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Securing Operational Capability for Exceptional Circumstances: How Do Professional First Responders Respond to the Unexpected?

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Abstract: Complexity and uncertainty are framing the modern world, whilst also affecting issues on security and sustainability. There is a need to prepare for known threats and identified risks, but also to improve the ability to cope in situations that are difficult to recognize or describe beforehand. What is at stake—both at the organizational and individual level—is the ability to make sense of uncertain and ambiguous situations. Analyzing two empirical cases, this study aims to shed light on the abilities of experts, who have acted in very challenging situations, in which deviating from established procedures and abandoning politeness have been necessary to respond effectively. The first case deals with a threat of serious violence faced by a police officer. The second case focuses on the actions of an executive fire officer during a rescue operation after an explosion at a shopping mall. This paper concludes by arguing that pre-established procedures require experts to reflect on their usability in exceptional situations as relying on them could also have detrimental effects.

Keywords: security; exceptional situation; decision-making; scripts; leverage points



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1. Introduction

In the modern world, we face circumstances and situations characterized by volatility, uncertainty, complexity, and ambiguity (VUCA) [1,2]. Thus, we are increasingly susceptible to the unfolding of non-linear, unpredictable, and fast-moving consequences [3–6]. If the crises of yesterday differ from upcoming crises, how can we prepare for whatever lies ahead? To cope with VUCA environments, it is crucial to explore the unknown and make sense of the dynamics of a situation [6]. Exploring the unknown implies that structures and operational models, which have previously proved their reliability, may be inadequate in the next situation to be encountered. That is to say, it is impossible to know in advance, what resources and abilities will be the most needed to resolve the next crises or emergency [7–9]. Nevertheless, professional first responders “are expected to fulfill their duties during an emergency regardless of the magnitude of the disaster” [10] (p. 2), that is, to display their capacity to raise to the level of an occasion.

However, it may be difficult for actors to deviate from the pre-established practices, operational models, and structures, even if doing so would be necessary for success in a situation [11,12]. Otherwise stated, some efforts to improve operational capacity may be unable to address unknown situations. Therefore, it is important to plan in advance, set up structures, draw operational models and action plans, and commit the relevant actors to follow them, while still maintaining the ability to detect when these pre-established scripts (be they procedures, operational models, action plans, the formal division of work, rules, tools, etc.) hinder rather than help produce effective responses, and take actions needed [13–18].

How could this phenomenon be approached in terms of research? As we know, security threats exist in every time and space scale, ranging from the acute and local to the

chronic and global [19]. One promising option, thus, is to focus on the scale of capabilities of individual actors, to investigate situations in which actors have succeeded in rising to the occasion, not only because of well-established scripts but also despite them [20]. The scale of individual abilities is reasonable in situations where time constraints do not allow negotiations, but decisions need to be made quickly and fluently in line with the dynamics of the situation [21] (pp. 35–36). What kind of cognitive qualities explain abilities of this kind? We attempt to answer this question by delving into two different incidents, where frontline responders perceived an unexpected situation, managed its anomalies, and identified better solutions accordingly [22,23].

The approach we have chosen highlights the idea that expertise is not solely about sovereignty in domain-specific skills but is also about the ability to perceive and make sense of an exceptional situation and act according to its demands [24,25]. In this sense, it is a question about the relationship between the problem and the solver, when the problem is dynamically uncertain. Krasmann and Hentschel [14] approached this through the concept of situational awareness, examining the demands of actors to respond to a problem as it unfolds and where the only thing to be done is to handle the situation itself, stressing the ability to act in a situation in which the reference points of conventional solutions disappear. Faced with the dynamics of highly stressful situations, actors are forced to apply their skills with great flexibility [24–28].

In the first example, we will focus on a police officer in a situation in which his team faced a serious threat of violence. The police officer felt that the team was not being led and coordinated properly. As a result, he made his own split-second decisions. In the second example, an executive fire officer and his team, as professional first responders, arrived at a shopping mall at which a devastating explosion had taken place. Many people needed urgent assistance but he decided not to focus directly on them. Through these examples, we can gain a sense of an expert's ability to rise to the occasion, when routine performance would be insufficient. Their decision-making and cognitive processes are of particular interest, as they can prevent or trigger the appropriate action.

The rest of the article is structured as follows. First, based on the literature, we lay the ground for the individual requirements in exceptional situations. Our aim is not to summarize all the relevant literature in this field, but to inspire the analysis and help to draw conclusions from the empirical data. Then, we explicate the research question, describe the method used in this study, and explain the phases of data analysis. After that, we dive into the results of the study. We then discuss the meaning and relevance of the results. The article ends with conclusions.

2. On the Requirements in Challenging Situations

Let us move on to assemble crucial pieces for our theoretical and conceptual framework so that we can give meaning to the empirical findings and justify the methodological choices we have made. For this, we conceptualize the scripts that direct and engage actors in desired actions. Then, we describe the requirements for efficient action in exceptional, unexpected situations with non-linear dynamics. Understanding the dissonance that subsequently arises is at the heart of this paper.

At the society level, responsibilities to address security problems and emergency situations are allocated to appropriate actors, and their operations are designed in an exceedingly bureaucratic and hierarchical manner; it is assumed that the legislator is well aware of the problems that the key actors will face, so their operational capacity can be built on pre-established action plans, operational models, procedures, conferred powers, tools, rules, and social norms [7,29]. Thus, their actions have legitimacy both legally and in the eyes of the public [30]. As this approach to organizing actions is undoubtedly an effective way to respond to the majority of situations encountered, it is further improved and strengthened, hence committing actors even more strongly to it [31]. Thus, well-known problems can be solved ever more flawlessly, efficiently, and in a more sophisticated manner. Effective and successful responses, then, require actors to stick to established

scripts and avoid soloing. There is a good reason for an actor to trust the adequacy of scripts in every situation encountered: committing to following them is the most proper way to achieve acceptable results without compromising the legitimacy of actions [31]. Referring to transboundary crises, Boin [32] argues that “many societies have never been as prepared for crises and disasters as they are today”, but the problem is that the preparedness focuses on traditional crises with limited or even counterproductive value in the face of exceptional ones.

Scripts not only influence the course of actions but also significantly determine how situations are perceived. They contain assumptions about the actor’s responsibilities, skills, equipment, and goals that together guide how the actor should interpret the situation [33]. Thus, they typically provide clarity, order, and keys for effective interventions [34]. As McConnell and Drennan [17] mention, the crisis management literature has traditionally been resistant to the idea that scripts could negatively impact a situation; rather, the starting point has been that since they are made with good intentions, their applied effects must also be good.

Even if the encountered incidents are surprising, unprecedented, fast-moving, and overwhelmingly stressful, key actors are expected to provide effective responses to restore order and minimize loss [10]. Therefore, they are obliged to implement and commit scripts on the one hand, but should also be prepared to act flexibly when the scripts fail to address the most critical situational factors [35,36]. It may be crucial for an actor to perceive the leverage points in a dynamic situation, to find the most important targets of intervention. Such systemic points that trigger or hold back non-linear dynamics can be very subtle, which is why their detection requires insightful interpretation—sensitivity in understanding the underlying systemic structures [22,36,37]. It is about the ability to identify where and how to intervene in a situation so that it does not result in serious consequences [38].

In addition to the need to perceive the leverage points, an actor must also have the courage to orientate towards them aggressively and actively in a cognitive sense [34], as it may be a problem for which pre-defined solutions do not apply. Expertise is required to determine when the script has guided actions as desired and when the leverage of the situation is beyond the scope of the script; it is crucial to sense when a situation is being misinterpreted [15,39]. Thus, addressing the situation effectively may require a rejection of established procedures, overcoming the formal chains of command, breaking certain rules, or behaving in a socially incorrect manner, for example. Depending on these may make a situation even worse by effectively forcing an actor to solve the wrong problem or preventing her/him from focusing on the most important elements of a situation [9].

A number of studies have attempted to explain the role of inadequate sense-making and inability to deviate from the pre-established scripts in various disasters, such as the Mann Gulch fire disaster [40], Mount Everest climbing disaster [41], and Roskilde rock festival [42]. However, to the authors’ knowledge, successful deviation from the established procedures and rules has been scarcely investigated, probably in part because successful cases stay out of the limelight. Focusing on how experts rely on scripts is, therefore, a promising approach to explain this phenomenon.

We approach this research phenomenon from the perspective of Naturalistic Decision Making (NDM). Roberts and Cole [43] argue that the decision-making of actors has historically been explored from an idealistic perspective, which is unable to take into account situational factors that have an impact on decision-making in critical incidents, such as acute stress, high risk, time constraints, incomplete information, uncertain goals, insufficient resources, etc. Instead, NDM assumes that, in reality, experts can cope with problem settings of these kinds by utilizing expert intuition [44–47], which is based on the decision maker’s situational awareness and cognitive skills rather than on the comparison with clear-cut alternatives [38]. Let us now move on to the methodology, to lay the ground for a better understanding of how we approached the research problem.

3. Materials and Methods

As noted above, the dissonance between pre-established scripts and more creative situation-specific decision-making is interesting here. We chose Cognitive Task Analysis (CTA) as a promising method to grasp this phenomenon. Klein and Militello [48] (p. 164) state that CTA offers the opportunity to understand the way people make key judgments and decisions, interpret situations, make perceptual discriminations, solve problems, generate plans, and use their cognitive skills to carry out challenging tasks. It draws attention to the expert's cognitive processes in particular incidents, thereby providing a means of understanding the implicit knowledge that experts rely on when dealing with the problems at hand. The method also seeks to address particular features of expertise in a way that can be utilized for enhancing expertise through education and training [20,21]. In this research, the method is applied to situations that differ from the expert's routine tasks, thereby highlighting the cognitive skills that cannot be solely explained by an expert's ability to follow given procedures, algorithms, and orders. Thus, the task to be performed is not pre-defined but subject to continuous interpretation.

More specifically, this study seeks to explore the following questions: (1) In highly challenging situations, how have the interviewed experts managed to rise to the occasion? (2) What elements made action and decision-making challenging for the experts? (3) Why were the experts able to deviate from the script?

In line with a CTA procedure, we collected the empirical data through in-depth interviews, using the Critical Decision Method (CDM)—a retrospective method that focuses on an actor's cognition in decision-making strategies, particularly in non-routine, ill-defined domains [20,21,49]. The study was conducted in Finland, where both cases have taken place. The first incident has never gained public attention, but it has been addressed in the internal processes of the police organization. The latter incident, in turn, has been covered broadly in the media due to its devastating consequences and human origin. As interviewers, we had prior knowledge of the experts we would like to address; we identified just these experts as we strived to understand situations in which professional first responders had to go beyond the given scripts to address the demands of an exceptional field of problems. In addition, what both interviewees have in common is a hierarchical organizational management style and well-established scripts that bring clarity and legitimacy in their actions. Thus, to withdraw from the scripts is anything but self-evident in their operational environments. Following the CDM procedure, the interviews were structured around four sweeps: (1) Incident identification, in which the interviewee returned to their memories about the situation. (2) Timeline verification, in which we co-created a timeline of the critical moments from the perspective of decision-making. (3) Deepening, in which we probed the shifts in the interviewee's assessment of the situation, critical cues, confusing factors, and actions taken. (4) "What if" queries, in which we set the interviewee to reflect hypothetical circumstances [50].

All subjects gave their informed consent for inclusion before they participated in the study. The study was conducted in accordance with the Declaration of Helsinki, and the protocol was approved by the Ethics Committee of Police University College, Finland. The interviewees reviewed and approved the manuscript for the part of their interviews. The interviews lasted for around three hours. The recorded interviews were transcribed for further analysis. Let us now turn to the research results, which are presented in a narrative form to highlight the cognitive aspects while retaining the chronology and context of both examples [21,51].

4. Results

In the previous sections, we have presented a theoretical framework that enables us to explain and understand the decision-making of experts in critical situations, in which dependence on pre-established scripts could have fatal consequences. With the help of the NDM approach and CTA methodology, we are ready to proceed to analyze such cases

in which the actors have risen to the occasion when necessitated by time constraints and high stakes.

4.1. *A Threat of Serious Violence Faced by a Police Officer*

As a first case, we will analyze a case regarding a threat of serious violence against a team of police officers. From the perspective of this study, it is interesting to explore how the interviewed police officer acted in a situation in which, in extreme danger and limited time, the roles of the team were switched, disregarding the established procedures and formal hierarchy. In a tactical sense, it is about the actions that may have saved the situation from ending in multiple fatalities.

4.1.1. On Noticing the Unusual Circumstances

The interviewee was initially patrolling a city center with his colleague when they received an emergency call of the highest level of urgency. According to the emergency call, serious violence had been reported in an apartment. The task of the police was to immediately break open the door, enter the apartment, stop the violence, and secure the scene. As the suspect(s) were most likely armed and intent upon harming the police, addressing safety issues was of particular importance. Another police patrol, including an incident commander who was in charge of the situation, was also called to the incident. This patrol had been first to arrive at the scene but did not have the necessary tools to break open the door. They were therefore waiting on the staircase by the relevant apartment door when the interviewee's patrol arrived.

The interviewee arrived with his colleague on the staircase. Due to the presence of the first patrol, he was able to fully focus on the task at hand: breaking open the door quickly and safely. Before this, the interviewee had observed certain details about the other patrol and their operational environment. A narrow hallway located in an apartment building, a door opening a specific way, and the actions of the patrol waiting for them—their positioning, communication, and stance—were not what the interviewee expected from the situation.

“They didn’t have proper observing directions. It was rather disorderly. One of them should have been observing one direction while the other was observing another direction. Then they would have had the situation under control. Their actions would have signaled to us that the door is located right there—open it.”

Given the reported task and the operational environment, the interviewee expected to see determined, stable, and focused teamwork by two people. By their action, they could have notified the arriving patrol about the next actions to be taken. The arriving patrol could then have joined the flow of cooperation. However, the interviewee only sensed a lot of busy activity and that, from his point of view, the energy was merely focused on irrelevant things.

The interviewee started to break open the door immediately with his colleague. He had a clear vision of how the group of four police officers should work in the situation—which roles each of them should have and how this would be seen in their positioning, readiness, and communications. In other words, breaking open the door should have been a part of a process in which different sub-tasks seamlessly integrated into one another. The door was opened fast and efficiently.

“They were certainly very busy, but, in my view, they achieved nothing. I assumed that when we got the door open, they would take control of the situation, prepare to use a firearm, and start shouting commands to the suspects. If that had been the case, I would have had an opportunity to drop the handspike, seek protection from the walls, and arrest anyone who walked out of the room.”

From the interviewee's point of view, immediately after the door was opened, what he expected to happen did not happen. The team should have instantly kept their eyes on the target and have been both mentally and practically ready to use a firearm. According

to him, that should have been the role of another patrol that was not breaking open the door with tools in their hands. In addition, it was the incident commander's role to direct the teamwork in the incident. What then followed was really interesting.

“At the point when the door was opened, I realized that nobody was doing anything [relevant]. Because nobody was prepared to use a firearm, I took one myself. However, I couldn't drop the handspike. It was a small wooden apartment building, so I couldn't throw it anywhere, because someone would have trodden on it, as we have so often seen. I remember that I went inside the apartment with the firearm in one hand and the handspike in the other. It all happened in a second.”

The interviewee states that he was not prepared to switch roles beforehand. His actions had not been specifically prepared, although the insight appeared in his mind in a split second. Due to this insight, he exceeded his authority and re-assigned the roles. Everything happened automatically, just by going with the flow of the situation, as he described it. The new roles were created not through negotiation and agreement, but through his actions. He detected a conflict and its potential implications for the dynamics of the situation. He had an insight that was primarily responsible for his subconscious actions.

4.1.2. On the Beginning of Improvisation and Overcoming Obstacles

The situation continued under the direction of the interviewee and was completed safely for all parties involved. It is of interest to ask how the interviewee justified his actions in the situation, bearing in mind that, in principle, following the formal command hierarchy is essential for conducting teamwork efficiently and safely. In other words, it would have been reasonable not to have improvised in the situation, but to blend in with the given teamwork and wait for instructions from the officer in charge. The interviewee did not actually consider his decision from a legal viewpoint—not in this specific incident and not even during the interview. He simply felt that he had to do it this way. In the interview, he explained his decisions resulting from the confidence that has been reinforced by his experience.

“I knew that I was by far the best in these situations due to my experience and background. When you feel confident that you can handle these things, taking on a role is not that difficult. [. . .] But I didn't do it deliberately. The main rule is to have your eye on the target and prepare to use a firearm as quickly as possible. And because no one else did, I did. I felt that if I wasn't going to do it, then nobody would. Then I made the decision. It was just a second after the door opened. I didn't think about it at all.”

Due to his experience and orientation in developing himself, he was able to note when the actions of the team were not as expected. He made a crucial decision regarding how long it would be prudent to follow formal procedures, and the point when following formal procedures became unnecessary. In that single moment, the meaningful became absurd, and what had been absurd became meaningful. He had an idea that caused him to take a risk that changed the dynamics of the situation.

The risk was targeted specifically at the systemic leverage point. It was shown as leverage in the sense that if that task had not been handled properly, the situation could have resulted in fatalities. Thus, every other task in the situation was deemed secondary compared to this leverage point. The incident commander certainly knew his responsibilities for the roles in the situation. However, for one reason or another, they were not part of his actions. In other words, all the necessary elements and information were available for others to see the situation through the leverage, but this did not happen.

In the situation, the interviewee acted quickly, intuitively, and automatically. However, his actions were based on expertise that has been developed through experience in the special police task force. This is why, ultimately, his automatic reflexes had rational,

deliberate foundations. The interviewee did exactly what he knew he had to do. The certainty that his actions were right reinforced his on.

“In the special task force, we practiced taking charge of situations in extreme scenarios a lot. For example, a scenario in which the leader became ambushed and took a hit. The educational idea was to keep the team running smoothly—someone had to take the lead on the fly. And generally, it was down to me, probably because I can’t stand that kind of disorder. Then, I rather aggressively took the lead to end the disorder and got things working again.”

“Although the special forces are more creative in their actions, they also have much stricter rules. And if the situation demands it, then you must be very creative in how you deviate from the rules.”

Bearing this in mind, it could be said that what is actually taught in special task forces is the individual’s ability to adapt to action with other team members to support a common goal. It is about training to use each other’s actions towards the same goal in a situation. As highlighted by the given situation, a better action would, paradoxically, happen less but as more determined and efficient group work. In this sense, training in special task forces has improved the interviewee’s ability to see the direction of the common work.

4.1.3. On Starting an Immediate Action

One important notion from the interview relates to the information the interviewee used as a basis for his decisions. By using just a few subtle and abstruse observations, he made crucial decisions. It was a kind of synthesis regarding the description of the task, certain aspects of the staircase and the door, and the actions of another patrol. He specifically did not require more reliable information to be sure that he needed to act contrary to the given procedure. On the one hand, it appears that he developed his skills to be more independent from explicit information and he reinforced his trust in his intuitive decision-making. On the other hand, this is explained by a deeper understanding of the situational dynamics and their non-linear leverage points.

“Through experience, education, and training, you learn to understand that the timeframes are so limited. If you must change roles, for example, you understand that it has to be done because there is no way not to do it. If you don’t, the game is up.”

Detecting the anomaly led to the insight. He was rather skeptical about the cooperation of the team that could trigger the action. Noticing the anomalies and an appropriate state of mind—let us use the term suspicious mindset—led him to act immediately. He specifically did not stay to ponder the situation or instruct other team members. Nor did he let the action reach its conclusion on its own and decide to give feedback at a more appropriate time. The interviewee thought that his experience had given him enough strength to not have to be polite. However, when he recognized the leverage point in the situation, it was easy for him to bypass his politeness. It, therefore, depends on the situation and its seriousness, whether politeness in action is beneficial and when it could have fatal consequences.

“Maybe the question is more about daring. Let’s take this same incident four to five years ago. Even if my knowledge had been no different, I would have been excessively polite to make such an intervention. At that time, I would not necessarily have taken the role I wanted to take. I would have seen that our safety was threatened, but still, I wouldn’t have done it. When talking about operational performance, I now think that if I hurt someone’s feelings in a situation it would be the least of our problems.”

4.2. Explosion in a Shopping Mall

Another case we are investigating in this article deals with an explosion in a busy shopping mall. Let’s take the viewpoint of the executive fire officer. The incident started

on a Friday evening when the fire department was called to a shopping mall where an explosion had taken place. The interviewee left for the scene with his group.

4.2.1. On Identifying the Bigger Picture

According to the call, a gas container had exploded. However, given the time of day, this didn't sound like a reasonable explanation to him. A gas container suggested construction work but on Fridays at that hour, construction work was very uncommon. Additional information was needed but the emergency center was unable to provide it. The problem in sharing and receiving information from the emergency center suggested that the situation was more serious than had been initially assumed.

Since no better information was available, the interviewee decided to immediately go and reconnoiter the scene. In other words, according to the initial information, the case did not fit any solution that they could have immediately started using. So, initially, he had to make the situation clear to himself, after which deciding on solutions would be of value meaningful. It is important to note that he did not start solving the sub-tasks one by one but rather tried to gain an overview of the bigger picture and how every person in need would fit into that picture. The interviewee instructed his group to remain in the fire trucks—to do nothing before they were clear about what they should do. He moved against a stream of people towards the center of the shopping mall.

At the entrance to the shopping mall, he saw a severed foot. However, there was no sign of an explosion at the entrance, which led to the assumption that the foot had flown some distance to the entrance. The interviewee continued making his way towards the explosion. His only goal was to gain more information about the scene to see the overall situation. Gaining an understanding of the overall situation was more important than helping the people he encountered. In other words, he had to ignore the needs of individual people. In this case, ignoring individual people meant that he did not let emotional elements distract him from his primary goal.

“In such situations, where there are many people, you simply cannot focus on one person and start treating them. Instead, you must get an understanding of the whole situation and what is going on. But if you think about individual things, it's all over. The uppermost thing in my mind was that I had to understand the overall situation to consider what steps to take, for example not focusing on the most seriously injured but gaining an overall view to deal with the situation. This was my primary goal and I was then able to implement the appropriate processes.”

It was a matter of his narrowing attention to ignore irrelevant subjects to prioritize the most important areas. This kind of narrowing attention, or tunnel vision, served as a prerequisite for sense-making. At this moment, the nature of the problem was unclear, so he did not narrow his vision in terms of the most obvious problems. In the next extract, he explains how realizing the seriousness of the situation triggered a special prudence regarding his actions—he could not afford to be ineffective.

“When I saw the severed foot at the entrance, I realized that something really serious had happened. Now I had to carefully consider what actually had to be done. A great number of people were running away and many of them grabbed me shouting, ‘Help, help!’ I just kept moving forwards and said ‘out of my way!’”

“I knew that if I didn't ignore them, I would be doing a poor job and we would fail. Many more people may have died, then. But if I did this properly, we had a much better chance of success.”

4.2.2. On Making Decisions

When the interviewee arrived at the scene of the explosion, he made certain observations about the surroundings. These observations helped him gain an overview of the overall situation. He stated that, after this became clear, everything was so easy. His first step was to declare a major incident, meaning that certain procedures would

start—additional help would arrive at the scene, hospitals would start to prepare special procedures, etc. After the leverage point had been found, he felt a sense of calmness and trust that everything would move forward on its own.

“Then I saw a pile of people, it could be called a pile—they were partially overlapping, and I immediately noted that some of them were dead. Then I declared a major incident. After that, the situation became quite clear.”

He could now address the safety issues at the explosion scene. From the interviewee’s perspective, the situation continued as an iterative process in which he observed the meaningfulness of his coordinated solutions in relation to the dynamics and the operational environment. He was prepared for the possibility that the running responses might have to be changed. It is about paying attention and also targeting resources for the unknown. If it transpired that an observation was a systematic leverage point, it would change the course of action.

“When the rescue teams were performing their tasks, I was able to figure out the bigger picture, to think ahead about what we would need to do if this or that happened. I sort of created scenarios for where we might be in half an hour, for example. You don’t just start thinking about this after half an hour. You must anticipate the situation, read it and think about how it may have developed in half an hour or two hours.”

The interviewee described how the firefighters who had been told to remain in the fire truck were nervous. Instead of being allowed to help people in need, they had to wait for orders. The interviewee emphasized that this do-not-do-anything-but-wait approach would pay off later through appropriate, efficient solutions and coordinated teamwork. As he said, if we get it wrong in the beginning, it takes a while until we can do things right. It is therefore important that the team effort is used on something that has the greatest benefit for the overall situation.

“In these kinds of situations, you have to think about the bigger picture, not just the visible effects. In this case, you mustn’t think about the explosion itself, but what would be the most effective or primary help. I prefer to think of it in terms of having an overview before making any decisions about the necessary actions.”

It is primarily about how the available resources can be used to maximum effect. As the interviewee described, you have to be able to look past some obvious effects and see the situation from a systemic problem-solving perspective. Sometimes, solutions require breaking old models of action so that the actions can be adapted to the situation. In this case, it was clear that the number of people needing urgent medical attention was much higher than they could treat by default resources. Thus, an important decision was to split the first-aid unit pairs into individual operatives. This meant that the available resources could be doubled. The interviewee stated how, once they had found out the correct way of solving the problem, it was obvious that they needed to extract as much as possible from the arriving resources. Thus, the theme returns to politeness in the situation.

“[Afterwards] the emergency paramedics criticized my decisions as I had decided to divide their units into two individual operatives. They were used to working as two-person teams. They took it badly. I divided the units because there were so few paramedics and so many people needed immediate help. They would have wanted to work as pairs, to support each other in such an extreme situation. [. . .] In my opinion, every professional must be able to administer lifesaving help within a couple of minutes. It would be unacceptable for one person to receive help while another person close by died, i.e., if we could have helped both persons—opened their airways or stopped them bleeding, for example. In this kind of situation, I cannot think about a paramedic’s feelings. I just think about their performance.”

4.3. Why Were the Experts Able to Deviate from the Scripts?

The emergency situations analyzed above showed how the actors deviated from pre-established scripts. The police officer exceeded his authority and re-assigned the roles by taking the lead on the fly. The executive fire officer, in turn, ignored the needs of individual people to organize the most effective responses. We can deepen our analysis by examining why and how the actors were able to act as they did. Using four examples, the following table (Table 1.) presents a collection of the cues that interviewees used when they decided to deviate from the scripts. It goes on to explain what would have made the deviation particularly challenging in the sense of cognition. Based on these factors, the table explains why the interviewees were able to deviate from the scripts.

Table 1. Summative results for the analysis carried out through the interviews.

Action/Mission of the Expert	Script	Cues	Why Difficult to Deviate from the Script?	Why Could Deviate from the Script?
Breaking the door down (team mission: entering the apartment, stopping the violence, and securing the scene).	One police patrol breaks the door down; the other controls the situation and prepares to use firearms.	Disorganized action and mixed focus by the second patrol. Differing perceptions about the situation between the interviewee and the incident commander.	The incident commander leads the team's actions. Deviating from the script would mean exceeding his authority. It would be a sign of mistrust of colleagues.	Assurance that following the script may result in a serious threat. Training in special task forces has clarified models of actions and enhanced the ability to make a distinction between the relevant and irrelevant; it has also prepared for creativity to act according to the demands of a situation.
Switching roles; taking the lead on the fly, preparing to use a firearm, entering the apartment, communicating by action.	The incident commander leads the situation. The other patrol focuses on the target, is ready to use a firearm, and start shouting commands if necessary.	The other patrol was neither mentally nor practically ready to use a firearm. Their actions were not streamlined, stable, or focused.	Lack of confidence. Lack of strength to not having to be polite. Willingness to ponder, discuss, or instruct other team members about the next steps.	The initial presumption is the suspect(s) will attack and is/are motivated to use violence. Understanding of possible consequences if the situation continues with the given script. Awareness of how time constraints affect decision-making. No necessity to be polite; the inconvenience for colleagues should not affect decision-making. Perception about keeping the action running smoothly despite surprises.
Missing obvious and visible problems. Addressing and orientating action towards the unknown.	Firefighters exist to help people in need. Much activity is on major incidents in time-pressured, decision-making situations. Resources should be quickly targeted to where needed.	The initial information did not make sense. Communication problems at the emergency center suggested that the situation was serious. Severed foot indicated a powerful explosion.	A chaotic situation puts focus on numerous sub-problems. Helping people is at the core of firefighters' identity; feels wrong and unnatural not to help people in need. Difficult to exclude irrelevant things from decision-making.	Clear perception about the importance of gaining a bigger picture overview before acting. Understanding the importance of resource distribution in major incidents. Understanding how empathy may lead to addressing non-urgent problems.
Dividing the emergency paramedic units into two individual operatives to gain maximum effect from available resources.	Emergency paramedics work as two-person teams, in which both have certain roles. It is important to support and be supported by a partner in demanding situations.	The number of people with life-threatening injuries seemed to be considerably high available resources could respond to.	Working in two-person teams is an established practice for mutual support. Wishing to provide the best possible medical treatment to each injured person; unwilling to compromise quality with quantity. Reluctance to shout orders in a situation that is already shocking.	Understanding that in an urgent, time-constrained situation, optimizing the quantity of help is more important than the quality. The starting point in mind is that every professional should be able to administer lifesaving help. Ability to see the systemic structure beyond the visible action.

Table 1. Cont.

Action/Mission of the Expert	Script	Cues	Why Difficult to Deviate from the Script?	Why Could Deviate from the Script?
Synthesis: Why could deviate from the script?		Experience and training have helped to perceive: the underlying systemic structures and their leverage points, along with actions to be taken; the essential patterns from the less essential background, to direct attention to most important things; the crucial role of time as a contingent element of a situation; the relationship of tasks and sub-tasks. Orientation to expertise has enhanced: moral responsibility to do good; the idea that there is no reason to assume that nothing can go wrong; the idea that doing good may require impolite behavior and ignoring empathy or other emotions.		

An interesting conclusion emerges from the above table. The ability to distinguish between what is essential and what does not seem to be a highly important skill in challenging situations. Scripts are of assistance in such situations by reminding the actor—by remembering for them—where the attention should be focused and how and in which order problems should be solved. They provide structure and clarity to the situation. By keeping to the script, the majority of situations are solved as hoped for, in an efficient and justified manner. This calls for obedience and perseverance from the actors so that they comply with the scripts and study, practice, and train to use the scripts.

On the other hand, as we can notice from the above table, in exceptional situations actors also need skills that are cognitively and attitude-wise completely different from the above-mentioned skills. In other words, actors should maintain a doubtful and skeptical attitude towards the scripts and, at the same time, develop capacity which is not dependent on the availability and suitability of the scripts. In addition, they should have the nerve to abandon politeness and feelings, such as empathy, if required. In this sense, the ability to provide help in the best way possible seems to require the simultaneous adoption of very contradictory characteristics.

Based on the findings presented in the table, it is indeed impossible to explicitly describe the cognitive abilities that guided the decisions and actions of our interviewees. However, the results suggest that these characteristics are associated with a systemic understanding of situations, together with an ability to perceive non-linearity, an ability to organize problems into hierarchical categories in a split-second, a skeptical or suspicious orientation to detect anomalies in the ongoing situation, as well as the strength to bypass politeness when necessary.

5. Discussion

It is time to interpret the meaning of the results with regard to previous scientific knowledge and discuss what new understanding the study managed to evoke. Generally speaking, it is known that reliance on scripts—such as standard operating procedures—does not necessarily bring the desired outcome, as they are designed to address future uncertainty with learnings from the past [52,53]. However, much less is known about situations in which actors have risen to an occasion not merely through relying upon scripts, but also despite them. The current study addressed this by delving into the cognitive processes of two professional first responders in extremely challenging situations. In such a situation, an actor should make decisions under high risk, acute stress, time constraints, and incomplete information [54,55]. One interesting aspect here is expert intuition, by which an actor can recognize familiar, previously learned patterns from the emerging situation and hence make quick yet effective decisions [16,23,56–60]. In this study, expert intuition was instrumental in detecting anomalies [15,22], whereupon the actors were able to make critical decisions to influence the dynamics of the situations [61–64].

In addition to expert intuition, the actor's relationship to or distance from the scripts seemed to play a key role in explaining their capacity to raise to the level of an occasion. On the one hand, the study illustrated how crucial it is that certain scripts are drilled into the actors through education, training, and learning through experience. However, what is surprising is that the ability to withdraw from the scripts appears to be even more important

when encountering situations in which dynamics do not run on the expected tracks. This result conveys an important, complementing message for the research on emergency management [37,65–68] by highlighting that scripts should not be taken as strict guidelines for problem-solving, but instead as reference points that also help actors to observe typical and normal patterns as well as critical anomalies the situation exposes. This finding brings a critical perspective to the discussion regarding the reference points professional first responders should rely on in making critical, irreversible decisions [12,34–37].

Another interesting point regarding the results of the current study relates to how an expert directs their attention in challenging, stressful situations. In principle, it is thought that crisis and acute stress narrow an actor's focus, and thus negatively affect decision-making in complex situations [69,70]. The underlying assumption is that in a stressful and time-pressured decision-making situation, an actor may over-focus on the sub-task, thereby ignoring important clues of the overall situation, or becoming immersed in the abundance of individual sub-tasks, consequently losing their ability to act effectively [70,71]. However, this study revealed that this matter is more paradoxical than has been thought. Regarding the situations analyzed in this study, it seems that appropriate actions are linked to the actors' ability to focus on and perform the essential sub-tasks on one hand, and the ability to read people, structures, and other clues around them to find the most important sub-tasks on the other. The results indicate that the motion between the levels of abstraction and how the actors distinguish the essential patterns from the less essential background is of importance [72]. In line with Ben Shalom et al. [39], who have investigated actors' sense-making in military combat, the situation may require the ability to focus on the sub-task with the appropriate level of severity, but also to remain at a distance to assess the relevance of the sub-task. Thus, it can be said that the cognitive processes by which an actor formulates and prioritizes various sub-tasks are crucial.

6. Conclusions

The examples presented in this study show how the interviewees have been able to rise to the occasion when routine performance would have been insufficient. On the one hand, this is because they have developed a high cognitive capacity through experience and training. On the other hand, they have developed rich mental models that serve as a basis for fueling a transformation between cognition and action. Thus, they were able to abandon some of the established scripts and ignore social correctness to focus on the leverage points of the problem. In doing so, they lost some reference points that would normally produce the necessary clarity and order. In this sense, they remained detached and were forced to rely on their own capacity in sense-making and problem-solving. Future studies could explore this issue further by investigating expert–novice differences in such challenging situations.

The results of this study indicate that while actors should enhance their abilities in adopting and training pre-established scripts to address known expected situations, they also need abilities to deviate from scripts and translate their insights into better procedures within exceptional situations. However, it is crucial to notice that there is a delicate balance between deviating from the script appropriately when necessary, and at the wrong time for the wrong reasons or otherwise inappropriately, which may also have dire consequences. Further research would be of great help in investigating how this challenge could be addressed in education, training, and learning through experience.

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