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ORIGINAL RESEARCH

Psychological safety and emergency department team performance: A mixed-methods study

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Abstract

Objectives: Team culture underpins team performance. Psychological safety – 'a shared belief held by members of a team that the team is safe for interpersonal risk taking' – is a critical component of team culture for high-performing teams across contexts. However, psychological safety in ED teams has not been well explored. We aimed to explore this core teamwork concept in the ED.

Methods: This was a sequential mixed-methods study of nursing and medical staff at a large tertiary care ED in Australia from October 2020 to March 2021. First, participants completed the 'Team Learning and Psychological Safety Survey' and a narrative questionnaire. These findings informed semi-structured interviews. We determined median psychological safety and compared results across role and length of time working in the department. Qualitative results were analysed using a deductive thematic analysis using a previously generated framework for enablers of psychological safety at the individual, team and organisational levels.

Results: The survey was completed by 72/410 participants and 19 interviews were conducted. The median psychological safety score was 37/49 (IQR 13). Psychological safety was not experienced universally, with nurses and new staff experiencing lower levels. Individual, team and organisational factors impacted psychological safety. The primary force shaping psychological safety was familiarity with colleagues and leaders.

Conclusion: Familiarity of team members and leaders was critical to the development of psychological safety within the ED. Fostering familiarity should be a focus for frontline leadership each shift and a priority in broader departmental decisions for those seeking to enhance the psychological safety of their teams.

Key words: *emergency department, psychological safety, teamwork.*

Key findings

- Psychological safety – the belief that a team is safe for interpersonal risk taking – is not uniformly experienced by those working in the ED. Newer team members and those with less hierarchical power are less likely to feel like they can contribute freely or speak up.
- ED teams build psychological safety through familiarity with colleagues and leaders.
- Clinical and organisational leaders should focus on enhancing team familiarity to improve the performance of ED teams.

Introduction

Emergency medicine relies on the performance of ever-changing teams in challenging conditions, yet little is known about the culture that underpins behaviours of these teams. In EDs, multidisciplinary groups are required to make rapid decisions with high degrees of uncertainty in the context of mounting external pressures and resource limitations.[1] Unsurprisingly, performance is variable. Recent efforts to enhance and standardise performance have focused on training to optimise teamwork behaviours (i.e. communication and crisis resource management), but there remains a gap in understanding how EDs generate a culture that effectively underpins such positive team behaviours and enables their enactment. Without greater clarity around factors that support effective team culture, we risk inefficiency and ineffectiveness in ongoing interventions that target

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behaviours rather than the values and beliefs that underpin them.

One theory that can be used to explore team culture in the ED is psychological safety – 'a shared belief held by members of a team that the team is safe for interpersonal risk taking'.[2] In a psychologically safe team, group members will feel that they can contribute, raise questions or offer suggestions without risk of humiliation and with the knowledge that those contributions are valued.[2] Think of the nurse questioning the dose of metoprolol, or the consultant offering feedback to a colleague on a recent trauma case; both these desirable behaviours require a climate in which it is acceptable to take an interpersonal risk – however big or small. In a psychologically safe team, it is much more likely that the nurse will raise the question, or the consultant will offer suggestions, compared to a team with low levels of psychological safety. Across diverse non-healthcare and healthcare contexts, we know behaviours like that of the nurse and the consultant are critical to teams performing at their best and that such behaviours are supported by a culture of psychological safety.[3–8] The development and maintenance of psychological safety is likely to be particularly important in the fast-paced, inter-dependent, ever-changing environment of the ED but has not been closely studied in this unique context.

As psychological safety is a necessary pre-requisite to enacting many of the behaviours we desire for teams in emergency medicine, understanding what factors support a psychologically safe culture is a next logical step. A recent systematic review of identified key enablers of psychological safety within healthcare teams.[5] In this review, O'Donovan *et al.* identified 13 key factors related to psychological safety at the individual, team and organisational levels across a variety of healthcare contexts.[5] Further exploration of the individual, team, and organisational level factors that support psychological safety in the ED will elevate our understanding of teamwork in emergency medicine.

In the present study, we sought to further understand how psychological safety manifests, is fostered, and is threatened in ED teams. This work serves as a crucial move towards informing targeted approaches to shaping ED team culture and supporting high performance within emergency medicine.

Methods

Design

Using a philosophy of pragmatism, we designed a mixed-methods study to increase our practical understanding of psychological safety in the ED.[9] This research stance prioritises using efficient methods to reasonably, but not perfectly, answer questions with actionable knowledge to inform approaches to real-world problems. It aligns well with the emergency medicine worldview and is particularly appropriate for applying social science theory on the ground in the ED. Quantitative data and qualitative data were merged at both the design and data analysis stages with analysis and emphasis weighted on qualitative findings.[10] Quantitative findings and initial narrative survey results informed the sequential interviews. The present study was performed in conjunction with research focused on understanding the impact of a simulation programme on ED climate.

Setting, population and recruitment

Gold Coast University Hospital (GCUH) is a tertiary care hospital in Southport, Australia, with approximately 155 000 patient visits per year. Emergency nurses, consultants and registrars were invited to participate in our study. All eligible participants received an email link to the mixed quantitative and narrative questionnaire (Appendix S1) and two follow-up reminder emails. Participants completing the survey were invited to participate in interviews and additional purposive sampling across experience levels and professions was used to identify additional interviewees.

Tools

Within our pragmatic research paradigm, the quantification of psychological safety in the ED served as a starting point to facilitate ongoing reflection and inform qualitative analysis, rather than to identify fundamental truth. We then further explored the practical manifestation of psychological safety through a narrative questionnaire and semi-structured interviews (Appendix S2). Table 1 outlines the justification, format and analysis approaches.

Ethics and data sharing

Ethical approval was provided by the GCHHS Human Research and Ethics Committee HREC/2020/QGC/60733. For confidentiality of participants, data are not openly accessible but authors can be contacted, and selective data sharing will be possible on a case-by-case basis.

Results

A total of 35/300 nurses, 20/60 registrars, 14/50 consultants and three nurse educators completed the quantitative and narrative surveys for a total $n = 72$ and 18% response rate. EP conducted 19 interviews (nine nurses, nine registrars and one consultant) with a mean duration of 17.6 min (7:14–33:53 min). These interviews were with staff at varying experience levels and length of time working at GCUH.

The mean psychological safety score was 35.5 out of 49 (SD 7.4) with scores ranging from 12 to 49. Both role and length of time working in the department were associated with statistically significant differences in psychological safety (Table 2) – post hoc pairwise comparisons revealed with more granular detail the sources of this difference within each variable. Nurses had lower psychological safety when compared to both registrars (31.1 *vs* 38.9, $P < 0.01$) and consultants (31.1 *vs* 41, $P < 0.01$) and those working in the department longer than 5 years felt more psychologically safe than those working in

TABLE 1. *Tools chosen for mixed methods study*

Tool	Justification	Format	Analysis
Quantitative survey – 'Team Learning and Psychological Safety Survey'[11]	The 'Team Learning and Psychological Safety Survey' was used to quantitatively measure psychological safety in the ED among consultants, registrars and nurses.[11] This scale has been identified as the preferred choice for quantitative measures of psychological safety.[6] The 7-item scale has been used extensively and shows strong content, criterion and construct validity across diverse groups, including those in healthcare that are similar to our team.[6]	Seven questions with Likert scale responses related to team learning, speaking up, and risk-taking behaviours. For the seven items assessing the ED team psychological safety on a 7-point Likert scale, which was adapted from Edmondson's (1999) validated Team Learning and Psychological Safety Survey. As per this scale, three of the questions are phrased as negative statements, such that a lower rating on the Likert scale achieves a higher score. See Appendix S1 for full survey.	A total score was computed with higher scores reflecting a higher level of perceived psychological safety (range 7–49). Negative statements ($n = 3$) were first reverse scored. A total score for the seven items was then computed with higher scores reflecting higher level of perceived psychological safety by the ED team. We report mean and standard deviation. A priori planned ANOVA tests were performed to explore the association of role and time working in the department (given these factors' association with power and hierarchy) on psychological safety. Data were analysed using SPSS Statistics Version 26. Sample size was based on the active population of our ED working group and a feasible method of recruitment (via email with two reminders).
Narrative questionnaire	Pragmatically, the narrative questionnaire allowed us to gather rich data about the experience of psychological safety from a wider breadth of people in the department then interviews would allow, and the results went on to inform the development of interview guide and process.	The narrative questionairre (Appendix S1) was piloted with ED team members and had two parts: Q1–Q4 exploring experiences in simulation (less relevant to the present study) and Q5–Q7 exploring psychological safety (more relevant to the present study). The first relevant narrative question (Q5) centred around an activating, common and directly related to psychological safety event – speaking up with concerns. Participants reflected on what enabled or prohibited them from being able to do so. The remaining questions were related to belonging and power which also underpin psychological safety.	Narrative survey responses and interview data were analysed using deductive thematic analysis.[12] The interviews and narrative surveys were coded by EP and LB in NVivo using a previously derived framework for psychological safety in healthcare – the O'Donovan framework – with 13 codes at the individual, team, and organisational levels (Appendix S3).[5] EP and LB met throughout this process to compare coding. VB was available to mediate any discrepancies in this process. Throughout the process LB and EP kept reflexive journals and positioning was frequently discussed at team research meetings. Interviews continued until data sufficiency was reached as agreed upon by LB, EP and VB. Data sufficiency, adequate data to allow for interpretation of answer research questions, rather than thematic saturation is a more appropriate approach given our pragmatic research paradigm and use of thematic analysis. Investigators collectively agreed the data gathered adequately informed a practical understanding of the manifestation of psychological safety in the ED. The analysis was shared first with other members of the research team who had full access to the data, then key members of the medical and nursing teams, and finally a broader group through two member-check meetings. Feedback on our analysis was sought and incorporated at each of these stages.
Semi-structured interviews	Interviews allowed for in-depth exploration of psychological safety. The interview guide, developed by EP, was informed by the narrative survey results – specifically the identified relevance of familiarity - and further explored of the enablers of psychological safety at the team and organisational level as per the O'Donovan framework.	The interview guide (Appendix S2) was developed based on themes from the surveys and the O'Donovan framework. It was piloted with ED team members. Interviews were conducted via phone or in person by EP, an applied anthropologist and emergency medicine fellow. Interviews were recorded and transcribed using NVivo then checked by EP and LB.	

TABLE 2. *Analysis of variance of psychological safety by work factors*

	Psych safety (SD)	*P*-value
Work role in ED		
Consultant/staff specialist ($n = 14$)	41.0 (3.6)	
Registrars ($n = 20$)	38.9 (4.5)	<0.001
Registered/clinical nurse ($n = 35$)	31.1 (8.8)	
Educators/facilitators ($n = 3$)	35.0 (10.2)	
Length of time working in ED		
<6 months ($n = 6$)	30.0 (10.8)	
6–12 months ($n = 8$)	28.5 (11.0)	0.01
1–5 years ($n = 25$)	35.7 (6.9)	
>5 years ($n = 32$)	37.8 (6.6)	

Relevant pairwise comparisons include: consultants having higher levels of psychological safety than nurses ($P < 0.01$), registrars having higher levels of psychological safety than nurses ($P < 0.01$), and those working in the department for more than 5 years having higher levels of psychological safety than those working in the department for 6–12 months ($P < 0.02$).

the department for 6–12 months (37.8 *vs* 28.5, $P < 0.02$).

Combined analysis of narrative survey and interview data using the O'Donovan framework (Appendix S3) provided deeper insight into how psychological safety practically manifests, is built, and threatened by individual, team and organisational factors. Figure 1 shows the relative frequency at which specific factors were identified in the analysis. Team-level factors were found to be the most important to participants and as such are the primary focus of this report. Further analysis related to the individual and organisational levels is provided in Appendix S4.

Team factors

Each of the team factors outlined in the O'Donovan framework was relevant to our participants except 'change oriented leadership' which was not raised by our participants throughout the surveys or interviews (Fig. 1, Table 3). The quantitative differences in psychological safety between nursing and both registrar and consultant groups were supported by qualitative data which showed the climate of psychological safety was not always experienced uniformly. Although not ubiquitous, we did notice a contrast between how consultants and registrars perceived the climate of psychological safety and how it was reported by their nursing colleagues.

> '*Emergency is a forward-thinking specialty where the traditional medical hierarchy is recognised as outdated and detrimental to patient care and staff wellbeing. This department embraces this movement and staff are treated as equals on the team.*' – S#42, ED Consultant

> '*Arrogant doctors are the biggest barrier in most situations. Some doctors need to be reminded that nurses are still people, we're on the same team and to be respectful.*' – S#38, ED Nurse, <1 year

These are stark and juxtaposed examples but align with overall trends in our data that consultants and registrars experienced a safer ED than nurses. It illuminates the notion that those towards the top of the hierarchy may be concerningly unaware of others' experiences.

Familiarity in focus

We have chosen to focus on the importance of familiarity in the reporting of our results because of its frequency and the overwhelming significance in the qualitative dataset (Fig. 1), as well as its practical actionability for those looking to shape psychological safety in their departments. Evidence of other team factors that were relevant are outlined in Table 3.

The centrality of familiarity, between team members and with leaders, as a core contributor to psychological safety in the ED context was striking and independent of working group (Fig. 1). The importance of familiarity supports the quantitative findings showing increased psychological safety for those working in the ED for longer than 1 year. Participants highlighted the importance of even superficial degrees of familiarity such as knowing names.

> '*Things that make me feel comfortable are a good rapport with my team leader and seeing doctors that I have a good working relationship with. Sometimes I see a bunch of doctors I don't know and think, "I have to get to know him introduce myself and make it easy to have a conversation*".' – I#4, Nurse, <1 year

Another participant described how familiarity allowed them to take risks while learning to manage patients independently.

> '*It's that low level banter and collegiality feeling that happens in the emergency department that keeps everything casual and upbeat. I feel like I can go to a consultant when I'm not sure about something. I can just get some advice and sometimes then they'll push me to make a decision…*' – I#3, Registrar

Participants also described a more intense type of familiarity, which included a keen understanding of others on the team's abilities, behaviours and quirks. They described how the team climate can change

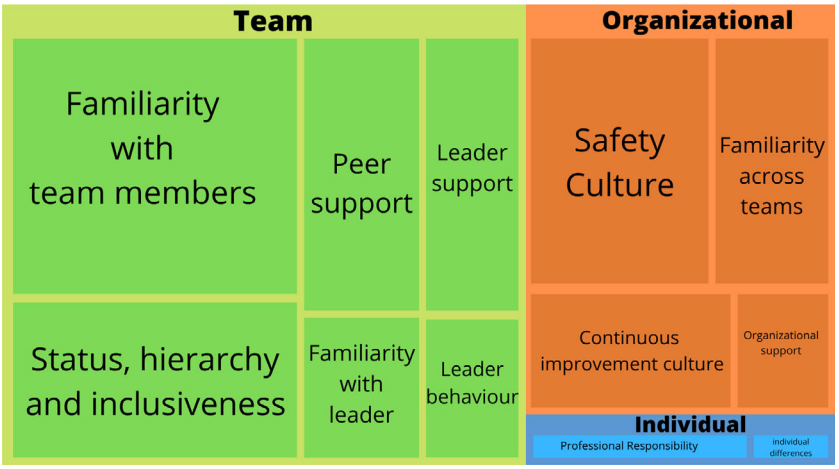

Figure 1. *Relative frequency of coding of enablers for psychological safety. Survey and interview data were coded using the O'Donovan framework for psychological safety in healthcare teams. This is an illustration of the coding frequencies within the data set.*

dramatically from day-to-day based on the level of familiarity with people they were working with. This deeper familiarity seemed to be built through shared experiences both in and out of the hospital but most notably through working together, especially on challenging cases or simulations.

> '[You need] *time, so the fact that you've become recognisable, your name and you are a familiar face within that space and having shared experiences with particular people… it might be a patient that you cared for together with this nurse that went really well, and then ongoing you to share something with that nurse.*'– I#3, Registrar

Leader (which was seemingly a fluid concept shared between nursing team leaders, registrars, and consultants) behaviours were perceived to impact familiarity. For example, participants reported increased familiarity with leaders who spent time in the break room, coordinated huddles at the beginning of shifts, facilitated simulation and education sessions, and planned social activities.

> '*One of the consultants pulled us all into the resus room first thing and introduced everyone and what their job was… and how they were feeling…she took down everyone's name. It made you actually feel special, I guess, because* [the consultants] *are taking the time…it's a busy time of their day…I think that really sets the mood for the day. It was so good.*' – I#1, ED Nurse, >5 years

Conversely, leader behaviours could also negatively impact the team affect and decrease the likelihood for others to contribute.

Responses from those newer to the department highlighted risks associated with a reliance on familiarity as a primary means for fostering psychological safety. One nurse shared a feeling that their extensive prior ED nursing experience was dismissed when they joined GCUH because they were not a familiar face, whereas others described experiencing cliques. A registrar described how a lack of structured, also an organisational factor, contributed to a sense of intimidation through lack of familiarity.

> '*…I knew what I need to do for the patient but I had no idea how to make it happen…things like not knowing which nurses filled what roles.*' – I#12, ED Registrar

Many participants commented on the fact that the increasing ED volumes and rising stressors in the day-to-day work were making it challenging to build familiarity and relationships meaningfully on the floor.

Discussion

We present a focused, pragmatic, analysis of team culture through the lens of psychological safety in a large tertiary care ED. Some have hypothesised the importance of psychological safety in emergency medicine,[13] but to our knowledge this is the first empiric study examining the granular manifestation of psychological safety in the context of multidisciplinary clinical ED work. Our study highlights challenges related to psychological safety in the ED and offers insight into the criticality of team familiarity in the development and maintenance of this important team construct.

Psychological safety is not uniform

Although there were high levels of aggregate psychological safety, the experience across the department was not uniform. Emergency medicine is a field that prides itself in a positive working environment, flat hierarchy, and an open culture,[1,14] yet there were clear reports in our data that this professed culture is not universally manifested or experienced. In both quantitative and qualitative data some individuals felt much less psychologically safe than others in the department – especially nurses and new staff – which is in keeping with prior ethnographic research.[14] As psychological safety is a group level, not an individual level construct, the risk is that ED teams are only as safe as the least psychologically safe team member. Psychological safety was described by participants as dynamic, changing from shift to shift depending on team make-up, and threatened by time and volume. It was perceived differently across working groups and those with different duration working in the ED. Altogether, it is quite likely that ED teams on any given shift are not

TABLE 3. *Team enablers of psychological safety*

Familiarity with leader	
'I always felt we have a fairly flat hierarchy. Which makes me feel safe to speak up or ask for help. Particularly with our consultants. They are mostly approachable and kind.' – S#34, Registrar	Both these quotes highlight the frequently cited importance of familiarity with leaders, in this case consultants, for more junior staff to raise concerns. Interestingly, in the data set, there was fluctuation in the perceived 'leader' – sometimes nursing team leaders, sometimes senior registrars and sometimes consultants. The fluidity in the nature of leadership poses unique advantages and threats to psychological safety in the ED.
'I would say as a junior nurse, hierarchy affected my ED experience. I felt intimidated by some consultants until I had worked in ED for a few years and got to know them. As a senior nurse, I feel confident being able to speak my opinions to most consultants with the exception of a few due to the fact that I find their personalities challenging.' – S#50, ED Nurse, >5 years	
Familiarity with team members	
'If you have a shift where it's predominantly new staff on, it's a completely different feel. Does not matter about the experience… it's just you have not built up any relationship with people, whereas when the relationships are stronger, it makes for a better shift for sure.' – I#1, ED Nurse, >5 years	Participants spoke frequently about the importance of familiarity with their colleagues and felt that it was mostly built through time and shared experiences on and off the floor. See text for more detailed analysis.
'I guess having that shared experience and working through a high stress scenario together is a bonding experience, is not it?' – I#9, Registrar	
'I often feel I can ask more questions with those staff who I am familiar with/have a strong working relationship with.' S#15, ED Nurse, >5 years	
'So initially, for the first year when I was a senior house officer (SHO) I found that nurse-SHO relationship very demoralising…if you asked for help with something, they would just be like, "why can't you do it?"… All this kind of stuff where you're trying to provide a service and just getting a lot of that kind of low grade, passive aggressiveness back. And then over time, the relationship improved…As the nurses get to know you better and realise that you're not an asshole they tend to be a lot more helpful and accommodating. But I think the issues come around a couple of things like lack of familiarity with each other and, you know, even just being able to learn names.' – I#7, Registrar	
'Being a big, busy department, where every staff interaction is out in the open, it does rob us of a level of familiarity with each other. There's little time for small talk and when you do have a chat with someone, we always have our eyes over our shoulders making sure we're not needed elsewhere. I think this is an understandable tradeoff to our profession and just how busy GCUH ED always is, but it does sometimes feel isolating.' – S#61, ED Consultant	Participants highlighted the threats to familiarity based on the size of the ED, increasing volumes, and structural factors such as rostering.
Leader behavioural integrity	
'There are two ED Consultants that have a poor reputation: unapproachable and condescending. I have personally experienced this with both of them. I am always worried when I need to approach them and will try to seek someone else first. I see this as a safety risk. The general consensus is that these two feel that because they are consultants they are "above the rest of us".' – S#28, ED Nurse, 1–5 years	The personality and integrity of leaders were crucial to team psychological safety in both positive and negative directions. These two quotes are representative of a number of concerning anecdotes related to the integrity of leaders and the resultant impact on the psychological safety of participants. It is likely that negative experiences are particularly memorable.
'You know, when you ask them a question and they kind of give you that and this facial expression and tone of voice that says, I can't believe I need to answer this question for you. Why are you even a doctor? One of them actually said those words… This is not someone that I ever want to have to ask something, because I know it's not going to go well for me and I'm in resus with them where I legitimately need them to manage the most complicated patients. I just kind of go, right? Yeah, this is going to suck. Let's try not to kill anyone or myself or my consultant today.' – I#12, Registrar	

TABLE 3. *Continued*

Peer support	
'I remember very clearly when I was a new grad in this department…at the time then a consultant was saying, "give this [medication] to a pregnant woman," and I questioned it. The consultant turned around and explained everything to me…I went back to the nurse who was supposed to be helping me. And she just said, "How dare you question a consultant."' – I#1, ED Nurse, >5 years	The concept of peer support for speaking up was relevant in our dataset, particularly among nursing staff who frequently turned to their colleagues if not receiving satisfactory attention or concern from medical colleagues with whom they had raised concerns.
'I feel very supported in raising concerns in the ED. In any situation where I have felt concerned about a patient I have been able to approach any member of the team and express my concern and ask for a second opinion.' – S#20, ED Nurse, 1–5 years	
Leader support	
'Yes - people know my name, they come to me for help and I feel my opinion is valued. When I had something go wrong I had support from many colleagues and from the OneED team. We share jokes and banter and I enjoy being around the team.' – S#57, Consultant	Direct support from leaders to voice dissenting opinions or other ideas contributed to psychological safety in the team setting of resuscitations but was less frequently mentioned in non-critical care settings. It is possible that explicit request for dissent, suggestions, and other ideas is underutilised in less acute aspects of team performance in emergency medicine.
'Due to age, the question was asked if anyone would feel uncomfortable intubating this patient, general consensus within the room was that we should proceed with intubation as it would give the best chance of survival. I felt that I could be open with my colleagues in this scenario and would have been able to speak up had I felt that intubation was not in the patient's best interests.' – S#50, ED Nurse, 1–5 years	
'I think the active participation and awareness of senior staff to constantly be reaching down to help engage with people that are new [is needed to build relationships]…just sort of like, "hi, my name this. Are you new here? Great" We're getting that five minute chat of just saying, "OK, cool. Well, if you need anything just let me know." But sometimes I won't even be spoken to by my team leader all shift.' – I#4, Nurse, <1 year	Direct and explicit support from leaders for new members of the department was perceived to be important.
Status, hierarchy and inclusiveness	
'It [the hierarchy] assists me because I know exactly who to go to with my concerns. First I ask my peer for their opinion, then I might ask a CN or the CNC, or I will go to the treating doctor, Reg or Consultant. If I'm really worried I will go straight to the Reg/Consultant.' – S#18, ED Nurse, <1 year	There seemed to be a dual and duelling role of hierarchy in the department.
'At the bottom of the heap you feel unnoticed.' – S#19, ED Nurse, <1 year	Many felt that the hierarchy supported psychological safety because it gave a clear chain of command and understanding of where to go with problems. However, there were examples of times when strict hierarchy impeded ability to speak up.
'I'm only one person in a team of over 300 nurses. I learnt very quickly your not appreciated as a team member until you've done time in the department.' – S#6, ED Nurse, 1–5 years	Issues of status and inclusiveness, less tied to direct hierarchy, and more related to belonging seemed to be a more problematic barrier to psychological safety for the group.
'There have been a few times when I've been worried about patients, some doctors are willing to re-review their patients & listen to your concerns, while I feel some other doctors don't seem to want to know. I've had to escalate these patients to the CNC & have them moved to a more safer area in the department before further deterioration occurred.' – S#11, ED Nurse, 1–5 years	

uniformly safe, and those in positions of power (who are likely to feel the safest) are at significant risk of under-recognising this problem. Within the broader psychological safety research community similar challenges associated with psychological safety in dynamic working groups and differing experiences within sub-groups

have been recognised but not reconciled.[3] For emergency medicine, this identified lack of universality means that efforts to foster psychological safety must be deliberately attended to shift after shift.

Harnessing familiarity to improve team performance

Individual, team and organisational factors all impacted psychological safety, but the team-level factors were the most relevant to participants. This is in keeping with prior research that has highlighted the importance of relationships as a mediator of psychological safety.[5,15] The centrality of team factors, specifically team and leader familiarity, in mediating psychological safety is consistent with a review of psychological safety within healthcare and other high performing teams (e.g. SWAT teams, businesses and film crews).[4,5,16] However, generating this familiarity poses a challenge in the dynamic context of the ED.[1,14] Our findings provide impetus to identify efficient ways to foster familiarity within ever-changing ED teams. Figure 2 summarises opportunities for enhancing familiarity at the team and departmental levels. These suggested points of focus are informed by both our data and broad literature from business, sociology, and other healthcare contexts.

Clinical leaders, both nursing and medical, should seek to nurture familiarity on the ED floor every shift. There are numerous opportunities for 'just-in-time' familiarity building exercises such as team-briefings before resuscitation cases[17] and start of shift huddles.[18–20] Familiarity can be further incubated through clinical debriefing. Structured reflection on work done together is an approach that has been adopted across industries and healthcare contexts.[20–24] These seemingly minor moments can create intimate bonding moments, thereby fostering belonging and signalling the importance of continuous improvement.

Organisational leaders must also prioritise familiarity for ED teams. Fortunately, there is growing evidence that there are effective departmental-level interventions to enhance familiarity. Recent studies in emergency medicine and general internal medicine have shown that team-based rostering improves performance and relationships.[25,26] Our prior research has also shown that simulation can effectively impact relationships, culture, and psychological safety.[27,28] Familiarity, should be a central goal when planning rostering, staff induction,[29] ongoing team training and other departmental events (i.e. meetings, education sessions and social events).

Figure 2. *Interventions to enhance familiarity for ED teams.*

Future directions

We anticipate that the present study will generate multiple paths of inquiry and inform future research. The importance of leader familiarity supports further exploration of key people within departments that either support or threaten psychological safety. Social network analysis might help to identify those individuals and groups that have the greatest ability to impact the psychological safety within the ED or other areas of the health service. Our findings might also raise questions about the return on investment of the

individual-level targeted interventions such as 'Speaking up for Safety' that are common in healthcare organisations.[30]

Limitations

The low survey response rate risks a quantitative misrepresentation of psychological safety; however, the rich qualitative data and member checks well supported our findings. There may be much that resonates and can be extrapolated to other sites, given some universalities of the culture of emergency medicine, but we encourage readers to consider the importance of examining the nuances of psychological safety in their own contexts.

Conclusion

Psychological safety is a critical component of team culture that underlies positive team behaviours. In the ED, psychological safety was not experienced universally with nurses and new staff experiencing lower levels of safety. Familiarity of team members and leaders was integral to the development of psychological safety within the ED setting and as such is a rational focus for deliberate efforts to shape culture. Small moments (shift huddles, team briefings and after action reviews) and bigger departmental decisions (team-based rostering, podding and orientation) should be considered by individuals and groups hoping to foster psychological safety and shape the culture of ED teams.

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Author contributions

EP, LBo, AE, CJ, WI, LB and VB were involved in study design. EP and VB coordinated data collection. EP conducted interviews. EP, LBo, CJ and VB were involved in primary data analysis and interpretation of findings. In addition to those authors, AE, WI and LB were also involved in interpretation of findings and manuscript preparation.

Competing interests

EP, LB, WI and VB are all employees of the ED where the present study was undertaken.

Data availability statement

The data that support the findings of this study are available from the corresponding author upon reasonable request. Some data may be withheld to protect participant confidentiality.

References

1. Purdy E, Alexander C, Caughley M, Bassett S, Brazil V. Identifying and transmitting the culture of emergency medicine through simulation. *AEM Educ. Train.* 2019; **3**: 118–28.
2. Edmondson A. Psychological safety and learning behavior in work teams. *Adm. Sci. Q.* 1999; **44**: 350–83.
3. Edmondson AC, Lei Z. Psychological safety: The history, renaissance, and future of an interpersonal construct. *Annu. Rev. Organ. Psychol. Organ. Behav.* 2014; **21**: 23–43.
4. Delizonna L. High-performing teams need psychological safety. Here's how to create it. *Harv. Bus. Rev.* 2017; **24**: 1–5.
5. O'Donovan R, McAuliffe E. A systematic review of factors that enable psychological safety in healthcare teams. *Int. J. Qual. Health Care* 2020; **32**: 240–50.
6. Newman A, Donohue R, Eva N. Psychological safety: A systematic review of the literature. *Hum. Resour. Manag. Rev.* 2017; **27**: 521–35.
7. O'Donovan R, McAuliffe E. A systematic review exploring the content and outcomes of interventions to improve psychological safety, speaking up and voice behaviour. *BMC Health Serv. Res.* 2020; **20**: 101.
8. Ginsburg L, Bain L. The evaluation of a multifaceted intervention to promote "speaking up" and strengthen interprofessional teamwork climate perceptions. *J. Interprof. Care* 2017; **31**: 207–17.
9. Yvonne FM. Doing mixed methods research pragmatically: implications for the rediscovery of pragmatism as a research paradigm. *J. Mixed Methods Res.* 2010; **4**: 6–16.
10. Creswell JW, Clark VL. Choosing a mixed methods study design. In: *Designing and Conducting Mixed Methods Research*. India: Sage Publications, 2017.
11. Edmondson A. Team learning and psychological safety survey. *Meas. Instrum. Database Soc. Sci.* 1999.
12. Pearse N. An illustration of deductive analysis in qualitative research. In: *18th European Conference on Research Methodology for Business and Management Studies*. Sonning Common, UK: Academic Conferences Limited; 2019: 264.
13. Lateef F. Maximizing learning and creativity: Understanding psychological safety in simulation-based learning. *J. Emerg. Trauma Shock* 2020; **13**: 5–14.
14. Person J, Spiva L, Hart P. The culture of an emergency department: An ethnographic study. *Int. Emerg. Nurs.* 2013; **21**: 222–7.
15. Carmeli A. Social capital, psychological safety and learning behaviours from failure in organisations. *Long Range Plann.* 2007; **40**: 30–44.
16. Hanft TR. *Familiarity in Organizations*. Dallas, TX: The University of Texas at Dallas, 2002.
17. Purdy E, Alexander C, Shaw R, Brazil V. The team briefing: Setting up relational coordination for your resuscitation. *Clin. Exp. Emerg. Med.* 2020; **7**: 1–4.
18. Ghosh S. Does formal daily huddle meetings improve safety awareness? *Int. J. Constr. Educ.* 2014; **10**: 285–99.
19. Provost SM, Lanham HJ, Leykum LK, McDaniel RR Jr, Pugh J. Health care huddles: Managing complexity to achieve high reliability. *Health Care Manage. Rev.* 2015; **40**: 2–12.

20. Trejo FE, Igel CM, Chuang M, Bajaj K, Bernstein PS. Checklists, huddles, and debriefs: critical tools to improve team performance in obstetrics. *Clin. Obstet. Gynecol.* 2019; **62**: 518–27.
21. Headquarters, Department of the Army. Leader's Guide to After Action Reviews (TC 25-20). 1993. Available from URL: https://www.hsdl.org/?view&did=775082
22. Kessler DO, Cheng A, Mullan PC. Debriefing in the emergency department after clinical events: A practical guide. *Ann. Emerg. Med.* 2015; **65**: 690–8.
23. Gilmartin S, Martin L, Kenny S, Callanan I, Salter N. Promoting hot debriefing in an emergency department. *BMJ Open Qual.* 2020; **9**: e000913.
24. Carmeli A, Gittell JH. High-quality relationships, psychological safety, and learning from failures in work organizations. *J. Organ. Behav.* 2009; **30**: 709–29.
25. Dinh MM, Green TC, Bein KJ, Lo S, Jones A, Johnson T. Emergency department clinical redesign, team-based care and improvements in hospital performance: A time series analysis. *Emerg. Med. Australas.* 2015; **27**: 317–22.
26. Lyasere CA, Wing J, Martel JN, Healy MG, Park YS, Finn KM. Effect of increased interprofessional familiarity on team performance, communication, and psychological safety on inpatient medical teams. *JAMA Intern. Med.* 2022; **182**: 1190–8.
27. Brazil V, Purdy E, Alexander C, Matulich J. Improving the relational aspects of trauma care through translational simulation. *Adv. Simul. (Lond).* 2019; **4**: 10.
28. Purdy E, Borchert L, El-Bitar A, Isaacson W, Bills L, Brazil V. Taking simulation out of its "safe container" – Exploring the bidirectional impacts of psychological safety and simulation in an emergency department. *Adv. Simul. (Lond).* 2022; **7**: 5.
29. Lagoo J, Berry W, Henrich N, Gawande A, Sato L, Haas S. Safely practicing in a new environment: A qualitative study to inform physician onboarding practices. *Jt. Comm. J. Qual. Patient Saf.* 2020; **46**: 314–20.
30. Cognitive Institute. Speaking up for safety programme. 2021. Available from URL: https://www.cognitiveinstitute.org/courses/speaking-up-for-safety-programme/

Supporting information

Additional supporting information may be found in the online version of this article at the publisher's web site:

Appendix S1. Quantitative and narrative questionnaire.
Appendix S2. Interview questions.
Appendix S3. O'Donovan framework for psychological safety in healthcare teams.
Appendix S4. Individual and organisational factors associated with psychological safety.