RESEARCH ARTICLE

Organizational Learning Through Debriefing: The Process of Sharing and Hiding Knowledge

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Our objective with this article is to reach a better understanding of debriefing as a learning tool by exploring the process of sharing and hiding knowledge and mistakes, respectively. There is disparity between the ideal of sharing every mistake truthfully on the one hand, thus allowing mutual learning, and the human tendency to hide knowledge on the other hand, thus preventing mutual learning. We have identified the following research question: How do pilots experience the process of sharing and hiding mistakes during debriefing?

The context is debriefing as it unfolded during regular training in a fighter squadron in the Royal Norwegian Air Force. Nine military pilots were interviewed, and the data were analyzed through coding and categorization. From the data analysis, four categories with subsequent narratives were revealed: (1) Mastery Culture – Embracing to Share Mistakes, (2) Safety Culture – Embarrassing to Hide Mistakes, (3) Performance Culture – Embarrassing to Share Mistakes, and (4) Cloaking Culture – Negotiating Whether to Share or Hide Mistakes.

We discuss our findings in the light of the classic prisoner's dilemma, delve deeper into the organizational, relational, and personal elements of this process and ask whether the military can learn from other professions. Our research deepens the knowledge of the disparity between the ideal of sharing mistakes and the human tendency to hide knowledge. Our research has practical implications for other military units and operative units, such as the police, fire fighters, and medical personnel as well as for organizational learning in general.

Keywords: Learning; Knowledge Hiding; Knowledge Sharing; Psychology; Debriefing; Military

Introduction

The legendary Greek warrior Achilles died while fighting in the Trojan War after being struck by an arrow in his heel, his only vulnerable spot. An Achilles Heel in organizational learning is when people do not feel sufficiently safe to share failure. To cure this, organizations should "fight the natural tendency to bury failure" (Mintzberg, Ahlstrand, & Lampel, 2005, p. 214).

The architecture of organizational learning is based on individual and collective experiences (Argyris & Schön, 1996; Kolb, 1984). In the armed forces, researchers have explored how organizations manage to create conditions so that individual experiences can grow into organizational knowledge (Godé & Barbaroux, 2012). Debriefing has great potential with respect to organizational learning, given that people are willing to share every aspect of their experiences truthfully (Godé & Barbaroux, 2012; Zigmont, Kappus, & Sudikoff, 2011). However, researchers have identified several antecedents of knowledge hiding, for example perception of distrust, complexity of knowledge, task-related knowledge, and lack of knowledge-sharing climate (Connelly, Černe, Dysvik, & Škerlavaj, 2019; Connelly, Zweig, Webster, & Trougakos, 2012). The NATO Lessons-Learned Handbook recognizes the difficulty of establishing a culture where individuals feel comfortable sharing knowledge and highlights barriers to lessons learned, including embarrassment or blame (JALLC, 2016, p. 38). Beyond this, the process of sharing versus hiding knowledge has received little attention and remains unclear: There is a gap in our understanding of how debriefing can realize the full potential of sharing knowledge and creating learning.

Our objective with this article is to reach a better understanding of debriefing as a learning tool by exploring the process of sharing and hiding knowledge and mistakes in a fighter squadron in the Royal Norwegian Air Force. This paper proceeds by elaborating on key concepts, showing that we still need to improve our understanding of how an organization's climate mediates people's tendency to hide and share knowledge. Then, we will present the methodology section and the data used to explore the debriefing in the fighter squadron, and we outline the findings, which encompass four categories in the span from sharing to hiding information. Finally, we discuss our findings in the light of relevant research literature to refine this article's practical and theoretical contributions.

Organizational Learning

When Chris Argyris and Donald Schön launched the concept of "organizational learning" in the late 1970s, it was commonly seen as "paradoxical, if not perverse, to attribute learning to organizations" (Argyris & Schön, 1996, p. 4). At the same level, Edgar Schein explored "organization learning" in the light of "organization culture" and "learning culture" (Schein, 2010). Learning had for the most part been seen as an individual process. A common definition of learning as a "relatively permanent change in our thoughts, feelings, or behavior that results from experience" mirrors the individual perspective (Moreno, 2010, p. 156). Within the armed forces, organizational learning, including action learning, after-action reviews, debriefing, and lessons learned are based on "individual and collective experiences accumulated by the members of an organization while engaging in their daily work environment" (Godé & Barbaroux, 2012, p. 322). The British army has addressed both structural and cultural issues to enhance the organization's learning from experience (Catignani, 2014).

Learning from Experience

Learning from experience is a key process in personal and organizational learning (Dewey, 1980; Kolb, 1984). An experience consists of an active element (the action itself) and a passive element (the consequences of the conducted activity) plus the relationship between them (Dewey, 1980). Reflection is the key process for creating the relationship between the two and for fulfilling the experience (Dewey, 1980). After a stressful event, there might be a pure stimulus-response relationship between events and learning, but there is potential in replacing this stimulus-response relationship by mediating a reflection process (Vygotsky, 1978). The military, and other professions, have made the reflection process a social practice and labeled it debriefing. For military forces, debriefing is the main process of creating personal experiences and organizational learning (Dyregrov, 1989; Folland, 2009; Mitchell, 1983; Shalev, Peri, Rogel-Fuchs, Ursano, & Marlowe, 1998; US Army, 2011; Zigmont et al., 2011). To facilitate debriefing, the soldiers have to feel comfortable when sharing lessons learned without fearing negative consequences from reporting failures and problems (Foley, Griffin, & McCartney, 2011).

Debriefing

Researchers have identified three traditions through which debriefing may enhance learning. Traditional debriefing is an important part of military learning after missions. The US Army uses what they call an "after-action review" where participants talk through what happened during the incident (US Army, 2011). The Israeli Armed Forces sit down in groups after a battle to reconstruct what happened, a process within which the soldiers' thoughts and feelings are part of the reality of combat (Shalev et al., 1998). However, as the focus for the most part is on what happened and associated thoughts, the emotional dimension may be ignored.

Psychological debriefing is often associated with the tradition of Critical Incident Stress Debriefing (CISD) (Mitchell, 1983), a group-based, seven-stage program led by specially trained personnel (Dahl, Klewe, & Skov, 2004; Dyregrov, 1989). This line of studies mirrors the psychological roots in clinical psychological theory (Dyregrov, 1989; Mitchell, 1983). In this line of debriefing, the emotional dimension is highly valued together with what happened, with associated thoughts, and with bodily reactions. Seen from a learning perspective, psychological debriefing is associated with positive outcomes, such as normalization, construction of meaning, and peer support (Pack, 2012, p. 287).

Holistic debriefing was implemented for learning purposes as part of experience-based learning in the Royal Norwegian Air Force (Folland, 2009). This combines traditional debriefing and psychological debriefing by explicitly addressing emotional aspects of the mission. Holistic debriefing has been associated with traumatic events, such as the terror attack at Utøya, Norway, in 2011 (Firing, Johansen, & Moen, 2015).

During the debriefing, the combination of supporting individual progression and achieving collective performances is essential and accomplished through a learning culture based on openness and mutual trust where individuals share every aspect of the action truthfully (Godé & Barbaroux, 2012, p. 322). When exploring debriefing among aircrew in the French Air Force, the researchers asked if there is a gap in understanding when it comes to how organizations manage to create the conditions for individual experiences to develop and improve organizational knowledge (Godé & Barbaroux, 2012).

Sharing or Hiding Knowledge

While many studies have examined knowledge sharing, few studies have investigated the determinants of knowledge withholding or knowledge hiding (Peng, 2013, p. 398). A key dimension of a learning organization is that it resists the natural tendency to bury failure by having open and frank discussions of shortcomings (Mintzberg et al., 2005, p. 214). Researchers have identified several antecedents of knowledge hiding, for example perception of distrust, complexity of knowledge, task-related knowledge, and knowledge-sharing climate (Connelly et al., 2019). The organizational culture should support behavior that encourages soldiers in the field to report problems as well as successes (Dyson, 2019, p. 117). The organizational culture must tolerate mistakes, and opportunities should be given to communicate mistakes that can be learned from (Dyson, 2019, p. 118). If not, people may share the knowledge that is explicit and unimportant, but withhold knowledge from colleagues that is tacit and important (Peng, 2013, p. 399). One way to decrease knowledge hiding is to transform the individual-based psychological ownership into organizational-based psychological ownership, thus making the knowledge "ours" (Peng, 2013, p. 409). As mentioned above, the NATO Lessons-Learned Handbook recognizes the difficulty of establishing a culture where individuals feel comfortable sharing knowledge and highlights barriers to lessons learned, including feelings of embarrassment or blame (JALLC, 2016, p. 38). The Handbook provides no further guidance.

When looking into the literature on organizational learning, two perspectives stand out: A behavioral perspective that views learning as a change of structures and standard operating procedures (SOP), and a cognitive perspective that views learning as a change of shared mental models and understanding among the involved members (Catignani, 2014, p. 34). The emotional aspect seems to have been forgotten or ignored.

A study of debriefing of Israeli Fighter pilots revealed that debriefing was perceived as having three main functions: (1) Learning functions, including sortie representations, improving performance, and learning from others, (2) Social control functions, including disciplining, monitoring performance, communicating, and socializing, and (3) Psychological functions, including social comparison, bonding, and building resilience (Ron, Lipshitz, & Popper, 2006). This study does not clarify whether there is room to express emotions. It is suggested that the Air Force is too mature for such personal considerations and that personnel should control their emotions. On the other hand, this study argues that ignoring emotional issues may lead to dysfunction (Ron et al., 2006). Such contradicting messages may lead participants to withhold parts of their expressions and experiences.

The Royal Norwegian Air Force introduced a new debriefing concept (holistic debriefing) to facilitate sharing of experiences, encompassing thoughts and emotions, cooperation, and communication (Moldjord & Iversen, 2015). However, the crew members tend to respond, one by one, uttering "I have nothing special to share". This utterance was used as a routine way to express that nothing worth sharing has been experienced, and a threshold for sharing was created if you felt you were the only one with issues. Even well-intended organizational routines may inhibit people from sharing knowledge (Moldjord & Hybertsen, 2015).

The Current Study

The success of organizational learning rests on the personnel's willingness to share every aspect of their experiences truthfully (Argyris & Schön, 1996; Kolb, 1984). A report based on the "Top Gun" program (the elite training program for fighter pilots) focuses on learning and states that "perfection is building a culture where your team is willing to expose every error, even those that could be hidden or ignored" (Berke, 2017, p. 2). In a study of debriefing in an F-16 fighter squadron in the Israeli Air Force, one can read: "I have yet to meet a pilot who lied in the post-flight review" (Ron et al., 2006, p. 1095). However, researchers have identified several antecedents of knowledge hiding, for example perception of distrust and the knowledge-sharing climate (Connelly et al., 2019; Peng, 2013). The NATO Lessons-Learned Handbook does not address the process of sharing versus hiding knowledge beyond the surface (JALLC, 2016, p. 38). Thus, the literature leaves a gap between the ideal of sharing every mistake truthfully and the human tendency to hide knowledge and thus prevent that others can learn from it.

The focus of this article is on the process of sharing and hiding knowledge and mistakes during debriefing. The context is the debriefing as it unfolded during regular training in the above-mentioned fighter squadron in the Royal Norwegian Air Force. We question whether everyone is willing to share all their mistakes so others can learn from them. Moreover, we also examine if the surveillance system encourages the pilots to share their mistakes. Finally, we ask about the kind of errors that are hard for the surveillance system to detect. Would such mistakes be shared? Bearing the gap in the literature in mind, we have derived the following research question: *How do pilots experience the process of sharing and hiding mistakes during debriefing?*

Methodology
Debriefing Procedure
The debriefing process appears to be a well-established standard procedure. The pilots land, park their aircraft, and hand in their video cassette. The Mission Support Crew prepares the data for debriefing. Led by a senior pilot, they play all the tapes, following a sequential timeline and stopping when necessary. Everyone has to participate during the debriefing, and everyone is expected to share eventual experiences regarding safety. Beyond safety issues, however, there is great autonomy with regard to what you want to share. Sometimes, they use around 30 minutes, other times they may sit for hours, depending on the complexity of the mission and the time available.

Data Collection
The participants were nine pilots from the fighter squadron in the Royal Norwegian Air Force. To ensure anonymity, the informants will not be described further.

We observed the entire planning, flying, and debriefing cycle during the squadron's daily training, except for the actual flying itself, with the debriefing process being our main focus. This was a participatory observation (Jorgensen, 1989), however, we did not participate or interfere with the process taking place in front of us. An observation protocol was used actively, taking notes about the shared narratives and key concepts used by the pilots. The observations were essential as preparation to the subsequent interviews. Working as lecturers at the Norwegian Air Force Academy for years, we had a mutual relationship to the pilots under investigation. Even though we as researchers were outside observers to the informants, we experienced mutual respect, and our interpretation is that any observers' effect was minimal during the observation of the debriefing routine. No further precautions were taken, other than signing a form of informed content along with the NSD requirements.

The interview guide consisted of three main sections: The planning process, the actual flying and, finally, the debriefing process. The order of the questions was flexible so we could follow the participants' perspectives and so the interviewer could probe into areas that arose to explore the pilots' thoughts and feelings in more depth. Nine in-depth interviews (lasting from 30 to 75 minutes) were conducted. The interviews were audiotaped and transcribed (amounting to 110 pages) to obtain an accurate basis for analysis (Creswell, 2007).

Data Analysis
We have used narratives to understand the pilots and the debriefing on the assumption that no objective structures are available in the debriefing experience. Rather, the goal has been to understand by developing knowledge of the flying experience in relation to the debriefing experience and to discover possible debriefing structures as the process is conducted in normal operations. Thus, we have pointed our lens partly towards the actual flying and partly towards the subsequent debriefing on the ground. When exploring this relationship, a narrative mode comes to the surface.

We started out with a person-oriented analysis. Three data items, partly based on the flying itself, partly on observation notes from the debriefing sessions, and partly on the interviews that were held after the debriefing sessions, are the core of the data material. We developed narratives from the pilot interviews, each ranging from the actual flying into the subsequent debriefing. From these narratives, possible patterns of the experienced debriefing were revealed.

We moved from these narratives to a subject-oriented analysis where the data material was analyzed through coding and categorization. Coding is seen as the pivotal link between collecting data and developing an emergent theory to explain the data material (Charmaz, 2006). This process started by bringing order to the material by attaching one or more code words to the relevant text paragraphs. Through this process we developed a table with extracts (utterances) in one column and code words in another. The further analysis was undertaken using the constant-comparative methodology (Charmaz, 2006). The last stage in the data

analysis was categorization, the process of gathering information about the same theme within its respective categories (Charmaz, 2006). Four categories with subsequent narratives were revealed:

- Mastery Culture – Embracing the Sharing of Mistakes (8)
- Safety Culture – Embarrassing to Hide Mistakes (9)
- Performance Culture – Embarrassing to Share Mistakes (6)
- Cloaking Culture – Negotiating Whether to Share or Hide Mistakes (5).

The number assigned to each category indicates how many of the respondents have utterances contributing to the category in question. In the following sections, each of the themes is described more thoroughly and exemplified with quotes from the respondents.

Results

In examining how the fighter pilots experienced the debriefing process, with particular focus on the process of sharing and hiding mistakes, we developed the categories Mastery, Safety, Performing and Cloaking. The categories provide the structure for the result section in which the four categories will be further elaborated.

Mastery Culture – Embracing Mistakes

Being a fighter pilot is all about learning. Being an expert is about entering into a long-lasting learning process to be better than your counterparts. We will examine this below.

Flying in Flow

When in a four-ship[1] fight against another four-ship group, the wingman has a special responsibility to secure the flight lead. While there are procedures for this, the quality of the fighting will depend on rapid operations and intuition. Here is one experience:

> *Today, I see it in front of me, I know what's going on, that my flight lead is about to be shot, so instead of waiting for instructions, I know what's going to happen, so I can fire at the enemy without my flight lead having to say anything. I wouldn't have done that in a check-out situation, I would have waited for the order because that's how the procedure goes. When you manage to do something like that you feel really good. It's really the bright spot from today, it helps your self-efficacy and is a positive learning experience for me. You feel like a king, it's a real boost.*

The above extract shows the dynamics in this learning culture. The profession is about being a little freer instead of being afraid to make mistakes, and it is vital that you operate even faster than your opponent does. No need for supersonic speed if you spend too much time making decisions. Self-efficacy and a positive learning experience matter to the fighter pilots. This experience resonates with the concept of flow (Csikszentmihalyi, 1990).

The Complacency Trap

After the four ships had participated in a dogfight scenario, they trained navigation and radar skills on their way back from the mission area. One of the wingmen came into the debriefing session, feeling good. After having focused on the dogfight, which turned out to be a good one, they moved into the second part of the mission where the videotapes revealed additional information. These are the pilot's reflections:

> *That's really embarrassing that he was able to get me because I have the radar to help me avoid such things. But today, I forgot to really search and look around. It's obvious in the debriefing. Out there I saw nothing on my radar. He even locked me on the radar. I can hear it in the aircraft when someone locks on me, and then the bells should be ringing. A bit like "complacency" there. He flies under both of us and shoots us multiple times, while I was thinking that I'd done well today.*

Even after having performed very well in the dogfight, the pilot felt it was "really embarrassing" to be shot down by his opponent. However, we interpret this kind of embarrassment as being learning-oriented. The pilot appears to be grateful that he has learned this lesson in a safe environment, as opposed to real operations when complacency can be deadly.

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[1] "Ship" is a concept used about the aircraft by people in the aviation environment.

Embracing Mistakes

Further interviews with the pilots revealed a culture beyond the performance culture as we suddenly discovered a wide opportunity for learning. Within this learning-oriented culture, it seemed normal to make mistakes for learning purposes, and it seemed normal to share them in the debriefing so others could learn from them. One pilot illustrates this, as follows:

> *What is part of the normal situation here is to mess up, make mistakes, and just accept that it happens. Because things happen all the time, there will be mistakes. What we have seen is that those who have a problem working in the environment here are the ones who have big problems admitting their mistakes.*

This utterance illustrates how the culture is open to the fact that it is normal to make mistakes, accepting that mistakes happen, and even embracing them as an opportunity to learn. This open culture is also revealed by the fact that people who have problems admitting mistakes run into problems working in this culture. This learning culture seems to bridge the need for high performance with mastery and draws a picture of the normal situation for pilots where making mistakes puts you on the road to excellence. This mirrors a focus on mastery in line with the kind of learning culture outlined by the Royal Norwegian Air Force Academy.

Safety Culture – Embarrassing to Hide Mistakes

Flying a fighter aircraft is associated with risk. During the Second World War, 334 Norwegian pilots lost their lives. What may not be so widely known is that during the 50s and 60s, 161 Norwegian pilots were killed during training. This gave birth to a new safety culture, a culture in which the idea of detecting and learning from mistakes is considered highly important. We will explore the phenomenon of sharing mistakes for safety purposes below.

The Crossfire

There is a basic mission today: a live-ammo mission, firing at a target in the air. The wingman takes the first shot and performs well. The four ships turn around and prepare for another attack. The wingman has already done his live shooting, so he will record the next attack on video. Suddenly, he finds himself between the firing fighter and the target – in the line of fire. He has a lump in his throat and feels genuine fear. Back on the ground, this incident was immediately taken up in the debriefing. The pilot acknowledged his responsibility for the incident. Later, we asked the pilot about his experience from the debriefing:

> *It was almost as if I had expected that I would get more of those "this is not a good thing" statements. No, I felt there was a very professional, but amiable tone. There was no finger-pointing, people saying something ugly or making me feel stupid.*

This revealed a twofold culture regarding openness to sharing experiences and learning. On the one hand, the pilot had some negative expectations and had expected to receive an authoritative response. On the other hand, the response he did receive had a professional and amiable tone. He experienced openness in the environment.

The Flyby

One mission that was discussed in the interviews was a ceremonial flyby in honor of the King of Norway. The pilots were flying side by side, and after they passed the King, they were to turn sharply left or right according to the planned procedure. But one of the pilots turned the wrong way and was close to crashing into the others. The terrified pilots reacted immediately, just heading away in all directions. One of the pilots described the debriefing as follows:

> *When it was briefed the next day with a video, the reactions from the pilots in the air were out in the open. People just swore at the communications system, something like "what the hell are you doing in there". There were very impulsive and sudden reactions from the pilots. They talked about why they communicated that way. For instance, people could say things like "I was scared and then I felt it and thought I was going to die". The focus was directed on the interaction between people and on relationships. It was very in-depth and surprising, I don't think that this is so common.*

From this case, we can envision how experiences of a certain degree of seriousness trigger a more extensive debriefing routine in which aspects of emotions and communication are explored more thoroughly. Here, the pilots really opened up, shared reactions and admitted making mistakes so they could learn from this near disaster. This was a combination of after-action review and psychological debriefing, more in line with holistic debriefing (Folland, 2009).

Embarrassing to Hide Mistakes
Further interviews with the pilots revealed the attitude related to sharing as opposed to covering up mistakes more in-depth. This was explained as follows:

> If I've made a mistake, then I think it's directly embarrassing. Then I feel that I might as well spread the word because the others will hear about it anyway. I feel I have to communicate it, get it out there, to stop the spreading of rumors about it. When you find it's embarrassing: just admit it, you'll kind of save yourself a bit by communicating that you don't think it's okay. If you try to cover it up and you're caught, then people think that you're a dork, like you don't take it seriously.

This utterance illustrates that while making a mistake might be embarrassing, being caught trying to cover up a mistake is even worse. The safety culture seems to reveal the dilemma between psychology, performance, and performance anxiety on the one hand, and education, learning, and trust on the other. One promising area for discussion is whether holistic debriefing may bridge these two perspectives (Folland, 2009).

Performance Culture – Embarrassing to Share Mistakes
Being a fighter pilot involves being part of a performance-oriented profession where being an expert is a matter of having the best performance. We will explore this in more detail below.

Failing to Meet Standards
After learning to fly in the US, Norwegian fighter pilots attend a training program in Norway, a Tactical Qualification Program (TQP). The intention with the program is to teach the pilots to be confident with maneuvers and tactics on several levels. Every flight is evaluated according to a grade sheet. Mistakes are often discovered in the debriefing session:

> There was one flight where I did pretty bad, I simply didn't do it well enough. I was supposed to drop a simulated bomb, and then I made a mistake so the bomb dropped somewhere else. And when that was the requirement of the flight, that you'll be able to drop it properly, then it was a failure. But I have learned to cope with it quite well. And I'm never more conscious of what I do than when I get back in the same situation. Then what you focus on the most is that you should not make the same mistake twice.

Even though the intention is to enhance the pilots learning, the TQP program is experienced as performance-oriented: It seems to be a matter of avoiding making mistakes and learning from mistakes to meet the standards of the profession.

The Need to Perform
At the end of the major exercise, a final dogfight was conducted. The maneuvers went well, and our interviewed pilot ended up winning all three rounds. In the debriefing session, the dogfight was reviewed quite briefly. The pilots focused on what they did, and how to improve and learn from the mission. But it turned out that there was more behind one of the pilots' mask, as he shared the following with us:

> I can feel that my body has been under a lot of tension, but now it's relieved. That's a good sensation in my body, and of course the joy of having achieved this. There's some uncertainty due to the many tasks I'm supposed to do. We start from prearranged level, attitude and speed and things like that, and of course the tension between my opponent and me adds to this pressure. I need to perform, not just for me, but to show him and the guys on the ground.

As we can see, when digging deeper we discovered a variety of emotions in the range from pure joy to more controlled emotions. This extract gives intimate insight into a performance culture: You do not want to be second best when meeting an enemy in air-to-air combat. What we also discovered, however, is that the need to perform is driven by social forces.

Embarrassing to Share Mistakes

In the interviews with the pilots we delved deeper into the performance culture. When we explored the case of making mistakes, there appear to be two processes related to debriefing:

> I must admit that if I've done a bad job, then I just want to be done with it. Just clarify what has happened, a brief "lesson learned", and not linger any more on it. I just want to forget about it because it's embarrassing in a way … If I've done a poor job, I simply believe that I don't really want to talk about it afterwards at all.

Here we see the issue of embarrassment in relation to failing. The pilot wants to learn the lesson and wants to be sure that he does not make the same mistake again, but he does not want to talk about it or dwell on the feeling of embarrassment or shame. The data material indicates that pilots may prefer to point out mistakes and move on in line with traditional debriefing. This made us question whether pilots share mistakes to contribute to the learning of others or share them to avoid being caught hiding them or even trying to hide them.

Cloaking Culture – Negotiating Whether to Share Mistakes

We have seen how pilots relate to the culture of performance, learning, and safety. However, digging deeper, we revealed fear, an issue seldom raised in debriefing, and a negotiating process as to what to share during debriefing – as if a cloaking[2] process was ongoing.

Fear of Failure

Beyond the actual mission conducted, the pilot dwells further on the experiences of making mistakes and the fear of failure:

> You become disappointed in yourself, you're ashamed, you're letting the others down not being able to perform your job. It's very common in our environment, the fear of failure, and I think it's very common for all people, it's very powerful, the anxiety over going out there, the fear of failure is even more powerful than the fear of death going out on combat missions.

This extract gives intimate insight into the performance anxiety that may exist in this culture, probably fueled by tacit knowledge not often brought to the surface.

Emotions and Relations

The profession of being a fighter pilot is associated with reasonable cognition and rapid action. However, when we asked about issues that might not be shared too often during debriefing, we received this answer:

> It's typical that you don't talk about feelings. If you make a mistake, you might say that it's embarrassing, but nothing more than that. We don't talk in-depth when it comes to emotions, we don't do that.

> There are obvious differences in relationships. When you see who you're going to fly with, there's a difference if you're looking forward to it with pleasure or you're tensed up. It's the same professionalism, but with some there's greater confidence, you're not so afraid to make mistakes, with others you're not so sure, and you get tense. The debriefing is primarily focused on what people have done. You get some feedback about yourself, but it's very instrumental. How I perceive you as a person, if I feel confident in you, if I trust you, what you make me feel like when we fly together, those aren't subjects we touch on in debriefing. I've never witnessed subjects such as the discomfort of flying with another particular pilot being addressed in the debriefing.

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[2] "Cloaking" is a term usually associated with stealth technology where one aims to make objects invisible to parts of the electromagnetic spectrum. The concept is also commonly used among Norwegian helicopter pilots when they follow procedures to be invisible on radar. In the current paper we argue that "cloaking" may also be a process in humans where we hide information so it is invisible in social contexts.

The first utterance, about not talking about emotions, points to a process influenced by an American fighter pilot culture where expressing emotions is associated with immaturity (Ron et al., 2006). The second utterance illustrates how addressing relational issues, such as trust and confidence, is avoided even though it has an impact on whether the pilot feels secure or tense when flying. This may be associated with emotions. Avoiding disclosure of emotions may also impede being open to sharing relational issues during debriefing.

Cloaking Mistakes

Even though these fighter pilots are highly skilled, it is fair to say that as their profession is so complex, they make mistakes in every mission they conduct. However, one of the pilots disclosed the following:

> *It's important for me to share mistakes so that others can learn from me, I truly want to contribute to a culture of learning and to our safety culture. Moreover, we have a comprehensive surveillance system that makes almost everything we do visible to others, it's on tape. That in itself is a reason to be honest and share with others. Yet, I sometimes go through a negotiation process in relation to my surroundings with respect to sharing mistakes with others. Some mistakes are hard for others to discover, so I evaluate whether to share them or not. Sometimes I share such mistakes to show I'm willing to make a contribution, to show that I'm concerned about learning and safety. However, I'm also driven by self-preservation, I can't show an unlimited number of mistakes because then I fear I'll lose face. I go through a negotiation process with myself to maintain a balance between being credible and still retaining my position as a highly skilled pilot.*

While the first part of the utterance touches on issues disclosed earlier, we see that there is something going on under "the radar", under the surveillance system. Everything is not on tape after all. This pilot discloses a process of negotiation as to whether to share mistakes. First, the pilot shares because he wants to contribute to learning and safety. Second, under this surface, there is a process of negotiation where the pilot assesses whether to share or cloak information to avoid losing face and to protect his self-esteem. While we may consider this process to be fairly natural, it is important to increase awareness of this fact to minimize the amount of knowledge that is cloaked from debriefing as a learning arena.

Discussion

This study's exploration of how the pilots in a Norwegian fighter squadron experienced the process of sharing and hiding mistakes in debriefing revealed the four categories presented above. The findings mostly demonstrated a culture of knowledge sharing, with only a small degree of knowledge hiding. However, our research goes a step further by exploring the hidden and ignored process behind sharing and hiding mistakes during debriefing. Below, we will discuss our findings in the light of the classic prisoner's dilemma role play, drilling deeper into three levels of this process, and ask whether the military can learn from other professions.

Victim of the Prisoner's Dilemma

Our findings that the fighter pilots engage in a "negotiation process" between sharing or hiding, that "it's typical that you don't talk about feelings", and findings from the helicopter crew member stating "I have nothing special to share" out of fear of being "the only one with issues" (Moldjord & Hybertsen, 2015, p. 294) gave clear associations to the classic prisoner's dilemma. The prisoner's dilemma game theory involves a situation where two people can either confess or keep silent, and they cannot talk to each other during the process. The result depends on what the other player does. If both keep silent, they both receive light punishments, if they both confess, they are given medium penalties, while if – in the worst-case scenario – one of them confesses and the other keeps silent, then the one that confesses gets free while the one keeps silent is given heavy punishment. Because both fear they will end up in that situation, they both decide to confess. This shows us how people who make individual rational choices in sum can make collective irrational choices (Poundstone, 1992).

The prisoner's dilemma is very different from the debriefing; in the debriefing context, the gold standard is to share everything for mutual learning, without any punishment or penalties. However, based on our findings, there is an ongoing negotiation process between sharing and hiding mistakes that may resonate with this dilemma. At the one hand, people might confess, share their mistakes, because this is beneficial for the mutual learning or propelled by the fear of guilt associated with errors being discovered using the VCR review in the debriefing. This is according to the gold standard, and is not a problem. At the other hand, the dilemmas worst-case scenario, one of them confesses and the other keeps silent, might influence the

debriefing. People might keep silent, hide and cover up mistakes, because of the fear of being reprimanded by the group, especially if the others are covering up their mistakes. If pilots feel that sharing mistakes is a negative ting, the impulse to hide and cover up mistakes might have an impact in the moment; however, following this impulse is not sustainable for learning and performance in the long run. Accepting, exploring and sharing this impulse can be a way out of being a victim of a dilemma more common and more prevalent than people may like to think.

Organization Matters

Mintzberg et al. worked from an organizational perspective when they argued that a pivotal dimension of learning is that organizations work against the natural tendency to bury failure (Mintzberg et al., 2005). Learning processes, such as lessons learned studies, after-action review and debriefing, are collective activities framed by an organizational structure and the learning culture of the organization (Dyson, 2019; Godé & Barbaroux, 2012; Ron et al., 2006; Zigmont et al., 2011).

Our study revealed a learning-oriented culture where making mistakes appeared to be accepted as normal and sharing mistakes in debriefing for learning purposes appeared just as normal – a finding in line with Dyson's research, arguing that the organizational culture should tolerate mistakes and create opportunities to communicate mistakes in order to learn (Dyson, 2019, p. 118). When it came to safety measures, the willingness to share mistakes became even more evident. Here, our findings illustrate a culture of sharing mistakes for collective benefits, a result that mirrors organizational-based psychological ownership regarding safety-related information (Peng, 2013, p. 409).

Our study also reports that the pilots want to learn from their mistakes, but they do not want to talk too much about them or dwell on the feeling of embarrassment or shame. The pilots also engage in the process of negotiation, where they assess whether to share the information with their surroundings or hide the information. This resonated with the way in which NATO addresses the difficulty of establishing a culture free of barriers to sharing of feelings, such as embarrassment and blame (JALLC, 2016, p. 38). Connelly et al. have identified reasons for knowledge hiding, for instance perception of distrust and not having a knowledge-sharing climate (Connelly et al., 2019). Our study does not offer any simple explanation for this tendency.

Relations Matter

Researchers argue that relations and interpersonal dynamics affect the process of hiding versus sharing knowledge (Cartwright & Zander, 1968; Connelly et al., 2012). On the one hand, our study reports a wide tendency to share mistakes in debriefing so that others can learn from them. Looking for another angle, we found that people who had problems admitting mistakes were the ones who were having problems working in that particular environment. This might indicate that relations matter and that having positive and safe relations mediates the process of knowledge sharing. Connelly et al. argue that nurturing of relationships may be a way to improve knowledge sharing (Connelly et al., 2012).

On the other hand, we also found that there is a process of negotiation where the pilots assess whether to share or hide information. Connelly et al. argue that the process of interpersonal dynamics affects an individual's decision to hide his knowledge (Connelly et al., 2012). This also resonates with the utterance "I have nothing special to share", a common saying in the early stages of the new debriefing routine in a helicopter unit in Norway (Moldjord & Hybertsen, 2015, p. 294). This utterance created a threshold as people in the aircrew worried about being "the only one with issues" (Moldjord & Hybertsen, 2015, p. 294). Researchers argue that there may have been a lack of relational trust among crew members in the early stages of the new debriefing routine and that relational trust and vulnerability trust appear to be key factors as to whether people are willing to share personal experiences (Moldjord & Hybertsen, 2015; Moldjord & Iversen, 2015). Trust has a positive impact on knowledge sharing (Dyson, 2019).

Personality Matters

When researchers explore the process of sharing and hiding knowledge in the light of personality traits, they find that the dimension of neuroticism predicts knowledge hiding (Arshad & Ismail, 2018). However, most people in the armed forces are selected with the elimination of neurotic candidates in mind, making this less relevant to our study.

However, as debriefing will sometimes reveal unpleasant memories of an event, this may be perceived as rather personal and associated with sharing emotions. The withholding or suppression of emotions during debriefing may be hard to observe because such tendencies might be implicit and tacit. Nevertheless, our study found that "it's typical that you don't talk about feelings", and that "you don't want to talk about the

feeling of embarrassment or shame". Such feelings may be associated with the fear of being "the odd one out" and guilt (Brown, 2000, p. 135). Guilt is a phenomenon that appears among people as much as inside them. It appears to be strongest and most common in relationships that are characterized by expectations of mutual concern (Baumeister, Stillwell, & Heatherton, 1994).

In regular debriefing sessions among fighter pilots, the idea of emotional control seems to coincide with the idea that the expression of emotions is associated with immaturity (Ron et al., 2006). An alternative to this is to normalize emotions and investigate them to enhance emotional intelligence (Goleman, 2006). This implies accepting that negative emotions are an unavoidable and undesirable result of failure. Researchers argue for a connection between emotions and motivation, arguing that negative emotions can enhance motivation (Nelson, Malkoc, & Shiv, 2018). This resonates with our study: Beyond the pilots' reluctance to talk about their failures, they want to learn from them and be sure not to make the same mistake again. The emotional learning model claims that negative emotions such as shame and embarrassment may boost motivation and learning (Damasio, 1994). The negative emotions following a failure will motivate people to avoid similar mistakes in subsequent episodes. This is in line with learning from experience, in which especially negative experiences lead to changes in future situations (Dewey, 1997; Gadamer, 2004).

Learning from Other Professions

Facilitating the sharing of experiences of others, both successes and failures, is a complicated endeavor that has a long history both in military and other settings, such as nursing (Clark & McLean, 2018; Frost, 2019; Magyar & Theophilos, 2010). Experience from therapy shows that a person is more willing to share his thoughts, feelings, and actions if there is a relationship built on trust between him and the facilitator (Horvath & Bedi, 2002). This is defined as the degree of positive attachment, including the values of trust and acceptance between the facilitator and the person in focus (Horvath & Greenberg, 1989). In the debriefing setting, however, several relationships are involved, and openness is dependent on trust between the person in focus and all the other people in the room. The more relationships, the harder is the work to establish trust among all the participants in the group. To establish the necessary trust, it is essential to pay attention to communication skills (Ivey, Ivey, & Zalaquett, 2017). The person in focus needs to feel that he is seen, heard, and understood by the facilitator, based on his personality and experience. The ability to ask open questions and show a genuine interest in the information provided by the person in focus is a necessary skill for achieving this and requires hundreds of hours of training and practice (Ivey et al., 2017). This gives rise to the question whether it may be possible to learn from other professions, such as the therapy setting in psychology, when it comes creating trust and an atmosphere where everything is shared?

There might be potential in bridging the armed forces and the health services (Clark & Mclean, 2018; Magyar & Theophilos, 2010). Combining the traditional after-action review with psychological debriefing may solve the mystery surrounding emotions and trust. Trust and emotions are a natural part of the learning process, with respect to both the learning climate and the outcome. Understanding actions and thoughts (Shalev et al., 1998; US Army, 2011) is equally essential when airing and understanding emotions (Dyregrov, 1989; Mitchell, 1983; Pennebaker, 1997). Accepting emotions in debriefing may contribute to learning without digging too deeply into traumatic issues (Pearson & Smith, 1985; Stein, 2002). This is in line with research within military psychology, where it is argued that knowledge sharing is associated with embracing cognitive and affective processes, encouraging military personnel to think and feel (Boies & Howell, 2009). This became evident among a Norwegian air crew in Afghanistan: When the aircrew commander invited the crew members to express their opinions on a particular mission, they did indeed share their feelings. This illustrates how the aircrew commander's role as facilitator influences the sharing of experiences in a positive way (Moldjord & Hybertsen, 2015, p. 292).

Possible Limitations, Implications and Contributions

Having investigated fighter pilots' experiences gained from debriefing, one limitation may be that the study is based on data provided by men only, with no exploration of whether gender could be an issue of influence when it comes to the willingness to share information during debriefing (Wasserman, Dayan, & Ben-Ari, 2018). This limitation was hard to avoid as we investigated Norwegian fighter pilots who were currently flying, which at that point in time was limited to male pilots only. However, we see the gender issue as a promising opportunity for further research, investigating military pilots with both genders participating. Moreover, one may question whether our findings can be generalized to other branches or situations. Looking at other operational units, such as the police, fire fighters, and health personnel, these branches may represent possible contexts in which the focus on debriefing may enhance learning and performance. Bearing this in mind, we argue that this study has the potential for naturalistic generalization (Lincoln & Guba, 1985).

Our research deepens the knowledge of the gap between the ideal of sharing mistakes and the human tendency to hide knowledge. The classic prisoner's dilemma extends this phenomenon beyond the military context. Discussing our findings in the light of organizational, relational, and personal aspects illustrates the universal character of this phenomenon. Asking whether the military can learn from other professions is a question directed at the military, but it is also an invitation to build bridges between professions with respect to this topic (Clark & McLean, 2018; Magyar & Theophilos, 2010). In doing so, our research potentially has implications for other military units and operative units, such as police, fire fighters, and medical personnel, and for organizational learning in general.

Closing Comments

In this study we have explored fighter pilots' experiences of debriefing, with focus on the process of sharing and hiding mistakes. We felt both humbled and privileged to witness the willingness of the pilots to share their personal and unembellished experiences from both the actual flying and the subsequent debriefing. We are, moreover, proud to pass on their process of sharing versus hiding mistakes during debriefings so that others may learn from them.

Through debriefing, the pilots demonstrated great willingness to generate knowledge that will make them even more professional before their next mission. When addressing emotional and social dilemmas, it is our strong belief that pilots will develop their debriefing further and keep performing at the highest standards in future missions. Finally, we disclose the potential in bridging the armed forces with other professions such as the health services (Clark & Mclean, 2018; Magyar & Theophilos, 2010). Combining the traditional after-action review with psychological debriefing (Dyregrov, 1989; Folland, 2009; Shalev et al., 1998) may solve the mystery surrounding emotions and trust.

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Competing Interests

The authors have no competing interests to declare.

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