Career stages in wildland firefighting: implications for voice in risky situations

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Abstract.   Avoidance of injury and death on the fireline may depend on firefighters voicing their concerns, but often this does not occur. Reasons for employee reticence identified in the literature include a perception of various personal costs or a belief that raising concerns is futile. Additionally, the social context may play a significant role. In a qualitative study using in-depth interviews with 36 wildland firefighters in the US, we explored reasons firefighters do or do not voice concerns. Findings revealed two primary themes related to initiating voice (limits to environmental perception and social influence) that vary considerably depending on a firefighter's career stage. Additionally, the tactics that firefighters use similarly vary with career stage. Rookies (novice firefighters) often lack the ability to discern and interpret environmental cues, rely on others to ensure safety, fear being stigmatised if they voice worries, and may believe no one will listen to them. Veteran firefighters – both mid-career experienced firefighters and expert veterans in high-experience leadership roles – are better able than rookies to perceive and describe risky situations and feel more confident to raise concerns. However, experienced firefighters still face social pressures that may lead them to remain silent. Expert veterans face fewer social pressures, but their roles can put them in situations where they are either complacent or distracted. Implications of these findings for firefighter training and fire leadership are discussed.

Additional keywords: impression management, leadership, psychological safety, situational awareness.

Introduction

The risks of wildland firefighting are many, and suboptimal decision-making can lead to tragic consequences. Successfully managing risk, particularly in group situations, involves building a rich situational assessment – about the hazard, its associated risk, and about possible actions (Klein *et al*. 2005) – by drawing on multiple perspectives (Edmondson 1999; Klein *et al*. 2005). If information from all group members is not considered, poor decisions may be reached (Jones and Kelly 2007). Group access to multiple perspectives requires that each individual member be willing and able to speak up (Edmondson 1999).

   Here we explore factors influencing speaking up ('voice') in the wildland fire arena. Specifically, we seek to understand reasons firefighters (we use 'firefighters' and 'firefighting' to refer specifically to wildland fire) give for voicing or not voicing their opinions when they feel uncomfortable or unsafe about going into a risky situation. After briefly reviewing literature on factors that promote or hinder voice, we present findings from qualitative interviews with wildland firefighters. Several themes emerged, which manifest differently based on firefighters' career stage, and hence the findings are organised accordingly. This research expands the literature on voice with concrete implications for how wildland firefighting organisations might improve the conditions for employee voice.

Reasons for silence or voice

We reviewed the literature from business and occupations that might have similarities with firefighting to identify the types of factors that affect employee voice. This literature focusses largely on social and organisational cultural conditions, and how employees' interpretations of these conditions influence their voice. Additionally, studies of voice in risky situations recognise the role of experience in shaping individuals' ability to recognise and interpret hazardous situations.

   One reason for maintaining silence in a risky situation is that an individual simply may not comprehend that there is a problem (Klein *et al*. 2005; Sneddon *et al*. 2006). According to problem detection theory, he or she may not consciously perceive environmental cues at all (owing to distraction or lack of experience), may fail to recognise important changes in those cues, or – if cues are perceived – may not comprehend their meaning.

   Apart from this, employees may not feel comfortable voicing their concerns or ideas, especially to superiors (Edmondson 1999; Premeaux and Bedeian 2003). As explained below, two main reasons for this are a perception that doing so will incur high personal costs and that efforts will be futile (Milliken *et al*. 2003). Social context, including leader behaviour (Edmondson 2003; Detert and Edmondson 2007), also plays an important role

in determining whether and how a person will voice concerns (Ashford *et al*. 1998; Detert and Burris 2007).

Personal costs are negative outcomes that an individual believes will arise as a result of bringing up concerns (Edmondson 1999; Detert and Burris 2007). Employees may perceive that, if they openly speak their minds, they will face retaliation from supervisors, such as loss of a job or unfair treatment in the future (Milliken *et al*. 2003; Detert and Edmondson 2007). Costs can be subtle or indirect, such as teasing from coworkers, a damaged reputation, or otherwise impaired working relationships (Ashford *et al*. 1998; Desmond 2006).

Additionally, if employees feel their effort will be futile, they will most likely choose not to say anything (Milliken *et al*. 2003; Detert and Edmondson 2007). Mentioning problems may appear pointless when employees believe, or have concrete evidence, that supervisors are not interested in subordinates' point of view (Milliken *et al*. 2003). The power structure of hierarchical organisations can emphasise this perception.

Finally, the workplace is a social environment. Employees read the context of a situation for cues about how potential concerns are likely to be received (Ashford *et al*. 1998) and base their tactics on these interpretations (Piderit and Ashford 2003). Several studies (Dutton *et al*. 1997, 2002; Detert and Edmondson 2007) have found that the specific person targeted, the particular issue, whether the setting is public or private, and the views of others affect decisions to speak and the tactics used. If messages are not presented in the appropriate forum for a leader to take them into consideration, the result may contribute to the perception of futility. Milliken *et al*. (2003) and Dutton *et al*. (1997) point out that there are specific contexts – such as lack of time pressure – in which management will be more open to listening to concerns and suggestions from subordinates. Thus, leaders may open the door to employee voice by creating cues at times when they are most free and empathetic to listening.

Appropriate leadership behaviour can significantly mitigate perceptions of personal costs, fostering psychological safety and increased willingness to talk (Ashford *et al*. 1998; Detert and Burris 2007). For instance, when leaders downplay power differences in a hierarchical relationship (Milliken *et al*. 2003) and actively encourage speaking up by explaining the importance of the employee's opinion for the organisation, psychological safety increases (Detert and Edmondson 2007). In a safe atmosphere, subordinates trust that supervisors and coworkers will not ridicule them (Berson *et al*. 2006). Leaders who exhibit these types of behaviours play a key role in motivating employees to voice their concerns.

Wildland firefighting

Whereas factors influencing employee voice have been studied largely in business settings, these issues are likely to be relevant in the wildland firefighting arena, particularly given its hierarchical structure and strong organisational culture. The US Incident Command System (ICS), for instance, is based on centralised leadership with delegation of responsibilities to specialised roles. Crews on the ground may have a very narrow perspective based on their own roles and contexts. Moreover, the dynamic conditions of fire can create a mentally and physically taxing environment, in which it is easy to miss an important cue

(Weick 2002). Understanding of a fire is highly dependent on communication channels (TriData Corporation 1996), and success of the operation dependent on units following specific orders (Thackaberry 2004). Fire conditions can be dynamic, changing rapidly and dramatically, so it is critical for employees at all levels to alert others to dangerous conditions they detect. Yet, even when there might seem to be few risks involved, firefighters do not always speak up, even though the agency has official 'turn down' policies (procedures for refusing orders).

The wildland firefighting culture inculcates strong values, notably ambition and competence (Desmond 2006). Young firefighters experience strong social pressure to carry out tasks capably, efficiently and without complaint. Thus, even though their training emphasises the need to speak up if they have concerns, the culture may lead to a fear of retribution (TriData Corporation 1996) or ridicule (Desmond 2007).

Study purpose

Considering the paucity of research regarding employee voice in high-risk fire situations, we sought to answer the following questions: what are the reasons firefighters give for voicing or not voicing their concerns about safety when faced with a potentially hazardous situation? To whom, and how, do firefighters raise issues? We defined voice broadly to include situations ranging from airing observations that might not be apparent to decision-makers to overtly questioning or refusing orders.

Methods

We used a qualitative approach because of its ability to address a complex issue in its natural context (Lincoln and Guba 1985; Morse and Richards 2002). Voice has not been widely studied in firefighting, and the fire environment quite likely involves unique social and environmental factors that influence voice. Because of this, we used a grounded theory approach to data generation and analysis. Qualitative interviews allow researchers to develop a deep and coherent understanding of employee perceptions (Nævestad 2008), in this case how they reported reacting to dangerous situations. Moreover, this approach allows us to explore critical factors that participants' say influence their decisions regarding voice.

Grounded theory allows concepts and their interrelationships to emerge from qualitative data (Charmaz 2003). In our analysis, we used concepts identified from the literature as 'sensitising concepts' to guide analysis (Bowen 2006), while remaining open to the possibility that those concepts would manifest themselves in unique ways in the firefighting environment and that additional concepts could arise. Additionally, our approach was influenced by phenomenology (Starks and Trinidad 2007), which examines the internal experiences of individuals (van Manen 1990), recognising that perceptions present evidence of the world as it is lived (Morse and Richards 2002). Phenomenology encourages the examination of experiences from multiple angles and perspectives, to generate a unified and rich understanding (Moustakas 1994). In this case, the phenomenon is voice (or silence) in relation to 'close calls' or actual critical events. This method and approach allows us to discover patterns among the uniquely subjective descriptions of experience.

Our use of a semistructured interview protocol permitted us to investigate specific themes, such as perception of hazards and conditions for voice, while being adaptable to the direction of responses (Kvale 1996). Semistructured interviews are best done by researchers who have an in-depth understanding of the field; at the time of the study, the senior author had been a wildland firefighter for 5 years, serving in various roles such as a squad leader, incident commander of type five fires (the smallest, least complex type of fire), and as a helicopter, fuels and hand crew member. Additionally, the senior author has had personal experience with the type of intense situations being studied.

Study participants

We used a criterion sampling scheme (Creswell 1998) to identify those who had personal experiences in choosing whether or not to speak up in a particularly dangerous circumstance on the fireline. Although firefighters held diverse positions at the time of the interview, we asked about their on-the-ground firefighting experiences (experiences of work directly on the fireline as opposed to upper levels of management). Because wildland fire is an interagency endeavour, we sought to capture narratives from ground forces working for any type of employer (federal, state, contractors). Snowball sampling was used to locate additional participants who had different or relevant experiences (Morse and Richards 2002), with a goal to conduct as many interviews as necessary to achieve theme saturation (Lincoln and Guba 1985; Morse and Richards 2002).

Data generation and interview protocol

Interviews were conducted in the most convenient location for interviewees: many occurred on the fireline, others in offices and fire caches. After obtaining informed consent, interviews were digitally recorded and transcribed to a secure computer. Once data extraction was complete, interviews were erased to comply with confidentiality requirements. Our protocol called first for participants to explain their background; then they were asked to fully describe any fireline experiences they had had in which they felt unsafe or where something went wrong. We sought the richness of data found in personal stories (Milliken *et al*. 2003); hence, participants were encouraged to go into as much depth as they needed to portray the context, events, their own role, and the role of other actors in the events they described. Examples of clarifying and probing questions included, 'Did you feel uncomfortable? Did you say anything to anyone; why? Why did you wait so long to pull out? What did other people say?' Firefighters described situations they had experienced at different points in their careers; some described many situations. They also provided insights gained from observing others' experiences of voice. To avoid shaping responses as much as possible, the interviewer remained neutral, asking for more information and avoiding making judgments. As interviews proceeded, two authors listened to and discussed the themes that were emerging. Subsequent interviews were targeted to explore themes in more depth, until the point of theoretical saturation, when no new themes were identified (Morse 1995; Bowen 2008). Thirty-six interviews were completed.

Coding of interviews

The first two authors undertook open coding at a top level for two interviews (Creswell 2003; Ryan and Bernard 2003). This resulted in initial themes related to leadership, organisational culture, context of specific fire events, and firefighters' personal approach to safety in fire. We then generated three top-level themes related to voice: (1) environmental perception (the failure or ability to notice cues); (2) social influences, including aspects such as how entitled individuals felt to speak, the role of status, credibility and reputation, and the influence of peer groups on speaking; and (3) tactics used to discuss or negotiate issues. Both authors then coded all the interviews independently (Fig. 1). Through iterative discussions of the coding and resolutions of differences – as is common in complex, qualitative research (e.g. Dutton *et al*. 1997) – we came to understand the essence of voice in firefighting as told through participants' narratives.

Results

Study participants represented most of the major types of on-the-ground coordinating groups and crews involved in fire (e.g. hotshot, helitack, handcrews, smokejumping and engine crews). Reflecting the preponderance of men in the organisations, most (75%) of the study participants were men. Ages ranged from early 20s to mid-70s, and the number of years spent working in fire ranged from 2 to 46. Interviews ranged from 15 to 90 min, depending on participants' experiences and their dispositions to share insights.

As we explored our three primary themes, it became apparent that firefighters routinely talked about them differently depending on the level of experience they had at the time when an event occurred. Therefore, we organise our results according to career stage, noting variations in the three primary themes in each. We found agreement around three distinct stages in firefighting. The first is the rookie (novice) stage, described by participants as lasting from 2 to 4 years, depending on individual factors and experiences gained in those initial years. With experience, firefighters transition from rookie to veteran status. Interviewees identified two levels of veterans – experienced firefighters and expert veterans – who are differentiated along a gradient of experience and knowledge that generates expertise and confidence in their ability to judge circumstances accurately. Experienced firefighters and expert veterans are less easily distinguished by years of experience, and more by the types of experiences they have had and the level of maturity they have developed. They stand apart from rookies in that they all have developed a functioning understanding of their environment and how all the pieces – weather, fuels, topography, tactics – work together.

Rookies

According to our participants, rookies' tendencies to speak up or stay silent are influenced by perceptions of their roles and their lack of extensive practical knowledge. Reasons for lack of voice among rookies include lack of experience to accurately recognise hazards; faith in their leaders; interest in proving competence and building credibility; and self-doubt about the proper interpretation of environmental cues. Rookies who do raise

	Environmental perception	Social influences	Tactics
Expert veterans	• Confident in recognition, interpretation of cues • May miss cues due to complacency, distractions	• Strong reputation • Responsibility as a supervisor • Not easily swayed • Prior experience with negative outcome increases willingness to voice concerns	• Know when and how to voice concerns • Elicits input • Negotiates • Proposes alternatives • Refuses assignments • Uses reputation
Experienced veterans	• Confidence in recognition, interpretation of cues • May misinterpret cues in specific circumstances due to lack of experience with those specific conditions • Still gaining experience	• May lack strong authority • If no alternative exists, will back off • Perceived pressure to 'get the job done' limits persistence • Perception that speaking up may limit future opportunities	• Can articulate rationale for concern • May not have experience to propose alternatives
Rookies	• Lack experience to accurately interpret cues and recognise hazards • Trust in leadership • Self-doubt	• Feels need to prove firefighting abilities before voicing concerns • Responds when asked by leader • Role as rookie to accept, learn, and conform to crew norms • Desire to prove competence • Fear of 'crying wolf' • Coworker actions override preseason training	• Tendency to raise concerns with other rookies to minimise personal cost of being wrong • Follows rules

Fig. 1.   Factors affecting firefighter voice in relation to career stage.

concerns often have those dismissed as unfounded, and they are aware of a stigma attached to being a rookie, particularly one who 'freaks out' unnecessarily (voices a concern about a (relatively) benign condition). Hence, they tend, choose less 'risky' outlets for voicing or validating their concerns. Each of these is discussed below.

Rookies are noted as facing unique challenges, especially in relation to awareness. One reason rookies don't speak up in what others would see as a dangerous situation is simple lack of experience and knowledge to understand their environment fully, and therefore to grasp the danger of their situation. If one fails to correctly identify cues in the environment, appropriate reasoning and action are unlikely (Klein *et al.* 2005; Sneddon *et al.* 2006). Many firefighters expressed that, as rookies, this led them to place their trust in their leaders.

It was my first big fire, I was a crewman on a hotshot crew, and almost every day we hiked down this steep draw and attacked the fire from below and cut line up hill … But this one time, it was a close call; we were walking up the hill [in] scattered timber with grass in between and we were walking around spot fires up this steep hill … and I didn't really know enough about fire behaviour to realise how close that was, but when you're walking around spot fires, walking up hill away from the fire, it was on a steep hill; I realised later that that was a close call, but I didn't say anything then because I totally trusted our superintendent … and he didn't show any kind of concern at all. [35 years, variety, male][A]

Often, rookies do not feel the need to worry – they consider their role to solely 'be a ground pounder'. In organisations like

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[A]Text in brackets indicates number of years of experience, types of positions held and sex.

firefighting, where socialisation of newcomers is institutionalised with discrete steps and role identities, newcomers tend to 'passively accept established roles' (Ashforth *et al*. 1998, p. 899). For example, one firefighter described an event that occurred during his third year, in which he 'didn't take the time to sit back and look at what was going on around me because we had people who were in charge of us that are supposed to be doing that' [6 years, variety, male]. He felt comfortable that his leaders 'weren't going to get [them] into a bad situation and they knew what was going on', so he 'relaxed [his] sense of awareness'.

The need to display competence creates a strong disincentive for rookies to speak up when they do perceive things that make them uncomfortable. On the one hand, rookies can become engrossed in demonstrating their competence, working hard and taking pride in the idea that they are 'firefighters' with a 'cool job'. As one put it, 'your first year you don't care about what the weather's doing or what the expected fire behaviour is, you don't understand it, you don't care, you just want to get out there and play in the dirt' [6 years, fuels crew, male]. Another observed that at 'your beginning stage … you are trying to prove to yourself and to your coworkers that you are a hard worker' [31 years, variety, male]. Rookies do not want to be seen as 'the dumb rookie' who 'feels uncomfortable again' [4 years, fuels crew, female]. One recalled that, as a rookie, 'it almost felt like everything was a close call for me, 'cause I was new; I didn't know when to freak out and when not to freak out' [2 years, engine, female].

Rookies hesitate to speak up – to 'cry wolf' – when they feel uncomfortable, because of possible negative peer reactions. Often their fears are dismissed by other, more experienced members. Although preseason, formal fire training courses encourage speaking up, in practice, the actions of coworkers often contra-indicate and override that training.

> I kinda learned there was times where they told you, you know, 'Tell us if you feel uncomfortable', and then if you say that you feel uncomfortable, they're like, 'Shut up'. You know, because you're younger, you're newer. They're like, 'You're over-reacting', and probably, you know, 'You're a girl', so, 'Just shut up, you don't know what you're talkin' about'. I'm like, [meekly] 'Oh, ok', just keep going. I look at everybody else, and like, 'Are you guys ok with this? Alright, we're going', you know, and never – even if I wanted to – I probably would have never said, 'I don't really feel comfortable'. I'd say it to my friends, but I wouldn't say it to that guy, ever. [2 years, engine, female]

As indicated above, rookies are made aware of their role and appropriate outlets for voice most strongly by their leaders. Additionally, the social implications for choosing to voice concerns, when there is no real threat, can further propagate the unwanted stigma of 'crying wolf' and can cause rookies to remain silent or choose outlets that are socially less risky, such as other rookies.

Veterans

As they take on more responsibility and gain more experience, firefighters' decisions about voice, the factors that influence those decisions and the tactics evolve. Experience and credentials help them both to identify problems and have solid ground for voicing their concerns. In this section, we describe how voice differs for experienced firefighters and expert veterans.

Experienced firefighters

Experienced firefighters have developed the ability to discern cues in the environment and confidence in their interpretation of those cues. As one noted, a firefighter can't 'just go up to somebody and say "No, I'm not doing it"'. Instead, 'you need to have a reason why you're not going to do it, to back up what you're saying … You need to say "I don't feel safe doing this because of this, this and this"' [12 years, variety, male]. This makes them more likely than rookies to voice concerns to superiors. Once they feel comfortable with fire weather, behaviour and fuels, they seem less concerned about negative attributions about their competence.

> I speak my mind pretty easily now. Being in it, and getting a lot of experience the last couple of years, I feel I can support my opinion. When something doesn't look right to me, it probably isn't, and so I at least speak my mind, and if it isn't right, no big deal, it's not worth risking just 'cause you don't want to look dumb or something. [5 years, engine, male]

However, paradoxically, the accumulation of experience can lead to misperception of environmental cues among experienced firefighters. Unlike rookies, who may feel that they don't know what is going on around them, experienced firefighters may draw too heavily on their past experience, causing misinterpretations of environmental cues when applied to new circumstances. As Dether and Black (2006, p. 53) similarly noted, they may lack 'appropriate mental models'. For example, one firefighter [5 years, engine, male] described how a division supervisor on an Incident Command team from the south-west misinterpreted conditions on a fire in the northern Rockies. The fire had 'burnt down the side of the mountain, down into the next drainage and transitioned into a grand-fir kind of stand'. The local crew understood fire behaviour and was able to hold the fire with a 'big cut line along a road'. However, 'the whole time' the division supervisor 'was saying "it won't hold", and he actually turned over his division because he said we weren't listening to him'. This example is interesting because it illustrates both the confidence of the supervisor to speak up, but also the disdain of the local crew regarding his fears.

Although experience may increase confidence to speak up, there are factors that limit experienced firefighters' willingness to persist, including sensitivity to production pressure – pressure to 'get the *job* done' – and awareness of the individual's subordinate place in the organisational hierarchy. If there seem to be no alternatives for accomplishing the assigned task, the firefighter often backs off.

> The longer I'm in fire, the more experience that I have under my belt, and the more friends I lose, unfortunately … the more I speak up … If a controversial decision comes my way, I have a role play within my mind, a small conversation and that conversation goes to worst-case scenario of 'What will this person say?' For instance: if we're about to dig a line

downhill towards a fire and I don't think it's safe, in my mind I'm thinking to myself, if I bring this up they're going to ask, one: 'Why don't you think it's safe?' Which is easy, usually, for me to answer. Two: 'What would you suggest?' Which is not always easy for me to answer. I don't always have an alternative to getting the job done and for that reason there's a lot of times that I haven't spoken up because I'm thinking to myself, 'I don't know what the alternative is, so I guess we'll take this risk'. [12 years, helitack, male]

Despite a greater commitment to voice their concerns, experienced firefighters will not always push the issue, sometimes because they do not perceive they have the formal authority to persist, and perceive that their persistence may negatively impact future assignment or advancement potential. This is illustrated in examples from two individuals who were involved in burnovers before which they chose to speak up, but only to a point. Both later felt regret and rethought how they would approach future situations. One [11 years, hotshot, male] had served as a lookout on a fire where a bulldozer operator engaged in very dangerous actions. He raised his concern, but because he was 'not in their chain of command at all', he did not insist when the operator dismissed his concerns. Another described a fire in which, as the lookout, she knew a crew was hiking into a bad situation [12 years, variety, female]. She had radioed the crew to say, 'It's rough up here. You guys need to really consider a different option. Maybe you should just turn back', but the crew kept moving and ultimately was involved in a burnover. She said she felt that she had 'no say in what they do', given her role. In both cases, these firefighters recognised problems and alerted others, but at some point decided to back off. Concerns about the hierarchy of fire organisations (being in the correct place in the chain of command) seem to have influenced their perceptions about how persistently they could voice their concerns, and thus their decisions about when to cease.

Expert veterans

Expert veterans have acquired a competence-based reputation that carries influence. Compared with experienced firefighters, expert veterans feel less pressure owing to their often higher placement in the fire hierarchy. These firefighters have the confidence and status to know how and when to speak up. They have honed their ability to appropriately raise sensitive issues. Further, they do not feel threatened by potential personal costs, such as being labelled negatively. As expressed by one veteran, they are 'not afraid to ask a tough question' [32 years, aviation, male]. Yet higher placement, which often accompanies expert experience, also means broader responsibilities. Thus, although veterans are more able than rookies to correctly identify hazards in their environments, they face two obstacles that can impede their ability to notice and communicate risks. The first is complacency. Veteran firefighters can fall into the trap of treating each fire the same as the last one, utilising similar tactics without much thought.

I think that the more experienced you are, the more relaxed that you are, but you can also fall into that role as an older firefighter with experience of being too relaxed and maybe getting in trouble. It's like … being so relaxed and so used to things that you become complacent and hazardous. [12 years, variety, female]

The other obstacle expert veterans face is distraction. Veterans are often in leadership positions where they must pay attention to multiple, quickly changing factors at once and cannot focus specifically on the threats posed by the fire itself. The following example illustrates how one leader understood and mitigated this situation.

I rely on those other 19 or 20 set of eyes to pick up the things that I can't see, because it's human nature for us to get inundated by things out there in that rapidly changing fire environment. We have people calling you on the radio and their cell phone is going off and guys are asking questions … It's real easy for us not to see the snag, or that we actually parked on the power line, because we are so busy doing this thing over here. So I rely on my kids to have a tremendous situational awareness about the entire environment that we are in. [24 years, hotshot, male]

The effect of social influences on voice is perceived differently among expert veterans. Although actual or anticipated personal costs can affect rookies and veterans alike, expert veterans no longer feel the weight of this burden as heavily. Acquiring extensive experience and status means firefighters no longer have to justify or prove themselves to others. This was evident in the interviews when participants were informed that their identities would be concealed; rookies and experienced firefighters generally expressed relief at this assurance. However, expert veterans not only did not care if their names were used, but some actually requested to be named.

Firefighters cited reputation and experience as the most important factors for being heard and given consideration by decision-makers. These two attributes are often found in hotshot superintendents and other expert-level crew leaders, because they have seen more fires than most and are known for being some of the hardest-working and most ambitious firefighters; this respect is demonstrated below by one firefighter.

I've worked with a lot of hotshot crews and the ones that I like the most have been ones that know how to work really hard, but they have no problem turning down an assignment, no problem at all. Because they work so hard every other time, they don't have to prove something by doing assignments that are not appropriate and not safe. [6 years, variety, female]

A unique group that acts in similar ways to expert veterans and is thus included in this section are those who have been in intense experiences or burnovers. They are more apt to speak up because they share the understanding of potential consequences for not doing so. This group also has acquired the confidence and credibility to say things when they feel uncomfortable, regardless of social influences. Several study participants described such transformational experiences.

My first 6 years, I was really aggressive, probably overly aggressive to be honest with you, and I am not proud to say that at all. It shames me to talk like that … because I just

wanted to put the damn fire out. I know that I cut several, several safety corners to do it and after that – that [burnover fatality] was my lesson of showing that, every single one of us is vulnerable. It may not get us, but it can very well get somebody that you're working with, so [my firefighting mentality] changed dramatically. [24 years, hotshot, male]

Expert veterans have developed indirect tactics to get their points across. Rather than turn down assignments directly, they will negotiate a different way of completing the assignment, or they will 'refuse' or question tactics indirectly. This is consistent with the observation of Dutton *et al*. (1997) that middle-level managers select tactics they think will work to 'sell' their ideas to their supervisors. For example, one veteran firefighter described the approach she developed to help herself and others understand the implications of decisions.

He [the hotshot superintendent] was talking about what he was going to do and he was going to send somebody right down to the bottom of the drainage to get the fire to pull off the line and get some heat generated there. And yet the fire at the bottom kind of hooked around. So I asked him, 'What are you gonna do if that fire comes out of there, out of that canyon, what are you gonna do?' 'Well I've got a real strong guy that I'm gonna have down in the canyon so he'll have no problem'. And I just thought, ya know, this guy has fought a lot of fire and I respected him well … but within the short time before he was going to send those folks down in there, the fire blew out, so if he had gotten anybody down in there, I don't know. It was just, one and one is two … he was getting mission-focussed and I kinda like to play the devil's advocate a little bit and ask questions to make people think a little bit about, prompt them, I guess to make the right decision. [29 years, hotshot, female]

Another example demonstrates one expert veteran's ability to negotiate and how his reputation, experience and tactics have helped him get his concerns noticed and resolved.

You say, 'Well I can do this if you get a hose line to back me up or if you get aircraft or if I get a lookout over there' … On almost every fire you have an assignment during the course of a fire [where] you'll have the choice to say, 'I'll do this if you do that', or if I can do something a little bit different, alter it and still make the overall extent of the plan happen for the operations chief. So, you know, it's not a big deal – it's not a turn down. You're just saying, 'Do this for me and I'll do this for you'. It's more like having a conversation about it. I think [it's] being in the hotshot business for a long time and then being respected for who and what you are and what you know. [34 years, hotshot, male]

Discussion

Voice in the wildland fire arena is a complex phenomenon that has both similarities and differences with other contexts. It is similar in that it involves perceptions of the environment, various social influences, and the adoption of tactics used to voice concerns. As in the study of Detert and Edmonson (2007), the ability to appropriately raise an issue affects both the decision to voice a concern and response to a voiced concern. In wildland firefighting, voice is also affected by a lack of ability to

accurately perceive and interpret environmental cues intrinsic to wildland fire.

Although we had not anticipated the central role of experience, firefighting career stage was reported to play an important role in firefighters' perception of environmental cues, how social factors influence voice, and the efficacy of their voice. The concept of career stages is similar to the description of Dreyfus and Dreyfus (1988) of skill acquisition, which progresses from a rule-based approach to an experienced-based approach. Here we interpret our findings within this framework.

Voice across the firefighter's career
Rookies

The earliest stage of skill acquisition, the novice, is characterised by a lack of perception and inability to distinguish subtle differences among environmental and social contexts (Dreyfus and Dreyfus 1988; Dutton *et al*. 2002; Blåka and Filstad 2007). Rookies may not perceive cues at all or they may not interpret them correctly (Klein *et al*. 2005; Sneddon *et al*. 2006). This was identified as a common problem for rookie firefighters.

To compensate for this lack of nuanced perception, rookies are presented with rules that are to be followed rigidly, with no allowance for situational variations (Dreyfus and Dreyfus 1988; Næveastad 2008). As they work on the fireline, many rookies begin to recognise that these rules are not straightforwardly applied in context and that the rules are not black and white (Desmond 2007), but they do not possess the experience to know when the rules apply and how or when to 'freak out'. Thus, they hesitate to voice concerns. Several firefighters mentioned how – as rookies – they had gone through events where they were uncomfortable but did not speak up, yet everything turned out fine. Such events caused them to question their own perceptions, and may have caused them to feel inadequate in their abilities to recognise what were actually substantial threats. Unfortunately, such circumstances could be unrecognised near-misses, contributing to the beginning of a 'normalisation of deviance' (Reason 1997), in which experiences that lack bad outcomes result in increasing comfort with risky tactics.

Rookies also face a major dilemma of personal costs. If rookies choose to voice their concerns and are over-reacting or wrong, they face the risk of appearing incompetent and may be ridiculed for their efforts. A similar phenomenon has been reported in many contexts (Ashford *et al*. 1998; Edmondson 1999; Milliken *et al*. 2003; Premeaux and Bedeian 2003; Desmond 2007; Detert and Burris 2007). Additionally, if they feel that they are more expendable (Detert and Burris 2007) because they are new and have not proved their competency, then they may choose to remain silent, avoid confrontation and focus on proving their competency as firefighters. This is especially likely if they do not observe anyone else expressing concern (Waring *et al*. 2007).

Another reason rookies may choose to remain silent is what Milliken *et al*. (2003) described as the futility of voice. Rookies may feel that any efforts would be useless because of what they have seen the culture demonstrate to them or others when they have tried raising a concern and were ignored, laughed at or chastised. As Ashforth *et al*. (1998) point out, structured

organisations with formal, sequential socialisation processes and a centralised chain of command discourage newcomers from questioning their roles.

Though rookies may be reluctant to voice concerns upward, they are still trying to make sense of their environment and make the transition from what Dreyfus and Dreyfus (1988) called the advanced beginner, characterised by the awareness of the powerful role that context plays, to a competent firefighter. As a result, they talk to equals because by doing so they keep the personal costs of being wrong low (Blåka and Filstad 2007). However, when problems stay at this level, they do not become apparent to those who could identify and explain the true significance of a concern. Although it is true that rookies are likely to raise many false alarms, sometimes they are the most acutely alert firefighters on the fireline, because they are trying to sort out the meanings and implications of the cues in their environment. This sensitivity to their surroundings may help them notice aspects that others do not, and ultimately increase collective safety on the fireline.

Experienced firefighters

The middle stage in the model of Dreyfus and Dreyfus (1988) of skill acquisition is referred to as the competent level. This stage is characterised by greater awareness of contextual subtleties, where one comprehends a situation as a set of distinct facts and is able to put those facts together to draw accurate conclusions and reach appropriate decisions. Several participants in the present study mentioned 'mental slides' they had acquired over the years and how they had learned to 'trust their gut'. Church (2007) described a similar phenomenon of experienced firefighters internalising the 10 standard firefighting orders and the 18 'watch out' situations such that they became reflexively understood, rather than recited from memory. A similar phenomenon has been documented among skilled operators on offshore oil drilling rigs (Nævestad 2008). This contrasts markedly with rookies' abilities.

Though experienced firefighters may be more capable than their rookie counterparts, they still face personal costs associated with voice. They have proved their competence on the fireline and they have more credibility. They can more often identify situational hazards correctly and are more confident that they will be correct in their decisions. However, if their assumptions are wrong or they do not live up to expectations, then they may have more to 'face' to lose (Dutton *et al*. 1997). These repercussions could be one reason that experienced firefighters tend to raise, but not persist in, voicing their concerns.

Negative career repercussions faced by experienced firefighters are comparable with the employment and social repercussions described by Ashford *et al*. (1998), Edmondson (1999), Milliken *et al*. (2003), Premeaux and Bedeian (2003) and Detert and Burris (2007), namely, risking job promotions or hindering working relationships with people responsible for the advancement of their careers. A damaged reputation in firefighting may follow one the rest of a career. As noted by Baumeister and Bushman (2008) and Cha and Edmondson (2006), bad decisions or actions are remembered more than good decisions or actions, and reputations circulate within the tight-knit culture of wildland fire. Hence, experienced firefighters are careful about how they approach speaking up.

Expert veterans

Dreyfus and Dreyfus' (1988) expertise phase is marked by maturity and practiced decision-making. Expertise is further characterised by a deep, holistic understanding of situations that promotes fluid performance and quick, correct decisions. Firefighters noted that expert veterans possess these skills and, correspondingly, their confidence in their ability to recognise safe and unsafe situations has increased. This confidence is one of the major factors making them more likely to voice concerns and stand firm in their decisions. Further, they have accumulated an array of methods for approaching situations, including the entitlement and confidence to directly refuse an assignment, as well as effective methods to negotiate and present other, safer ways of completing an assignment. Negotiating is a tactic for speaking up that Kassing (2002) called 'solution presentation', where workers dissent, but then strategically offer another way of completing the task.

Certain challenges facing expert veterans are less related to group dynamics and more structural: complacency and distractions. To the extent that fires may be perceived as routine, firefighters may fall into organisational habits (Gersick and Hackman 1990) or fixate on common scenarios (Klein *et al*. 2005). Leaders with multiple responsibilities may not be able to attend to all relevant environmental cues (Albolino *et al*. 2007). Importantly, some resolutions for these two obstacles – teaching others to voice their concerns, at appropriate times, and being open to comments when subordinates do voice their concerns – also provide the exact cultural cues that facilitate voice in others. This is known as psychological safety (Ashford *et al*. 1998; Edmondson 2003; Detert and Edmondson 2007), and we discuss its implications for improving safety on the fireline next.

Psychological safety and implications for management

Weick and Sutcliffe (2001, p. 74) pointed out that 'with every problem, someone somewhere sees it coming. But those people tend to be low rank, invisible, unauthorised, [and] reluctant to speak up'. This highlights the necessity of psychological safety – feeling that one will not be reprimanded or socially penalised for raising one's own perspective or issues – in the development of a vocal culture. It is also an underpinning of a 'reporting' culture (Reason 1997). In firefighting, expert veterans in leadership positions may have the greatest capability to encourage voice.

Edmondson (2003) describes the value of downplaying power difference, in which a leader demonstrates to subordinate team members that they are as much a part of success as the leader. Leaders who take action based on the input received, even if this action is solely having a discussion, are noted as being successful by Edmondson. Firefighters we interviewed said that leadership plays a crucial role in determining whether and how firefighters speak up. Effective leaders are those who directly ask for and elicit input from their subordinates; it is not always socially sanctioned for subordinates to make the initial action in speaking up. These leaders create an environment of trust and safety through establishing ground rules and modelling respect. Through their own example, these leaders teach their subordinates the appropriate times to speak and how to approach others with requests or concerns.

These suggestions for creating psychological safety take time, time that a leader may not always have. Mentoring, as several study participants noted, can make a tremendous difference. Pairing rookies and early experienced firefighters, who have enough experience not to be considered rookies but are not yet seasoned experts, may make rookies feel more comfortable conversing and asking questions. There are many benefits to mentoring. For example, Blåka and Filstad (2007) noted that a less structured relationship is often excellent for learning about tacit cultural knowledge, allowing the participants to learn 'how to see' more quickly. Mentoring can facilitate an open climate, by creating an expectation for asking questions, and weed out unnecessary fears without stigma or loss of face. It can also enhance leadership ability through giving mid-level firefighters more responsibility, thus helping them develop the confidence necessary to become expert veterans.

Conclusion

Critical concerns that have serious implications for fighting fire safely can come from people of any experience level. Our conversations with firefighters revealed that both the content of a concern and the decision about whether to speak up vary across the stages of a firefighter's career. Each stage experiences unique challenges – among rookies initially focussing on lack of confidence in recognition, interpretation and judgment of the fire environment, and possible negative social and professional consequences of speaking up. As experience and comfort with the fire environment grow, the nature of perceptual and social challenges shifts. Decisions to voice concerns are easier owing to greater self-confidence, yet a culturally 'wrong' question or statement still poses risk to reputation and career. At the most experienced stage, focus turns to how a person's demeanour, style, tact and openness can affect whether he or she is heard and what sort of psychological climate is set for others.

As a qualitative study, our purpose was to uncover the factors said to be affecting voice and understand how those are negotiated by firefighters. We have a limited ability to generalise or quantify the findings. Future research, looking into the connections between voice, power, leadership, safety management systems or confirming the presence of these patterns to enable broader generalisation can have significant, positive impact on safety and organisational performance. It may be useful to look specifically at how voice is most effectively cultivated at each stage, and whether the consequence of errors or omissions of voice at each stage are similar. These findings could be directly applicable to developing better safety management systems and leadership curricula than are currently in practice in the wildland fire arena as well as inform other related areas of study concerning voice.

Acknowledgements

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