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Creating safe atmospheres in surgery: experience one, create one, teach one

What if creating psychological safety in surgical teams could go beyond culture? We explore how leaders can shape 'safe atmospheres' to empower team members to speak up.

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Previous studies of human factors and psychological safety in surgery are reflected in current training programmes.[1] The principles taught are not restricted to improving patient safety but also include enhancing the safety and wellbeing of the workforce. NHS policy on safety acknowledges the need for patients and staff to feel able to speak up, and for leadership to promote this.[2] However, recent research reports that work is still needed to develop ways to enable staff to speak up without fear.[3] Our exploratory study develops an early understanding of how the leadership of surgical teams can encourage a safe atmosphere.

Researchers studying safety in other organisational settings are giving increased attention to the concept of atmosphere.[4–9] In contrast to notions of culture and climate, an atmosphere does not necessarily persist.[10] It tends to be short-lasting and may change instantaneously. An atmosphere can be felt individually or concurrently by more than one person in a group.[4] It may arise in the moment or be drawn from previous moods, emotions, relationships and longer-term experiences of the team members and organisations. This contributes to a push and pull dynamic: in addition to atmospheres being created by feelings, they can also cause emotions.

To date, there have been few studies on the association of leadership with types of atmosphere. Nevertheless, studies of leadership in other fields have demonstrated that atmospheres are beneficial to leadership development sessions,[5] and that they may enhance performance and reduce staff turnover[6] as well as supporting innovation.[7] Edmondson's studies of psychological safety have played a role in understanding leadership in healthcare and surgical teams.[8,9,11] She briefly mentions surgeons fostering an atmosphere of learning, indicating that atmosphere is a contributing factor for feeling safe to speak up. However, Edmondson did not develop this concept and instead focused her attention on categorising types of leadership communication.[8]

We extend Edmondson's embryonic notion by developing an understanding of the experiences surgical team members have had of leadership for atmospheric work. This is work people do to create and maintain a particular kind of emotional atmosphere in a team or organisation. Here, we focus on the emotion of feeling safe to speak up about issues that cause people concern, particularly patient safety and staff wellbeing. Earlier work on atmosphere in other research fields has expressed it as capable of being created deliberately, emerging spontaneously or being the result of a combination of spontaneous and planned elements (being "moments of potentiality and promise").[12,13] The main aim of this article is to consider whether a safe atmosphere in surgical multidisciplinary teams (MDTs) is manipulable and reproducible.

METHODS

Given its exploratory nature and our concern for relational experiences, this study used a qualitative approach to collect data through 60 semi-structured interviews and observation. The interviews were carried out over a period of two years (2020–2022) and usually lasted 50–75 minutes. Each interview opened with a set of questions designed to probe the interviewees' experiences of clinical leadership and their perceptions of how it was practised.

Surgical team leaders were not defined as such solely because they were in a senior role, such as consultant, which traditionally would be assumed to make them the leader. Instead, the questions explored leadership activities that were potentially used by team members individually and collectively, both by clinicians in surgical teams and people in non-clinical management roles. Example questions include "Could you describe your role and what it entails?" and "In the context of surgery, what is a safe atmosphere to you? What effect does it have on you?".

The questions were intended to explore how experiences have changed over time (e.g. "Are changes in atmosphere something you've been aware of all throughout your career?"). Subsequent questions were tailored to the responses given to the opening questions.

In order to deepen our understanding of the atmospherics of surgery, we conducted more interviews and re-interviewed some study participants. Our aim was to clarify certain issues using an enhanced interview protocol. For example, we asked more targeted questions about how managing atmospheres in theatre has changed over time. The interviews were audio-recorded and transcribed.

Established participants noted that it helps to draw on their own experience as a junior to create a welcoming atmosphere because they remember "how it feels to enter an operating theatre..."

Field notes from virtual observations of training and meetings recorded additional insights into features of work and social interactions.

The interview pool comprised 60 current and recently retired NHS employees (both clinical and non-clinical, in executive, management and support roles), and private practice practitioners. The number of interviews conducted was at least double the minimum number recommended by Warren to achieve theoretical saturation

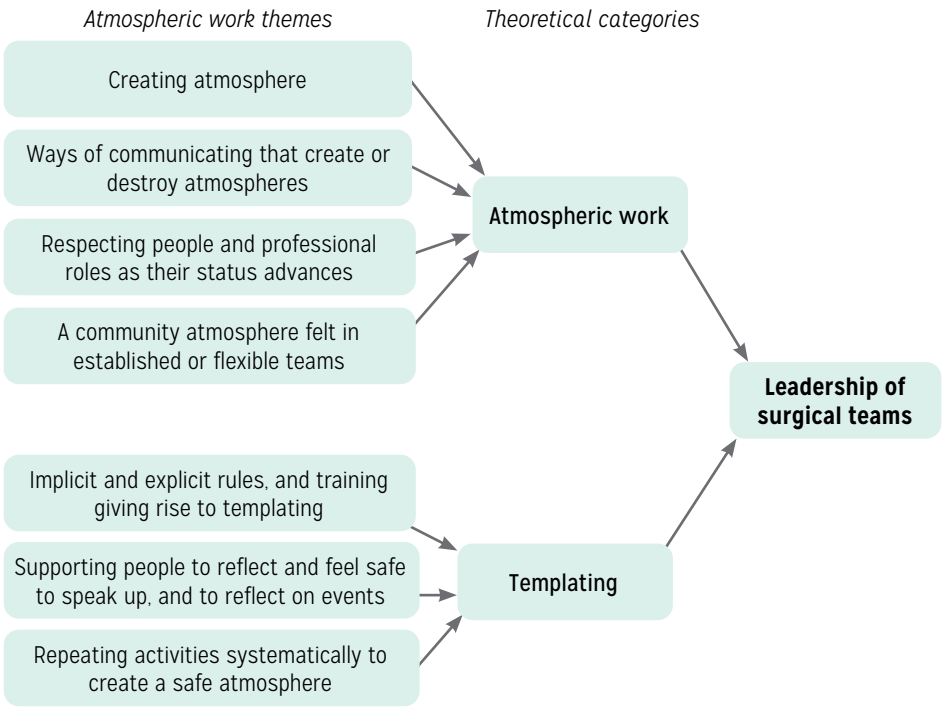
and trustworthiness for a qualitative study.[14] Clinical participants were drawn from different professions (operating department practitioners [ODPs], nurses, nurse practitioners, surgeons, anaesthetists) and specialties (general surgery, emergency surgery, colorectal, vascular, orthopaedic and plastic surgery, obstetrics and gynaecology, and anaesthetics). The career stages of participants varied from practitioners who are professionally qualified but are undergoing training in their chosen surgical specialty to staff who are experienced in their field (>15 years since initial medical qualification). Non-clinical managers were in a range of roles, including programme manager, cancer services manager and NHS trust chair.

The analysis was conducted in nine stages: (1) conducting *in vivo* coding (i.e. using the participants' language in the data rather than the researcher's terms); (2) synthesising the data into themes; (3) producing working definitions of the activities and experiences that participants described; (4) labelling participants' descriptions of leadership; (5) bracketing experiences across three successive time periods; (6) organising data from themes to reflect our findings; (7) managing the data across the time brackets; (8) subsequently moving between our data and previous studies concerning leadership to consider its application to our findings; and finally, (9) enhancing the interview protocol to collect additional data to build on initial novel insights. We moved through stages 1–8 with new data as additional participants came forwards.

RESULTS

In building an understanding of how surgical team leadership contributes to creating and maintaining a safe atmosphere, a number of themes became apparent. Under each theme were bundles of activities that contribute to different aspects of leadership. This work can be reproducible by using a process we term 'templating'. The overall structure of the data relating to activities for atmospheric work is shown in Figure 1.

Figure 1 Overall structure of the data



Atmospheric work and its perceived benefits

Participants considered atmosphere to be a feeling that hangs in the air: intangible but affecting their mood, how they interact with people and how they carry out their work. However, when they first start working in theatres and become aware of the atmosphere, it may not be as they expected. This was true even if they had worked in healthcare before. Participants believed that this was because each surgical environment has a distinct atmosphere.

Participants were clear about the importance of creating the right atmosphere, how it affects the working day and its impact on team effectiveness:

"I think it's really important. That level of atmosphere actually is key. It's very hard to know how people get it right. But you just know some people that you work with or teams that you work with, the atmosphere is generally right, […] and then, it's funny, those, those teams, you just know the day will run more smoothly, that there will be less chance of there being problems and things will be right. And it's difficult to measure. But that's quite an interesting thing if we can measure it to work out how that becomes effectiveness essentially." [Consultant anaesthetist: P14]

From the rich descriptions that participants provided, we identified four main themes for atmospheric work (Figure 1) and bundles of activities relevant to each theme that contribute to the leadership process. Table 1 details these and provides examples from the data of those activities.

The theme of creating atmosphere centres around the relational activities such as communication and creating a connection between team members. Established relationships among the team generally support creating a safe atmosphere. Participants describe that in these cases, they work very closely together, and respect each other professionally and clinically so that "as friends, we had good open working relationships with the scrub team and the junior staff" [Consultant surgeon: P4].

However, it is possible to develop a sense of camaraderie even if people do not know one another by using atmospheric work activities. This approach is used to compensate for what the participants

Table 1 Explanations of activities and examples of activities in data of atmospheric work

Leaderhip process theme		Activity	Explanation	Example in data
Atmospheric work	Creating atmosphere	Creating appropriate informality	Using first name or surname	"Just be nice to people. You know, it's not rocket science" [Theatre nurse: P29]
		Creating a pleasant environment	Playing/giving colleagues option to choose music	"So I bring speakers with me. I ask everyone in there is there any particular type of music they like putting on. I always make sure it's on" [Surgical registrar: P41]
		Informal social talk	Relaxed chatting before surgery starts	"Have a little chat, have a little banter" [Consultant surgeon: P18]
		Drawing newcomers in	Asking people who they are and how you can help the new arrival	"People ask who you are and, you know, how can they help. And, you know, what do you hope to get out of it?" [Surgical registrar: P36]
	Ways of communicating that create or destroy atmosphere	Finding	Finding the best time and way to communicate	"If you find the right moment, the right place, and the right person to do that" [Clinical manager: P17]; "I just try to develop those kind of communication skills, slow everything down, but it's much easier said than done, actually. It's something I found very challenging to develop" [Surgical registrar: P02]

consider the decline of a naturally occurring community atmosphere due to more frequent use of teams who do not work together regularly. Over time, these changes, which are related to training practices and different organisational allocation of personnel to teams, have drawn people away from feeling safe in surgical teams. The decline means that "it's very difficult to get that sort of togetherness when you don't see the same members of the team all the time. You're just constantly seeing different doctors turning up at different times [...] It's very difficult to get that camaraderie" [Consultant surgeon: P30].

Nevertheless, where safe atmospheres are still possible, they can be created by drawing newcomers in deliberately so that they feel part of the community as "when you go to theatre, it's very much the domain of the theatre staff" [Surgical registrar: P27].

Leadership for atmospheric work

Leadership for creating safe atmospheres included being welcoming. This can be as simple as asking people who they are, and how the existing team member can help the new arrival in the operating theatre and during the operation. Participants described being welcoming as being approachable and making "sure that [people] feel like their concerns have been listened to" [Surgical registrar: P05].

Although established team members may already be experiencing a safe atmosphere, the activity of welcoming recreates the safe atmosphere for the newcomer too. Established participants noted that it helps to draw on their own experience as a junior to create a welcoming atmosphere because they remember "how it feels to enter an operating theatre. Being the junior, being someone unknown, so there is a bit of apprehension on their part" [Anaesthetic registrar: P54]. By being welcoming, they may change the newcomer's perception of the atmosphere from an apprehensive or fearful one. This may require an explanation of what to expect and pre-empting problems that would otherwise taint the safe atmosphere owing to team members' stress or impatience.

In contrast to welcoming, a safe atmosphere can be damaged or destroyed owing to an activity that we term 'diminishing'. This is preventing or diminishing respect for a person, or reducing the person's confidence to contribute to leadership and speaking up. In the context of atmospheres, it may prevent someone feeling included in a safe atmosphere. Diminishing may be an isolated event or the culmination of ongoing practices because "if you continually treated people like that, their ability to, to respond to you is going to diminish over time" [Surgical registrar: P36].

All these atmospheric work activities are underpinned by how communication takes place. Participants emphasised that they appreciate that there are times during their work where one person must take control and give one-way directions (e.g. if a complication arises during surgery. However, generally, they believed that communication should be two-way to create and maintain a safe atmosphere. Two-way communication (inter-communicating) may arise naturally among people who are familiar with one another but may need to be instigated deliberately otherwise, finding the right time and way to communicate.

Templating

As well as individual instances of using atmospheric work to prepare or coach people to participate in a safe atmosphere, some participants (particularly surgeons) described using a more or less systematic reproducible process with "a template that is reused to make sure that on each occasion, you have that atmosphere" [Surgical registrar: P28]. Accordingly, we term this latter activity 'templating'.

From participants' descriptions, we identified three main themes involved in templating: (1) drawing on implicit and explicit rules, and training; (2) finding ways to support people to reflect and feel safe to speak up, and to reflect on events; and (3)

repeating a template that they have found works previously or because they have seen other colleagues using certain activities that result in a safe atmosphere. Table 2 provides examples from the data of the activities.

In respect of the first theme, the World Health Organization (WHO) surgical safety checklist and human factors training both support templating. The former can be used as an opportunity to create a safe atmosphere and knowledge gained through human factors training gives people confidence to speak up. This is particularly so for "a new kind of generation of doctors coming through" [Surgical registrar: P2]. While it was acknowledged that it is often the senior surgeon present who tends to use templating to set the atmospheric tone, it is common for other members to be involved in supporting colleagues to reflect on their experiences and to speak up: there's "the runners, or there's the ODPs and the nurses. I think they were alert to everything that's going on outside that, off the table… the peripheral people in theatre. And I think that contributes to the safe atmosphere" [Nurse: P15].

Table 2 Explanations of activities and examples of activities in data of templating

Templating	Implicit and explicit rules and training giving rise to templating	WHO surgical safety checklist	Leveraging the use of the WHO checklist for atmospheric work, using templating	"During the WHO checklist, I've been in theatre where they may ask a medical student 'Have you got any issues?' or 'What did you think about that?', that sort of thing and [it] encourages people to speak up then" [ODP: P23]
		Formal training	Training's influence on people participating in safe atmospheres	"[…] the sort of human factors teaching around the medical student, or the HCA in the corner should be able to speak up and say, you know, 'Mr Bloggs Surgeon, I think you're chopping off the wrong leg', because they've happened to notice that they've set up the wrong side" [Consultant anaesthetist: P14]
	Supporting people to reflect and feel safe to speak up, and to reflect on events	Speaking up	Raising issues that cause people concern (e.g. about patient safety)	"Our lead nurse was quite OK about telling him that this behaviour wasn't going to work. She had new staff in the room and either he behaved or she would take them all out […] The nurse's action does repair it [the atmosphere]" [Theatre nurse: P13]
		Reflecting	Thinking about what has gone well/badly	Admitting your "own fallibility, which I do very openly as much as I can" and ensuring "that any discussion is non-judgemental" [Consultant anaesthetist: P57]
		Scene setting	Setting the expectations and scene in preparation for an atmosphere	"It was like a little theatre, like an acting theatre. I mean, the doors open. You do all the work beforehand to prepare the theatre for the patient. He's in with the anaesthetist. The doors open. So they're sets, that's the stage. And that's when the acting starts. It's a funny kind of little atmosphere, really" [Nurse specialist: P15]
	Repeating activities systematically to create a safe atmosphere	Using a template	Using your own template	"[I have] in my mind a rough template by which I work" [Consultant surgeon: P30]
			Seeing others repeatedly create an atmosphere	Awareness of "a template that [they] reused to make sure that on each occasion, you have that atmosphere" [Surgical registrar: P28]

HCA = healthcare assistant; ODP = operating department practitioner; WHO = World Health Organization

DISCUSSION

This research extends previous work related to organisational safety by focusing on surgical team leadership and atmospheric work. Since the 1980s, it has become increasingly important in surgical teams to ensure that people feel safe to speak up. Our findings indicate that an atmosphere can arise naturally in which people feel safe. This is perceived as a fortuitous, spontaneous melding of people and feelings in the moment, emerging from the established relational aspects of a team who are familiar with one another. The presence of a safe atmosphere has been facilitated by the flattening of some aspects of the hierarchy in the operating theatre and the organisational endorsement of collective leadership, supported by the mandating of the WHO checklist.

Nevertheless, it was clear that unsafe atmospheres can be created too, through recurring 'old school' behaviour. This term was used to describe members of the team (usually senior) who continued to act in ways that might have been acceptable in the past but were now falling out of fashion or are no longer acceptable in wider society. While the frequency of old school behaviour was reported to be declining, it continues to make people feel that they cannot speak up consistently. In order to avoid the perpetuation of this behaviour, it would appear advisable for the NHS at an organisational and policy level to take a more proactive approach to counter old school behaviour, and to specify atmospheric work as the endorsed organisational approach to promoting a safe atmosphere.

An outcome of the increased use of flexible teamworking is fewer opportunities to rely on the relational bedrock that is common to stable teams. It

is on this bedrock that less visible aspects of teamworking are based, such as trust and two-way communication. In this flexible teamworking model, atmospheric work is providing an alternative means of creating and maintaining a safe atmosphere.

Atmospheric work relies on a bundle of leadership activities used by team members. This operates individually and collectively across the different roles of the MDT, not solely by a person in a senior role that would traditionally be assumed to make them the leader. This not only creates and maintains the safe atmosphere at that moment in time but also lays the foundations for creating future safe atmospheres. Fundamentally, it is a training tool to enable people to recognise and participate in safe atmospheres.

For some participants, atmospheric work was a passive experience. Others, however, identified that a crucial part of leadership is to consistently recreate safe atmospheres. As the team assembles to undertake a procedure, so the atmosphere must be recreated (or "staged").[15] This is achieved through the templating process. This is the strategic invocation of specific memories of a previous atmosphere to recreate, sustain and perpetuate an atmosphere of feeling safe to speak up.

Atmospheric work and templating appear to have the potential to address hesitancy to speak up due to (lack of) a person's hierarchical status, 'ego' or emotions, including fear and pride. Templating is seen to provide consistency in preparing people for eventualities, sometimes unexpected, and in turn to support and improve patient safety. While participants described their awareness and individual use of templating, there is currently a lack of an organisational proactive approach to build on this potential and to promote templating's use more consistently across the organisation.

Limitations and future research

The findings from this exploratory study may not be generalisable as they would be in an experiment but they can serve to "shed empirical light"[16] on atmospheric work in surgical MDTs. Although the participants were employed at three NHS trusts, the data reference people's experiences at approximately seventy different NHS locations at which they were based cumulatively throughout their careers.

We note that since completion of our study, an updated national 'freedom to speak up' policy has been published.[17] It is recommended that research takes place to assess the effectiveness of its implementation and whether it could be complemented by the introduction of training for atmospheric work.

CONCLUSIONS

The importance of human factors and psychological safety is reflected in the introduction of human factors teaching in the NHS and in its strategic policy.[2,18] The policy acknowledges both the need for an environment in which people feel they may speak up and leadership to promote that.[2] However, despite these top-down initiatives, it is apparent from recent research and our participants' experiences that the environment continues to be one in which people do not always feel able to raise concerns. Nevertheless, the potential for counteracting barriers to speaking up by using atmospheric work was appreciated by many participants. Consequently, based on this study's empirical evidence, templating holds promise for building individual and team confidence to speak up in surgical teams about matters that cause team members concern. Awareness of atmospheric work and templating opens up the possibility of purposefully teaching atmospheric work and templating.

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