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Pilot is a pilot is a pilot?: Exploration of effects of professional culture in helicopter pilots

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Abstract. Culture has been identified as a factor influencing the way people communicate and behave. Though often imperceptible by its members, cross-cultural interactions can lead to misunderstandings and conflicts. Despite ex-military and civilian trained pilots frequently flying together, there has been a lack of research describing each professional sub-culture. The current study aims to bridge that gap by exploring how professional culture interacts in the cockpit and how it affects pilots' safety behaviours. The study used in-depth semi-structured interviews with 15 participants (14 helicopter pilots) to collect data on effects of professional culture. The data were analysed using conventional content analysis. Content analysis indicated five separate categories relevant to perceptions of professional culture. The findings indicate that pilots acknowledge the cultural differences present between themselves and others, and that culture can have an effect on their and other's safety behaviours. The participants suggested that various sub-culture types can have impact on flight safety through their effects on communication and the way people interact, but not through technical skills of flying the aircraft. The differences between military and civilian training and flying were discussed in depth. This research highlights the various ways in which culture affects pilots' safety behaviours and interactions with one another. It also provides an in-depth look at the way pilots perceive and experience cross-cultural interactions in the cockpit.

Keywords: helicopters, culture, safety, cross-cultural interactions, military

1 Culture in the Cockpit

Culture is often imperceptible by its members, while seen by outsiders as unpredictable and even 'nonsensical' (Helmreich & Merritt, 1998). Thus, it is possible for cross-

cultural interactions to lead to misunderstandings and conflicts. However, the role of culture in aviation has received relatively little empirical attention since the seminal book by Helmreich and Merritt (1998), and few advances have been made in understanding how various combinations of cultures might interact in the cockpit. More importantly, despite the large amount of ex-military pilots being employed in the civil sector, the respective cultures of each pilot group and their interactions have received no mention in the academic literature. The current study aims to bridge that gap by exploring how sub-groups of professional culture interact in the cockpit and how it potentially affects pilots' safety behaviours.

1.1 Professional culture

While there are three (national, organisational and professional) culture types thought to be relevant for flight safety, professional culture has been underlined as being the most salient (Helmreich & Merritt, 1998). Professional culture is based on job role and training background, forming a sense of community. The professional culture of fixed-wing pilots is exemplified by personality, intelligence and skills, and good social skills (Omole et al., 2016). Professional culture in aviation is still very masculine: in 2018, out of 890 helicopter pilot licence holders in the UK, only 24 were women (CAA, 2019).

However, it is likely that the professional culture within aviation is not uniform and subcultures develop through various personal factors, for instance, type of flying (Helmreich & Merritt, 1998) and, by association, training background. There are two general avenues to becoming a pilot (helicopter or fixed-wing): through the military (state-funded route) vs. civilian (self-funded) training. While all pilots are qualified masters of their profession once they leave training, it can be argued that the culture 'implanted' through training differs between the two.

While there are certain similarities between military and civilian flying (e.g., predominantly male, strict organisational structure, framework and rules; Redmond et al., 2015), there are also key differences between the two professional subcultures. Cooper et al. (2018) outline that military culture is grounded in strict discipline, determination and commitment to duty (e.g., 'leave no man behind' and never quitting the mission). This philosophy is indoctrinated through bootcamps and emphasises the value of the team. Civilian fields, on the other hand, differ in important ways from these rules and logic of the military field, being far more centred around safety and regulations (Hormann, 2001), and profit (Leaver & Reader, 2019). Thus, not surprisingly perhaps, military pilots are described as feeling higher sense of community with other ex-military pilots than with civilian pilots, whereas civilian pilots often identify more with other pilots who fly for similar organisations.

Despite the significant contribution of ex-military personnel to many civil industries (e.g., healthcare), certain transition difficulties due to the specific military culture have been identified, for example, inability to find work due to misconceptions from employers about military job roles or lack of job opportunities at an appropriate skill level (Watts et al., 2016). In aviation it appears to be less of an issue with military veterans, having a higher status as the technically outstanding pilots. Nevertheless, due to the specific and strict indoctrination of military lifestyle at the beginning of service

(i.e. boot camp), service persons in transition may find it difficult to adopt to civilian culture (Redmond et al., 2015) and start reproducing military cultural attitudes and behaviour without being aware of it.

This involuntary (and often unacknowledged) reproduction of military attitudes and behaviours can lead to culture clashes and misunderstandings. Helicopter pilots do not work alone – they are part of a team in the cockpit or a larger rescue team in Search and Rescue (SAR pilots work together with rear crew who are medics, crane operators, etc.). Moreover, typically pilots do not work in the same team every day due to shift and rotation patterns, training requirements, working time restrictions etc. (Flin, 2010). Thus, unexpected culture clashes form the potential to have an adverse effect on safety critical behaviours like situation awareness (i.e., pilot's mental model of the world around him) which is crucial for mission success, as it depends on sharing mental models with each other through communication and team cooperation (Endlsey, 1990).

1.2 The Current Study

Professional culture could influence safety behaviours either through risking safety to save others (military 'leave no man behind' custom) or perhaps being too focused on following all rules (heavily regulated civil aviation). However, not only are cross-cultural interactions rarely studied, but there also is no scientific literature that examines both civilian and military culture, how they intertwine and how they affect people's safety behaviours.

The current exploratory study examined how professional culture¹ affects helicopter pilots' safety-related behaviours. Semi-structured interviews were chosen to suit the exploratory nature of the first study and to allow for more in-depth examination of all three culture types. The study had three main aims: (1) to explore pilots' views on the effects of culture on safety behaviours; (2) to determine which aspects of culture are perceived as potential factors that might influence safety behaviours, performance and training; and (3) to determine which aspect of culture is perceived as the most important and / or most likely to influence safety behaviours and performance.

2 Methods

2.1 Participants

Three groups of oil and gas pilots (pilots, trainers and management team) were contacted internally by the company's training lead (in Aberdeen), and an invitation poster was hung in the break room at the heliport. In total 15 participants (2 female) were interviewed: 5 pilots, 6 trainers and 4 managers. One participant (pilot group) was excluded as the interview was very short (less than 10min). Remaining participants ($n = 14$) age ranged from 36 to 64 ($M = 47.20$, $SD = 7.98$). Interviews were conducted both in person ($n = 11$), over video call ($n = 2$) and over the phone ($n = 2$). Most participants

¹ The effects of organisational and national culture were also explored but are not reported here due to space constraints. National culture findings are reported elsewhere.

(all but one who was only involved in training pilots) were current pilots with varying flight experience. Ten were ex-military trained (including non-pilot) and five were civilian trained pilots. Nine participants were trained in the UK, and six pilots received their training in other countries (e.g., USA, Netherlands, etc.)

The study was approved by the University of Aberdeen, School of Psychology Ethics committee.

2.2 Interviews

Semi-structured interviews designed to investigate the research questions took place over two collection periods (due to COVID-19). The first wave of data collection took place January-February 2020, and second wave was June-July 2020. The in-person interviews took place in various private meeting rooms at the company's Aberdeen training department offices, over-the-phone interviews were conducted at the University of Aberdeen lab, and video call interviews were conducted from home (both researcher and the participants).

For all interviews, after initial study participation invitation from an internal contact, participants emailed the researcher directly and picked a suitable interview time using a private Doodle poll. Interviews lasted an average of 33 minutes (from 16 to 61 minutes).

In each interview after a small introduction, the purpose of the interview was explained, and the participants were given two consent form to complete along with time to ask any questions. Participant demographic information was sampled. Then participants were asked pre-prepared questions in 3 sections, each relevant to a culture type, and one overall question. In the second wave (after COVID-19), three additional overall questions were added in relation to the company's perceived handling of the crisis and any potential changes in the company culture. If participants misunderstood any questions, they were clarified. Participants were encouraged to give full answers and provide examples, where appropriate. Occasionally, follow up questions were asked, where answers were brief. This procedure was followed until all questions were covered, whereby participants were asked if there was anything else that they would like to bring up that had not been covered by the interview questions.

Throughout the interview process, the researcher remained neutral and inviting, being aware as to not provide physical or verbal (dis)approval to the answers given, apart from context specific facial expressions.

2.3 Analysis Strategy

A conventional content analysis (Hsieh & Shannon, 2005) was performed. Codes were generated in primarily inductive coding (i.e., the analysis was data-driven (bottom-up) rather than theory-driven (top-down)) with some aspects of deductive coding (i.e., only information related to culture and safety was coded).

Data saturation, the point at which no new categories were developed on the basis of the data (Guest, Bunce & Johnson, 2006) was reached by 14th interview, and last two interviews were conducted to confirm that.

3 Results

Content analysis generated five themes relevant to professional culture (Table 1).

3.1 Military culture

Participants described military culture as underpinned by taking risks and doing anything to ‘get the job done’ attitude:

‘The priorities for military pilots are- are slightly different. They are very much focused on ‘we must get this task done’. Almost come what may.’
(Participant #5)

Participants noted that ex-military pilots come with a much broader range of experience and skills, as they are trained for a different job with different requirements compared to a civilian:

‘There’s guys who’ve been trained in the army [...] they’ve done some quite exciting stuff, compared to what the civilian pilots have done. Because they, [...] have to go into war zones or, they fly low level, [...] they use the helicopter for quite a lot of different tasks, not just personnel carrying, but also, erm, lift, load lifting, low level flying, all that sort of stuff. So, they come with, um, a completely different set of skills ...’ (Participant #4)

Participants mentioned that it’s comfortable flying with ex-military pilots due to perceived ‘quality assurance’ of their skills and training.

Table 1. Themes and codes relevant to professional culture.

Theme (definition)	Code
<i>Military culture:</i> Pilots describe military culture and characteristics of (ex-)military pilots. Most interviewees stress the ‘get the job done’ attitude and broad experience range of (ex-)military pilots.	Risks and finding ways to get the job done (efficiency over safety) (<i>n</i> = 10)
	Military pilots have broader experience (<i>n</i> = 8)
	Strict hierarchy & steep cockpit gradient (<i>n</i> = 7)
	Military pilots ‘stand out’ (<i>n</i> = 5)
	Military pilots have better training and more invested in them (<i>n</i> = 5)
	‘Quality assurance’ of military pilots (<i>n</i> = 4)
	Military pilots can be cocky (<i>n</i> = 5)
	Military pilots are taught to be autonomous (<i>n</i> = 3)
	Subconscious bond between ex-military pilots (<i>n</i> = 3)
<i>Civilian culture:</i> Pilots describe the characteristics of civilian-trained pilots as technically able, rule-following and highly motivated.	Civilian pilots can be as good as military, or better, but there's more variation (<i>n</i> = 8)
	Civilian pilot flying is more rule-based (<i>n</i> = 3)
	Self-funded pilots are more motivated (<i>n</i> = 2)
	Civilian pilots are more individualist (<i>n</i> = 1)

<i>Characteristics and limitations of civil aviation:</i> Pilots describe civilian flying as ‘safety above all’, but a financially driven, potentially boring operation. Participants also mention that it is hard to use people’s expertise and changes in rules and procedures take a long time.	Safety above efficiency (n = 6)
	Civilian aviation is financially driven (n = 5)
	Civilian flying as a bus service (n = 5)
	Civilian flying is boring for military pilots (n = 4)
	In civil aviation job roles are separate (n = 2)
	Changes in rules and procedures take a long time (n = 3)
<i>Professional culture of pilots:</i> Pilots describe their professional culture as similar, irrespective of experience, but highlight that a broader range of experience makes pilots more understanding and better.	It’s hard to use each person’s expertise in civil aviation (n = 10)
	Pilot is a pilot is a pilot (n = 2)
	Variety of jobs make pilots more understanding (n = 4)
<i>Early influences on development of professional culture:</i>	Pilots have big egos and personalities (n = 2)
	Single-pilot pilots fly differently (n = 4)
	Culture of the first job stays with you (n = 3)

3.2 Civilian culture

Participants described civilian pilots as just as technically able as military (in terms of their actual flying skills once they are on the job), but noted that there is more variation due to unlimited attempts to pass:

‘There’s their minimum standard that they set and anybody who’s got the determination and money and the perseverance, and a basic level of skill, can probably pass the exam if they try hard enough. [...] when you meet them for the first time, you’ve got no idea how good they’re gonna be...’ (Participant #3)

Participants also describe civilian pilots as also more reliant on the rules in their approach to flying, i.e., not seeing other options to approach the task other than those described in the rule book:

‘A lot of the civilian guys become more rule-based... purely because they- they develop the skills to a certain point... [...]the rules are then written to allow them to operate the aircraft, erm, without the reliance on the skill that you might need to operate the aircraft in if the rules weren’t so narrow’ (Participant #13)

3.3 Characteristics and limitations of civil aviation

Civil aviation was described as highly regulated and safe, with ‘safety above efficiency’ culture:

‘We’re always looking for, erm, the safest outcome, not necessarily the most efficient outcome.’ (Participant #5)

It was also noted that civilian flying is financially driven and can be at times boring:

'We're a customer orientated service, we're a bus service effectively, and we're trying to get guys safely from A to B, and we're offering a service...'
(Participant #4)

3.4 Professional culture of pilots

Pilots described that irrespective of different training backgrounds, there are certain overarching characteristics of pilots:

'The thing with pilots, we're quite a highly motivated bunch, but we're also quite goal orientated, we wanna try and do things efficiently' (Participant #4)

Participants mentioned that a diversity of experiences and jobs made pilots better in terms of skills and understanding of rules.

3.5 Early influences on development of professional culture

Pilots highlighted that training background and culture of the first job shaped their attitudes to flying and prevailed in some form even after changing jobs.

'I think, any job, when you first start a job, the culture that you first enter has a great effect for the rest of your career.' (Participant #1)

Finally, it was also mentioned that if a pilot learned and flew in a single-pilot aircraft, it influenced the way they approached flying as a crew as well, meaning that they often struggle to share responsibilities and communicate.

4 Discussion

The qualitative data from this study provides extensive insight into helicopter pilots' perceptions of culture and its influence on performance, safety behaviours and training. Key themes discussed importance of standardisation (to eliminate or reduce the impact of culture), international differences, language barriers, and different characteristics and limitations of military and civilian cultures.

4.1 Research questions and findings

It appears that most pilots do not believe that professional culture affects their or others' general flight behaviours. The actual skills involved in day-to-day operations (e.g., flying the aircraft to a rig and back) do not differ between pilots as that is what they are trained to do. However, the broader the experience of a pilot (from their military training or simply because they have worked in many different jobs) can come in useful during unexpected situations (e.g., emergencies), where skills and quick thinking outside of the rulebook is required.

One of the most novel findings of this study is the complexity of comparisons that the pilots drew between military and civilian aviation and profound impact of training background on pilots for the rest of their careers. This research contributes to the very limited amount of literature on ex-military/civilian interactions despite the fact that the aviation industry employs a great amount of ex-military pilots. The most highlighted disparity between military and civilian flying was the safety vs. efficiency difference between the two. Almost every participant mentioned that in the military the most

important thing is to 'get the job done' and being comfortable with taking risks in order to do that. It is a stark contrast to civilian operations where safety is 'above all'. While civilian pilots obviously also want to complete their flights successfully, they have no reservations about turning back if the minimum acceptable risk threshold is breached. It is clear that this disparity stems from the inherently different mission types in these environments: military pilots are trained for the worst-case scenario (i.e., war), whereas civilians would never want to put any life at risk (a single accident can destroy a company financially). However, it is interesting that some ex-military pilots admitted to still occasionally falling back into thinking of potential workarounds to get the job done even years after leaving the military. It is important to note, though, that captains stressed they would not do anything without the agreement of their co-pilot, even if it meant going back.

Another common comparison drawn was the difference in depth and quality of training between military and civilian worlds. Ex-military pilots described that the military training was much more in-depth due to the fact that they were required to fly the aircraft in more extreme weather and use less automation than their civilian counterparts. They suggested that this difference in training structure created a difference in approach to flying: pilots reflected that civilian flying is more rule-based (looking at checklists and following SOPs), whereas in the military you were expected to be more flexible and reactive to changing situations.

Interestingly, participants suggested a multitude of benefits of having multi-cultural crews. Different training background was suggested to benefit both skills (i.e., showing new things to each other) as well as broadening perspectives (e.g., suggesting new ways of thinking about issues).

Combined, the present findings demonstrate the underlying influence of culture on pilots' performance, safety behaviours and team interactions. However, participants underlined the importance of standardisation to eliminate or reduce impact of culture, for instance, using standard language in the cockpit to avoid confusion.

4.2 Limitations and future directions

The overall positive attitudes towards culture types might be questionable. Due to the fact that an internal contact was used for recruitment, it may be possible that only people with positive attitudes were recruited. It is also possible that participants exhibited social desirability bias, enhanced by the face-to-face interviews and the politically correct nature of British respondents. Future studies will employ a third person vignette design online, which will help to reduce the effect of social desirability bias, as well as expand the participant pool to hopefully broaden the opinions present in the sample. However, it also important to note that perhaps pilots interviewed genuinely enjoy their job and are happy with their workplace, as it has been previously found that pilots do overwhelmingly like their work and are proud of their profession (Helmreich & Merritt, 1998).

The current study has provided a wealth of qualitative data that describes specific cultures (e.g., military culture and civilian culture) which have not been explicitly described before, especially from rotary aviation point of view.

5 Conclusion

The current study aimed to explore how professional culture interacts in the cockpit and how it affects pilots' safety behaviours by conducting in-depth semi-structured interviews with managers, trainers and pilots. The findings of the study provide a rich picture of how various sub-culture types present themselves in the cockpit and how they interact. Pilots also reflected on culture's effect on their and other's safety behaviours.

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