal interview during observation, Fieldnote].

When an event involves children, it might be easy to identify with a parent. When identifying with a victim's family, it may also be difficult to take an objective stance, as happened to police chief Hank who had to do CPR [resuscitation] on *"an old man who looked just like my father"* [Senior police officer and chief Hank, City A, Interview P04].

Jacco, a 47-year-old police officer, who suffers from PTSD, can't let go of the memory of the following incident:

It was a deadly motor accident of an 18-year-old who turned out to be the son of a colleague. Jack: *"Until that moment I always thought 'it's an object, but then, suddenly; this head is of someone's beloved'".* (Jacco Bezuijn, Autobiography)

Suddenly, the sharp line between 'us' and 'them' vanished. A similar story was told by Eric, a 27-year-old military group commander, about his arrival in a war zone:

"The first day we were driving through the city we saw how everything was shot to pieces. Then you see how people lived there. It really impressed me a lot. I think I'll never forget what impressed me most. I entered one of these houses and saw a dollhouse, also shot to pieces. Then you realize: people live here too ...". (DOCUMENT 01, p.86-87)

When this young group commander was reminded of the personified beings that once existed in this city, he could no longer avoid identification with 'them'.

Fred, a senior firefighter chief gets emotional while talking about his past traumatic incidents. *"When a drunken guy drives himself dead against a tree, I don't feel anything. But a young woman with a mobile phone still in her hand [swallows away some tears, composes himself] ... I first support the men [firefighters], but later, during a walk alone in the woods, I cry. [I asked him what makes this incident so different. He needs some time to think about the answer] ... "Maybe, because at that time, I had a daughter of the same age"*. (Senior firefighter, Fred, City A, Interview A03)

Axel, together with his dog, was the first police officer to arrive at the scene of a homicide of a teenager who had been missing for days. He had the unfortunate disadvantage of not knowing what he would encounter or what to expect. At 4 m distance, he found the dead girl who had fluorescent painted hair. *"It was the physique, the hair, exactly like my daughter at that time"* (Senior police officer and dog handler, Axel, Interview P16). Although Axel said he was shocked *"only for a brief moment"*, and that he *"immediately composed himself and came into action by calling his chief"*, it seemed as if this decade-old story had to be told during my first encounter with him. In fact, many of the emotionally charged events professionals talked about had occurred years ago, often

in the early stages of their careers. However, these events seemed to have had a profound impact and still needed to be shared. 'Needed' in the sense that I (first author) noticed that the interviewees hardly allowed to be interrupted while they recounted vivid and detailed memories, as if the past experiences were still never really processed.

Interpretative analysis: Events involving children elicit overwhelming stress reactions in all of us, including high-risk professionals (Boyle, 2005; Clohessy & Ehlers, 1999; Karlsson & Christianson, 2003; Oliveira et al., 2023; Regehr et al., 2002). The high-risk professionals in the quotes above not only see themselves or their loved ones in the victim, –looking at the strong emotional reactions– they seem to merge with them, feeling what the victim or family members are experiencing. Or, in the case where the victim does not yet fully realize the drama of the situation (3.1), professionals feel what they expect the victim to experience. According to Rogers, empathy is *"accurately perceiving the internal frame of reference of another person, with the emotional components and meanings contained therein, as if one were the other person, without ever losing the 'as if' quality"* (Rogers, 1992). When losing the 'as if' condition, or self-other differentiation, we speak of identification, which can lead to overwhelming emotions and personal distress, with the risk that professionals become as overwhelmed as the victim or patient. This emotional flooding can paradoxically lead professionals to distance themselves from suffering persons, as the emotions become unbearable, which we illustrate in the next theme.

3.3. You can't take it personally: avoiding identification

Armed emergency personnel are trained to take on an impersonal attitude when encountering civilians, with the assumption that this may be necessary, or even vital, for their functioning. Police officers are taught to control imagining that they themselves could be the other person. The importance of this training became evident during a resilience training session for police officers when the topic 'Feelings' was discussed. When the trainer asked what feeling they sometimes have, but do not want in their work, an officer responded:

"That you are going to compare a situation with your situation at home". The trainer prompted: "What kind of feeling is that?". The officer replied: "To think, 'it could have been me'." Other group members uttered their consent. (Participant observation of a resilience training for police officers, Fieldnote)

It seems that the aim of living by the slogan 'you can't take it personally' is to avoid becoming 'too-wrapped-up' in one's personal situation.

During observation I (RG) noticed that emergency dispatchers and their colleagues on the road (police officers, firefighters, and ambulance personnel) frequently use codes, terms and abbreviations to describe the gruesome states of victims. Similar communication patterns using acronyms and abbreviations are highly prevalent among military personnel.

The strategies of emotionally distancing extend beyond emergency services to surgical teams. Surgeons and team members are not supposed to operate on someone with whom they have a strong personal relationship, lest their feelings interfere with their mental clarity (Fox, 1992). Surgical team members normally see only a small part of the patient's body because the rest of the person is covered with drapes. This distancing is reinforced linguistically through technical or medical terminology, such as Latin derivatives, and by decomposing patients into their parts – illustrated in the introduction where the perioperative nurses referred to *"an ankle"*.

Interpretative analysis: High-risk professionals' emotional detachment strategies seem to prevent identification, but sometimes fail when situations unexpectedly hit close to home. This leads to overwhelming emotions, as illustrated in the second theme (3.2), which are difficult to integrate into concepts of the self, others, and the world, and therefore increase the risk of traumatization. Memories associated with

the overwhelming experiences are likely to return in post-traumatic symptoms, such as intrusive images and sensations (American Psychiatric Association, 2022). Situations in which they are confronted with their own physical vulnerability, such as attending a police funeral, are rated as high on emotional impact (Gershon et al., 2009), and are also associated with higher rates of PTSD (Carlier et al., 2000). Strategies like emotional avoidance, –but also alcohol misuse, and emotional spillover– may be employed as attempts to mitigate these intrusions. However, these strategies only hinder the processing of traumatic experiences, reinforce post-traumatic stress disorder and ultimately exacerbate the condition (Moskowitz et al., 2019).

3.4. The weight of years: the cumulative impact

These vivid compelling memories accompanied by strong emotional reactions did not show up so frequently in interviews with professionals in a horizontal social structure. Instead, when discussing the stressful or emotional aspects of the work, many of them, whether emergency nurses or paramedics, male or female, pointed out that, in their experience, the older they get, the ‘more emotional’ they become:

- A 60-year-old emergency nurse adds to this: “yeh [sigh], I am a lot more emotional. Sometimes I cry harder than the family” (Ida, Informal interview during observation, Fieldnote).

- A 60 plus intensive care nurse: “I don’t know why but I am a lot more emotional than I used to be. [...]. When the whole family is present it’s hard. When one is crying it’s still okay, but when they all start ... it passes the curtains [sigh] ... that’s hard” (Frank, Informal interview during observation, Fieldnote).

Apart from their explicit expressions of becoming more emotional, I noticed an accompanying ‘tiredness’ in their way of talking. The administrator of an ambulance department explained in an in-depth interview:

“There is an expiry date on this occupation. The longer they do this job, the more symptoms they get. We now have a large group of paramedics in their fifties, sixties. So, the number of CPRs on their peers also gets higher. Then you think: ‘I could have been lying there’. And, as you get older you hear them say; ‘if there is a suicide, I’m not going to look, I don’t have to, he’s dead anyway’.” [David, Administrator Ambulance department, Interview T05].

I (RG) was struck by my encounter with Jo, a paramedic in his early forties who had started his career as an ambulance driver when he was 19 years old. In a monotone, depersonalized way and from a third person perspective, he told me that he has ‘had enough’:

“You get older, your parents get ill, you get children, you get sick yourself now and then, then you get more emotional. You used to drive on adrenaline, but the older ones never lose the stress, you never stop hearing the beeps inside your head.” [Jo, 42-year-old paramedic, Station T, Interview T09]

Interpretative analysis: The capacity to empathically connect to victims or patients, i.e., knowing the subjective inner world of the other, including the emotional components and meanings which pertain thereto, is largely based on personal life experiences –self-experiential empathy (Vanaerschot, 1990) –and thus increases with age. This empathic connection often involves feeling merged with the other or taking over the emotions of the other, while still maintaining the ‘as if’ condition. This perspective taking is referred to as empathic concern (Batson, 2009). Yet sustaining this empathic concern—feeling with victims while maintaining self-other differentiation —demands continuous emotional regulation. This ongoing effort to balance connection with detachment can become a source of emotional exhaustion (Geuzinge, 2015).

4. Conclusion

In this research, we aimed to understand how high-risk professionals respond emotionally to potentially traumatic events when functioning in an environment that reinforces suppression of emotional reactions and fosters emotional distance. We analyzed the data from our ethnographic research involving eight groups of high-risk professionals across both vertical and horizontal social structures, focusing on their emotional reactions to past and present potentially traumatic events.

Using selected data from our analysis, we illustrated how professionals in vertical social structures —i.e., police officers, career firefighters, military personnel, and perioperative nurses – are prone to experience unexpected moments of identification with victims. These experiences may provoke intense emotional distress, increasing the likelihood of trauma-related mental health problems.

In contrast, among professionals in horizontal social structures, such as paramedics and specialized nurses, we did not observe these sudden, intense emotional reactions. They seem to experience increased emotionality and exhaustion over the course of their careers.

5. Discussion

Our findings indicate that the way high-risk professionals in vertical social structures emotionally respond to potentially traumatizing events may increase their risk of traumatization. If these emotional response patterns become habitual and generalize to other contexts, they may affect the quality of their social relationships outside the organizational frame and the support they can expect from them. In the following sections, we relate our findings to existing literature on how such professionals interact with patients or civilians, as well as on their experiences of alienation from family members.

Our main finding regarding high-risk professionals in horizontal social structures is an elevated risk of emotional exhaustion. This will be discussed in the third section in relation to the existing literature.

5.1. Professionals’ uncaring or harsh treatment of patients or civilians

Some researchers have observed that police officers show little caring or respect for the feelings of others (Hofer et al., 2021; Inzunza, 2015), and that medical personnel tend to treat patients in an uncaring way (Crabbe et al., 2004; Mardell, 1998). Pogrebin and Poole argue that sympathetic or nurturing behavior of police officers, i.e., being understanding and responsive to the problems of citizens, could compromise the integrity of the ‘us-versus-them’ dichotomy (Pogrebin & Poole, 1991). When people lack consideration for the mental or emotional states of others, empathy is inevitably at stake (Haslam, 2006; Lietz et al., 2011). Based on our findings, we might assume that one’s own high arousal associated with observing the distress of others might be too difficult to regulate (Decety & Moriguchi, 2007): “someone else’s pain is too much for us, so we cut off” (Fox, 1992, p. 178). When professionals find it difficult to empathize with the situations of others or with a distressed individual, they might risk misattunement. As a result, victims or patients could perceive the professional as uncaring or harsh.

5.2. Professionals’ alienation from family members

Maintaining healthy interpersonal relationships within one’s family can be a challenge for high-risk professionals (Geuzinge et al., 2020; Hill et al., 2020; Lawn et al., 2020; Watkins et al., 2021). Among police officers and military personnel there is a general tendency to avoid or limit talking with their intimate partners about occupational experiences (Brockman et al., 2016; Davidson & Moss, 2008). Their motive is often described as protective towards their intimate partners (Boyle, 2005; Evans et al., 2013; Verey & Smith, 2012). However, we suggest that the tendency to protect loved ones might be used as an alibi to shield one’s own emotions. After all, if professionals are repeatedly reinforced in

their work environment to emotionally detach, any experience of emotion may become uncomfortable and tends to be suppressed (Farnsworth & Sewell, 2011). Talking about past experiences with others—such as at home—often involves mentally revisiting those moments, which can heighten one's awareness of the emotions that accompanied the original event (Pascual-Leone et al., 2016, pp. 147–181). When professionals' primary way of dealing with emotions is to avoid them, they may lack the regulating capacities needed to integrate these emotional experiences.

The assumption that partners might not be able to handle their emotions when hearing about shocking events might very well just be a simple projection of one's own regulating capacity. In short, detachment from one's own emotions parallels emotional detachment from loved ones. This alienation, in turn, limits the role of family members as possible supportive resources to process overwhelming experiences.

5.3. Empathic concern and the risk of emotional exhaustion

Our findings indicate that professionals socialized in a horizontal social structure seem to experience increased emotionality and exhaustion over the course of their careers. Their way of being in the social world and of approaching social interactions tends to be more open and inclusive (Geuzinge, Visse, Duyndam, & Vermetten, 2024). Just as for many other helping professionals, others are potentially seen more akin to themselves, which makes them more prone to repeatedly empathizing with victims or patients (Singer & Klimecki, 2014). Shocking experiences of others that one identifies with will disrupt one's own existing schemata, making one aware of being just as vulnerable as the unfortunate other. After a potentially traumatic event, this kind of accommodation process can open the door for a positive outcome for the professional, such as posttraumatic growth (Tedeschi, 2011). However, the empathic connections have also been described as a pathway to negative outcomes, such as vicarious trauma (Badger et al., 2008) and emotional exhaustion (Kleineidam & Fischbach, 2023). Depletion of one's emotional resources, i.e., emotional exhaustion, is considered as the first stage of burnout (Maslach et al., 2001). Older, or more senior professionals, are more prone to go through this accommodation process and its accompanying vulnerability (Schnell et al., 2020), which may explain the fourth theme in our findings.

6. Implications

Socialization of high-risk professionals in a vertical social structure often takes place during their formative late adolescent years, the youngest being military and police recruits (Geuzinge, Visse, Duyndam, & Vermetten, 2024). Adolescents are generally highly motivated to belong to a group and to form social ties to develop a social (and professional) identity. In this socialization process, young professionals may also be particularly prone to incorporate the ways other group members emotionally react to potentially traumatic events and regulate their emotions. Even though professional socialization is developed to selflessly serve others and to be functional for emergency organizations, it may not always be functional or beneficial for the professionals themselves. The implications are that the following may be considered.

First, while some might view exposure to gruesome images of injuries or death as a 'rite of passage' in the socialization of newcomers, it is important to recognize that such exposures often occur during a period when the self and the brain are not yet fully developed (Siegel, 2012). Therefore, it is questionable whether young professionals' regulating capacities are already sufficiently developed to be able to adapt to all potentially traumatic events early in their careers. It may therefore be prudent to refrain from exposing students to shocking events early in their training. Though at first glance it may seem protective to habituate and desensitize young professionals from the start, these practices only limit the young professionals' emotional response repertoire. Instead, young professionals could in their training programs

benefit from a focus on developing emotion regulation skills. This includes learning to integrate affective empathy—literally feeling what the victim feels—with cognitive empathy, which involves maintaining the crucial distinction between self and other (Vanaerschot, 1990). For, when professionals can achieve high levels of both cognitive and affective empathy, by effectively communicating about sensitive and emotional topics, they may actually be better protected against mental health problems (Lamothe et al., 2014).

Second, it is only as adults that we gradually become aware that 'the first cut is the deepest' (Stevens, 1967). Empirical studies support this notion, suggesting that early career experiences are particularly likely to shatter preconceived notions of reality. In other words, those experiences often lead to a realization by young professionals that real work is quite different from what they learned at the academy (Charnley, 1999; Karlsson & Christianson, 2003; Paton et al., 2009). Rather than accepting this as an inevitable aspect of professional development, it may be prudent to ensure that these emotional wounds—especially the first—receive the attention and care which are necessary for healing before the next overwhelming experience arises. Emotions need to be recognized, processed, and expressed to facilitate healthy integration of distressing experiences (Austenfeld & Stanton, 2004; Greenberg, 2021). This also involves the necessity of addressing personal vulnerabilities that can undermine emotion regulation when triggered. Furthermore, professionals need training in cognitive reappraisal techniques, including the essential knowledge that is required to implement these reappraisal strategies effectively.

Third, an us-versus-them mentality, in which emotional distance from patients or civilians is increased, might be a functional adaptation in an emergency or at war. However, that is not where high-risk professionals in a vertical social structure are constantly in. Instead, they need time to process overwhelming emotional experiences. It deserves consideration to encourage professionals, especially at home, to decrease emotional distance by fostering a broader social network and a wider supportive social environment. By fostering a supportive social environment, i.e., a broad social network that prioritizes psychological and emotional well-being, we can better equip young professionals to face the challenges that lie ahead.

7. Limitations

This article is based on collected data from observations and interviews with professionals in the Netherlands, which may limit the transferability of the findings to other countries. These data also depend on the primary researcher's way of looking and seeing. We hope, however, that through the transparency of the researchers' positionality, as outlined in the method section, the transferability of the findings has been increased (Olmos-Vega et al., 2023).

Additionally, for practical reasons, we did not include observations of deployed military personnel, but restricted our data to interviews and document analysis, which might restrict the scope of our conclusions.

A second possible limitation concerns the method chosen for data collection. If the aim of this research was to assess emotional reactions to potentially traumatic events, we could have used standardized self-reported measures, such as the Impact of Events Scale (IES-15) (Horowitz et al., 1979), to capture professionals' perceptions. While self-report data can often reflect individuals' realities, many measures have inherent limitations due to potential biases (Schwarz, 1999). One notable issue, particularly relevant for our study, is that respondents need to be aware of their emotional experiences to accurately report post-traumatic reactions. Our findings suggest that professionals in a vertical social structure may have compromised emotional awareness, potentially obscuring their ability to self-report trauma-related phenomena. By utilizing qualitative methods, which are more suitable for our research question, this study provides deeper insights into the risk of traumatization.

In this respect we would like to add that the primary researcher's

background in clinical psychology may have provided distinct advantages in recognizing and interpreting emotional responses that researchers from other disciplines might not identify as readily. Therefore, we recommend that researchers studying high-risk professional contexts without clinical training consider collaborating with mental health professionals and establishing clear procedures for recognizing signs of distress in participants.

8. Future research directions

Several avenues merit investigation to advance understanding of social structures and the risk of traumatization in high-risk professions. First, longitudinal studies could examine how emotional response patterns develop and change throughout professionals' careers, particularly during the critical socialization period. Second, cross-cultural comparative studies would illuminate whether vertical and horizontal social structures are manifested similarly across different national and organizational contexts. Third, intervention research could test whether training programs that emphasize emotion regulation skills and cognitive-affective empathy integration reduce traumatization risk compared to traditional habituation approaches. Fourth, mixed-methods studies combining ethnographic insights with standardized measures could provide complementary perspectives on emotional responses and coping strategies. Finally, research examining family and organizational support systems could identify specific factors that promote resilience within different social structures and may inform evidence-based support interventions for high-risk professionals.

CRedit authorship contribution statement

Renate Geuzinge: Writing – original draft, Methodology, Formal analysis, Data curation, Conceptualization. **Merel Visse:** Writing – review & editing, Methodology, Formal analysis. **Eric Vermetten:** Writing – review & editing, Supervision, Methodology. **Joachim Duyndam:** Writing – review & editing, Supervision.

Disclosure statement

The authors report there are no competing interests to declare.

Data availability statement

Owing to the nature of this research, the participants of this study did not agree for their data to be shared publicly, so supporting data are not available.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Appendix A. Supplementary data

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