Exploring bullying in cardiothoracic surgery: the role of psychological safety and personal traits

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Abstract

Background: Lack of psychological safety within surgical teams and fear of damaging one's career or reputation may counteract the effect of formal reporting as a tool for preventing bullying. Also, personality traits of cardiothoracic surgeons may promote bullying. In the current study, we evaluate these factors and their association with bullying in cardiothoracic surgical teams. *Methods:* Forty-four cardiothoracic surgeons filled in the Negative Acts Questionnaire-Revised, Safety Attitude Questionnaire, and Big Five Inventory. *Results:* Of the 44 participants, 18 (40.90%) experienced bullying during their careers. Psychological safety was negatively associated with work-related bullying and positively associated with the agreeableness and openness personality factors. *Conclusion:* Bullying within the cardiothoracic surgical teams is a prominent problem that is negatively associated with psychological safety. Psychological safety is positively associated with agreeableness and openness, and interventions focusing on promoting an organizational culture based on such factors may improve the effectiveness of such interventions.

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Introduction

Studies in cardiothoracic surgery have revealed a prevalence of bullying among cardiothoracic surgeons ranging from 49% to 55%,[1,2] with female surgeons experiencing the highest incidence.[3,4] This may constitute a considerable problem, as bullying may increase the occurrence of medical errors and decrease the willingness to engage in discussions of prevention of errors in the medical team,[5,6] as well as negatively impact cardiothoracic surgeons' mental and physical health,[7] increase career barriers,[8] and diminish safety indicators in organisations.[9] However, little is known about when and under what circumstances bullying occurs, as well as what types of bullying are most prevalent.

In addition, bullying may be difficult to identify and address as conventional methods of identification involve formal reporting of bullying, and such approaches have shown low effectiveness.[2] However, studies suggest that implementing local measures, such as increasing open discussions among cardiothoracic surgeons and other team members about potential or existing bullying issues, proves to be more effective.[10–12] This indicates that bullying may also be addressed by focusing on the team's experience of psychological safety rather than singling out the victim, as psychological safety is inversely related to bullying.[11] However, few studies have investigated the association between bullying and psychological safety.

Furthermore, researchers have emphasised the significant role that high-status colleagues and chiefs play in initiating open discussions[13] both for the cumulative team experience,[14] and in providing effective mentorship.[15] It has been suggested that excessive ego-centeredness and narcissism in team leaders such as surgeon chiefs promote bullying in the medical team;[16,17] however, how the personality of a leader impact on organisational communication and culture has only been sparsely researched. Therefore, increasing our understanding of what factors contribute to the communication style within the team, particularly in the operating room,[18–20] especially the impact of specific personality traits in team leader's personality traits/features[21,22] remains a key area of investigation.

Taken together, more knowledge regarding what gives rise to bullying, both in terms of organisational culture, team dynamics, and individual contributions, as well as what measures may be used to counter bullying, is needed. In the current study, we examined the associations between bullying, psychological safety, and cardiothoracic surgeons' personality traits to enhance our understanding of the interplay between these factors, and whether this may inform interventions aimed at preventing bullying. Hence, the aims of the current study are threefold: (1) to examine what factors are associated with bullying in cardiothoracic surgery, including obstacles associated with the chief-surgeon relationships, gender, and career barriers; (2) to assess psychological safety in cardiothoracic surgery and its association with bullying; (3) to explore the association between personality traits of cardiothoracic surgeons and psychological safety within the team.

Material and methods

A cross-sectional survey was conducted from June to September 2023, utilising the LinkedIn professional network as a recruiting platform. Inclusion or exclusion criteria for cardiothoracic surgeons were not predefined; however, possession or attainment of experience within the cardiothoracic domain was pivotal. Ethical clearance for the survey study was secured from the Institutional Review Board under Protocol No. BSS-2022-064. The RedCap platform was used to collect participants' answers.

Data collection included distinct sections: (1) socio-demographic data, (2) ad hoc questions focusing on aspects of bullying, such as relationships with chief surgeons (someone who has been appointed to the position), gender biases, and career barriers, and (3) standardised questionnaires, such as the Safety Attitude Questionnaire (psychological safety),[23] the Negative Acts Questionnaire-Revised (frequency of bullying),[24] and the Big Five Inventory (personality traits).[25]

The Safety Attitude Questionnaire contains five subscales: teamwork climate, safety climate, job satisfaction, stress recognition, and perception of management. For interpretation, Likert scores are converted to a percentile score, with scores 50 indicating the need for improvement, and scores 75 indicating positive safety attitude.[26] The Negative Acts Questionnaire-Revised contains three subscales: work-related bullying, person-related bullying, and physical intimidation. Scores 33 indicate no bullying, scores 33 and 45 indicate infrequent bullying, and scores 45 indicate frequent bullying.[27] Items on the Big Five Inventory each contribute to scores on one of four factors: openness, conscientiousness, extraversion, agreeableness, and neuroticism factors,[25] which may be interpreted according to the description of the five-factor model.[25]

Statistical analysis was performed using the Statistical Package for the Social Sciences (SPSS) version 29.01.0. Percentages, means, and standard deviations were used to describe respondents' characteristics and scale scores. Pearson correlations were used to estimate the association between variables. We used an of 0.05 supplemented by effect sizes identified through Pearson's *r*. Correlations of medium effect size or more ($r > 0.45$) were considered of interest.[28]

Results

Sample characteristics

A total of 79 respondents expressed interest in the study, of which 44 (56%) completed the questionnaire. Among them, 19 (43%) respondents were from the European Union and United Kingdom, 17 (39%) were from other countries, and eight 8(18%) did not respond to this question. Our sample consisted of 32 (73%) male and 12 (27%) female surgeons. Of these, 33 (75%) participants were under the age of 50, while 11 (25%) were 50 years old or older; the mean age of respondents was 41.

In terms of specialty, 27 (61%) respondents specialised in cardiac surgery, 20 (46%) in congenital surgery, and five (11%) in thoracic surgery. Moreover, 16 (36%) held positions as fellows or residents, while 15 (34%) were consultants or chiefs, and 13 (30%) did not respond to this question. Lastly, 10 (23%) respondents worked less than 40 hours per week, while 34 (77%) worked more than 40 hours per week.

Prevalence and characteristics of bullying

In our sample of 44 respondents, 18 (4%) answered "yes," 13 (30%) answered "no," and 13 (30%) did not respond to ever having experienced bullying. The 18 respondents reporting bullying received additional descriptive questions regarding their bullying experience. The main source of bullying was identified as colleagues (n = 11; 61%), chief (n = 10; 56%), the general corporate culture (n = 7; 39%), administration (n = 5; 28%), and patients or their relatives (n = 1; 6%). Bullying most often took place in the operating room (n = 13; 72%); at general meetings in the presence of the whole team (n = 11; 61%); in doctors' or nurses' offices (n = 7; 39%); in the ICU (n = 4; 22%); in the patient's ward (n = 3; 17%); and during emergency medical care (n = 2; 11%).

A total of 31 (39%) participants provided feedback regarding how they experienced their chief surgeons. Respondents reported that the chief allows himself/herself to shout in the presence of other colleagues without apologising for the incident (n = 14; 45%), the chief sometimes shouts but then apologises (n = 6; 19%), and the chief never shouts (n = 11; 36%). Table 1 provides a full overview of the psychological challenges experienced in relation to a chief surgeon and gender stereotypes experienced in cardiothoracic surgery.

Barriers to a career as cardiac surgeon

Of the 28 (64%) respondents who provided feedback, the most frequently encountered career barriers were as follows: bullying at work.

Psychological safety and negative acts

For the 27 respondents (61%) who provided feedback on the Safety Attitude Questionnaire and the Negative Acts Questionnaire, the mean percentile on the Safety Attitude Questionnaire was 66.56, indicating neither need for improvement, nor a positive safety attitude; however, mean percentiles for the teamwork climate (77.58) and job satisfaction (76.67) subscales both exceeded 75, indicating a positive safety attitude. In contrast, stress recognition had a mean percentile of 35.60, indicating a need for attention or improvement.

The mean score of the Negative Acts Questionnaire was 36.74 (range: 22–84), which is equivalent to experiencing infrequent bullying; however, 13 (48.15%) respondents indicated they did not experience bullying, nine respondents (33.33%) indicated infrequent encounters with bullying, while five respondents (18.52%) indicated frequent experiences of bullying. This suggests that only a third of the respondents did not encounter any bullying phenomena during work.

The analyses of the association between these scales showed a significant negative association equivalent of a medium effect size between the safety climate subscale and the work-related bullying (–0.49, $p < 0.015$) subscale, as well as between the safety climate subscale and physically intimidating bullying subscale (–0.53, $p < 0.01$).

Personality traits and psychological safety

For the 27 respondents (34%) who filled in the Big Five Inventory, we found the highest average score on the conscientiousness factor (mean ± SD = 4.04 ± 0.5) and openness factor (mean ± SD = 3.98 ± 0.5), while the lowest score was reported on the

Table 1. Psychological challenges and gender stereotypes in cardiothoracic surgery

Items	Yes n (%)	No n (%)	Undecided n (%)
Chief-related relationship obstacles (n = 31)			
Have you ever hesitated to go to work due to a challenging relationship with your chief?	10 (32.3)	18 (58.1)	3 (9.7)
Have you encountered inappropriate jokes with sexual undertones from your chief?	8 (25.8)	23 (74.2)	-
Has your chief used offensive language or spoken unpleasant words towards you?	7 (22.6)	24 (77.4)	-
Have there been instances where, during difficult workdays, you felt a lack of desire to live?	4 (12.9)	27 (87.1)	-
Have you faced threats from your chief, risking your participation in surgery due to their subjective beliefs?	12 (38.7)	19 (61.3)	-
Have you experienced fear of your chief, making it challenging to seek professional advice?	9 (29,0)	17 (54.8)	5 (16.1)
Has there ever been a moment when, due to a challenging relationship with a chief, you questioned your choice of profession and even contemplated quitting surgery?	6 (19,4)	25 (80.6)	-
Gender-related obstacles (n = 31)			
Is it preferable for women to opt for the profession of a cardiologist rather than a cardiothoracicsurgeon?	12 (38.8)	15 (48.4)	4 (12.9)
Is it more challenging for female cardiac surgeons to maintain focus during operations and endure long-term, complex procedures?	6 (19.4)	21 (67.8)	4 (12.9)
Is it believed that a woman aspiring to be a successful cardiac surgeon cannot effectively balance family and children with her professional commitments?	11 (35.5)	17 (54.9)	3 (9,7)

neuroticism factor (mean ± SD = 2.43 ± 0.6). When evaluating the association between personality factors and psychological safety, we found a positive association equivalent of a medium effect size between the safety climate subscale and the agreeableness factor (0.65, $p < 0.001$), the agreeableness factor and the teamwork climate subscale (0.52, $p < 0.01$), and openness factor and safety climate subscale (0.52, $p < 0.01$). A full summary of results for the subscales of Negative Acts Questionnaire-Revised, Safety Attitude Questionnaire, and the Big Five Inventory is presented in Table 2.

Discussion

In the current study, we found that 40% of respondents reported being bullied during their careers and that bullying was considered a barrier to career advancement by 50% of our respondents. Cardiothoracic chiefs or senior colleagues were identified as the primary sources of bullying. In addition, we found that psychological safety was negatively associated with bullying, whereas it was positively associated with personality factors such as agreeableness and openness.

The prevalence rate reported here is consistent with previous studies of the prevalence of bullying in surgical teams.[2] However, systematic identification of bullying with the aim of prevention is difficult, as indicated by recent studies showing that potential complaints due to bullying at work are often accompanied by intimidation and fear of career obstacles.[29,30] In addition, the authors showed that bullying in surgical teams often takes covert, manipulative forms, where senior surgeons may set up others to continue bullying individuals in the team.[30]

The fact that cardiothoracic chiefs and senior colleagues were identified as the main sources of bullying may explain the high prevalence of bullying found. Surgical trainees may be afraid to complain, moreover, they often do not believe that their complaint can change the situation.[31] On one hand, targeting the unprofessional behaviour of cardiothoracic chiefs may seem impossible, as they may appeal to their professional and leadership achievements, suggesting that their leadership is effective; on the other hand, the problem of silencing professional mistakes due to bullying may

prompt organisation to consider changing the behavioural culture in the team. However, the question of who will take on the task of implementing these changes and addressing the behavioural issues with cardiothoracic chiefs remains open.

Furthermore, bullying may be especially persistent as it often occurs in a limited circle of people, such as in operating rooms. Our study showed that 72.2% of bullying cases took place in the operating room, which is comparable to other studies.[19] According to Villafranca and Jacobsohn, trainees in the operating room may learn harmful behavioural styles from their mentors, along with practical skills, and pass this experience on to the next generation, creating a vicious circle.[20] In contrast, Kamali and Iling[32] found that trainees who had experienced negative mentoring felt that they were now more confident about which professional behaviours they did not want to repeat in the future. Furthermore, Kamali and Iling showed that trainees who mostly receive insufficient and often negative feedback about their work in the operating room are at risk of demotivation to learn and do not feel encouraged to discuss professional issues,[32] whereas negative assessments, when delivered constructively and in a friendly atmosphere, are seen as contributing to increased motivation to learn from mistakes and decreasing feelings of inequality in terms of gender or career barriers.

Our results also indicate a negative association between a safe climate and bullying, which may indicate that those who have been subjected to bullying experience a low commitment to safety within the organisation. According to a concept analysis by Lin and colleagues, the safety climate is part of the broader concept of a psychologically safe culture, which develops due to the high consistency of individual values with group values.[33] Within the setting of a neonatal ICU, Nembhard and Edmondson illustrated how to increase psychological safety within a group by having a leader with a high professional status engage all employees in an open discussion, particularly those with lower status who might have been reluctant to initiate conversations about challenging work-related issues.[11]

The significant role of a leader in creating an open and safe work culture may also be associated with prevalent personality traits in leaders. In this study, we found positive associations between the

Table 2. Subscales of Negative Act Questionnaire-Revised, Safety Attitude Questionnaire, and Big Five Inventory

Items	Range	Mean (SD)
NAQ-R		
Work-related bullying	7–26	13.00 (5.3)
Person-related bullying	12–47	19.48 (8.9)
Physically intimidating bullying	3–11	4.65 (2.2)
Sum	22–84	36.74 (15.7)
SAQ		
Teamwork climate	50.00–100.00	77.58 (17>5)
Safety climate	28.57–100.00	72.83 (21.4)
Job satisfaction	35.00–100.00	76.67 (21.6)
Stress recognition	0.00–93.75	35.60 (27.5)
Perception of Hospital and Unit Management	40.00–100.00	69.50 (20.4)
Work Conditions	25.00–100.00	67.19 (25.2)
Overall	48.73–97.22	66.56 (22.2)
BFI		
Extraversion	2.25–4.63	3.46 (0.6)
Neuroticism	1.13–3.75	2.43 (0.6)
Conscientiousness	3.22–4.89	4.04 (0.5)
Openness	2.80–4.80	3.98 (0.5)
Agreeableness	2.67–4.44	3.51 (0.5)

safety climate subscale and the agreeableness factor, which is characterised by prosocial and communal orientation, including traits such as altruism, tender-mindedness, and trust,[25] and between the safety climate and the openness factor, which involves originality and complexity in an individual's mental and experiential life. Overall, our respondents scored high on the openness factor. Taken together, this suggests that positively emphasising and strengthening personal qualities, such as agreeableness and openness among cardiothoracic surgeons, may assist in cultivating a safe psychological climate within the team. This in turn may foster job satisfaction, as we also found a positive association between the job satisfaction and team climate subscales.

Of note, our findings also indicate that cardiothoracic surgeons may find it hard to recognise the stress levels associated with their work, especially considering that 77% of respondents worked more than 40 hours per week, while also reporting that stress does not impact the quality of their work and that they do not tend to make professional mistakes under stress. However, already in 2006, Sexton and colleagues[5] emphasised the importance of recognising the potential effects of stress for both airline pilots and surgeons, as recognising signs of stress in oneself is not always easy. Therefore, aviation team members are trained to assist in identifying stress indicators among each other. Sexton and colleagues argue that similar training may be essential for surgeons as well,[34] which is supported by Arora and colleagues, who suggest that formal training in the recognition and management of stress may also be important for surgeons,[35] however, standardised procedures for assessing stress in surgeons remain lacking.[36]

Limitations. This article reports on findings from a small group of cardiothoracic surgeons; therefore, with a larger sample, the results may differ and not be generalisable. Also, we focused on personality traits included in the five-factor model and did not explore characteristics such as narcissism or egocentrism, which may also be relevant to explore. Additionally, due to the limited sample size, we were not able to analyse subgroups based on gender or professional status.

Conclusion

The current study found that 40% of respondents had experienced bullying during their work in surgical teams, and bullying was considered a significant barrier to career advancement and associated with a lack of psychological safety in the workplace. In addition, we found that personality factors such as agreeableness and openness were positively associated with psychological safety, suggesting that supporting and strengthening an organisational culture based on these factors may be beneficial in increasing psychological safety. As cardiothoracic chiefs and senior colleagues were identified as the primary sources of bullying, focusing on team leaders as role models in cultural change may be pivotal.

Highlights

- Workplace bullying is common in the cardiothoracic speciality and most often occurs in the operating room and at the joint staff meeting.
- As incidents of bullying within the team rise, the sense of psychological safety in the workplace diminishes.
- Personal traits exhibited by cardiothoracic surgeons, such as agreeableness and openness, are positively correlated with psychological safety at work.

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