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Article

Psychological Safety as a Predictor of Acute Stress, Well-Being and Burnout in Health and Social Care Workers: A Predictive Correlational Study

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Abstract

Background: Health and social care workers (HSCWs) experience high levels of stress, burnout and emotional strain. Psychological safety is increasingly recognised as a protective factor, yet limited research has examined how individual psychological safety and team psychological safety jointly contribute to mental health outcomes in frontline care environments. **Methods:** A total of 821 HSCWs completed validated measures assessing individual psychological safety (NPSS), team psychological safety (TPSS), well-being, burnout and acute stress. Correlational analyses and hierarchical regression models were used to evaluate the unique and shared contributions of individual and team psychological safety to each outcome. **Results:** Both NPSS and TPSS were significantly associated with well-being, burnout and acute stress. Team psychological safety emerged as the strongest predictor of burnout and acute stress, accounting for substantial additional variance beyond individual psychological safety, with increases in explained variance ranging from .14 to .16. For well-being, NPSS ($\beta = .38$) and TPSS ($\beta = .36$) were both significant predictors. TPSS demonstrated large effects for burnout ($\beta = .67$) and acute stress ($\beta = .72$). **Conclusions:** Psychological safety plays a central role in the mental health of HSCWs. Team-based psychological safety was particularly influential in protecting against burnout and acute stress, while individual neuroceptive safety remained important for supporting overall well-being. Strengthening both individual and team-level psychological safety may enhance resilience and reduce psychological risk within health and social care settings. **Implications:** Incorporating NPSS and TPSS within workforce assessment may support early identification of psychological vulnerability, inform trauma-informed organisational interventions and promote more resilient, supportive workplace cultures.

Keywords: psychological safety; acute stress; burnout; well-being; health and social care workers; mental health; Polyvagal Theory

1. Introduction

Health and social care workers (HSCWs) operate in environments characterised by sustained pressure, high emotional labour, and frequent exposure to traumatic or morally distressing events. These conditions contribute to elevated levels of burnout, acute stress, and reduced psychological well-being across global health and social care systems (Cogan et al., 2022; Fronteira et al., 2024; Jun et al., 2021). Workforce challenges including chronic understaffing, high sickness absence, and increased turnover have intensified in recent years, placing additional strain on services and heightening the need for effective strategies to support the resilience and mental health of those delivering care. Psychological safety has emerged as a critical protective factor within high-risk, high-demand settings (Peddie et al., 2025). Traditionally conceptualised at the team level, psychological safety refers to a shared belief that it is safe to take interpersonal risks such as asking

questions, raising concerns, or admitting mistakes without fear of negative consequences (Edmondson, 1999). A substantial body of research has linked team psychological safety to improved communication, enhanced learning, better performance, and reduced stress within healthcare teams (Frazier et al., 2017; O'Donovan et al., 2020). However, team psychological safety represents only one dimension of workers' experience; it does not fully capture how individuals internally detect and process cues of safety or threat.

Polyvagal Theory (PVT; Porges, 2011; 2024) offers a neurophysiological framework for understanding psychological safety at the individual level. According to this theory, the autonomic nervous system continuously engages in *neuroception*, the unconscious detection of cues of danger or safety which shapes emotional regulation, social engagement, and stress responses. Drawing on this framework, the Neuroception of Psychological Safety Scale (NPSS) was developed to measure embodied experiences of safety through three dimensions: social engagement, compassion, and bodily sensations (Morton et al., 2024). These dimensions capture internal felt states that support co-regulation, openness, and adaptive responding mechanisms that may be particularly relevant for HSCWs frequently exposed to trauma, unpredictability, and high emotional labour (Cogan et al., 2024; Melander et al., 2024).

Trauma-informed approaches similarly emphasise the importance of felt safety, noting that structural protections alone are insufficient if individuals do not physiologically experience safety (Domínguez-Salas et al., 2021; Roche et al., 2025). In frontline settings, both individual neuroceptive processes and team relational dynamics may play essential roles in shaping resilience. Individual safety may support emotional regulation and personal coping, while team-level safety may provide collective buffering during demanding or distressing events (Amoadu et al., 2025). Despite growing interest in both levels of psychological safety, few studies have examined them simultaneously or explored how they jointly contribute to well-being, burnout, and acute stress in health and social care workforces.

To address this gap, the present study explores the role of psychological safety at both the individual and team levels among a large sample of HSCWs. Specifically, it examines how neuroceptive experiences of safety and team-based relational safety are associated with well-being, burnout, and acute stress. Rather than positioning individual and team psychological safety in competition, the aim of this study is to develop a more comprehensive understanding of how multiple dimensions of psychological safety operate within frontline care environments. By examining both constructs simultaneously, this research seeks to clarify the mechanisms through which psychological safety may protect against distress, support resilience, and contribute to workforce sustainability.

2. Method

This study employed a predictive correlational design to examine how psychological safety at both the individual and team levels relates to acute stress, well-being, and burnout among health and social care workers (HSCWs). This design is appropriate for assessing the strength and direction of associations between theoretically relevant constructs and for identifying which aspects of psychological safety may serve as meaningful predictors of mental health outcomes. Predictive correlational approaches have been widely used in occupational and trauma-informed research to identify antecedents of stress, burnout, and resilience in frontline settings (Domínguez-Salas et al., 2021).

In the present study, individual psychological safety and team psychological safety served as the primary independent variables. The dependent variables were acute stress, well-being, and burnout, each assessed using validated psychometric measures. By modelling these relationships simultaneously, the study sought to clarify the unique and shared contributions of neuroceptive, individual-level safety experiences and team-level relational safety in predicting key indicators of psychological health among HSCWs.

2.1. Materials

The NPSS (Morton et al., 2024) is a 29-item self-report instrument developed to assess individual perceptions of psychological safety, based on PVT. The NPSS measures psychological safety across three dimensions: social engagement, compassion, and bodily sensations. Social engagement captures feelings of acceptance, trust, and openness within social settings, while compassion reflects empathy and the willingness to help others. Bodily sensations evaluate internal physical states, such as steady heart rate and relaxed muscles, which are indicators of a calm physiological state. Participants rate items on a 5-point Likert scale from “strongly disagree” to “strongly agree,” with higher scores indicating greater perceived psychological safety. This scale has demonstrated strong internal consistency establishing it as a reliable tool for measuring individual psychological safety (Cogan et al., 2024; Cogan et al., 2025; Poli et al., 2024).

The TPSS (Edmondson et al., 1999), is a 7-item scale that assesses the collective belief among team members that the team environment is safe for interpersonal risk-taking. The TPSS includes statements such as “If you make a mistake on this team, it is often held against you” and “It is safe to take a risk on this team.” Participants respond on a 7-point Likert scale ranging from “very inaccurate” to “very accurate.” Higher scores reflect a stronger perception of team-based psychological safety. The TPSS has been extensively validated in various organisational contexts and is associated with positive outcomes like team collaboration and innovation (Edmondson & Lei, 2014).

The Short Warwick-Edinburgh Mental Well-being Scale (SWEMWBS; Ng et al., 2017) is a brief, 7-item scale that measures overall mental well-being by assessing positive mental states like optimism, relaxation, and confidence. The SWEMWBS includes statements such as “I’ve been feeling useful” and “I’ve been feeling close to other people.” Responses are given on a 5-point scale from “none of the time” to “all of the time,” with higher scores reflecting better well-being and capturing an overview of emotional and psychological health. The scale is known for its high reliability (Ng et al., 2017) and has been validated across diverse populations, proving to be a sensitive tool for measuring changes in mental health.

The Burnout Measure – Short Version (BMS; Malach-Pines, 2005) is a 10-item scale that assesses burnout across physical, emotional, and mental dimensions. Items cover symptoms like fatigue, worthlessness, and emotional exhaustion, with statements such as “I’ve had it” and “I feel emotionally drained.” Responses are rated on a 7-point scale from “never” to “always,” with higher scores indicating higher burnout levels. The BMS is widely used in occupational health research for identifying levels of burnout (Riley, et al., 2018), making it a validated and effective measure for assessing burnout across various professional and personal contexts.

The Abbreviated Post-Traumatic Stress Disorder Checklist – Civilian (APCL-C; Lang & Stein, 2005) is a 6-item measure designed to assess acute stress symptoms in civilian populations. It evaluates typical trauma responses such as re-experiencing, hyperarousal, and avoidance. Items include “Repeated, disturbing memories, thoughts, or images of a stressful experience from the past,” with responses on a 5-point Likert scale from “not at all” to “extremely.” Higher scores indicate greater levels of acute stress, suggesting potential need for further mental health support. The APCL-C has demonstrated good internal consistency and is widely used in assessing acute stress symptoms in non-combat populations (Freedy et al., 2010).

2.2. Procedure and Recruitment

Participants were recruited through NHS organisational networks, professional associations, and social media advertisements targeting health and social care workers. The study was promoted via social media platforms, relevant forums, and websites focused on mental health and well-being, providing a link to the survey and encouraging eligible individuals to participate. Additionally, NHS departments, health and social care employers, and professional bodies shared the study within their staff networks to reach workers who met the eligibility criteria.

The survey, administered via the online platform Qualtrics, began with a participant information sheet followed by an online consent form. Participants were then asked to provide socio-demographic information before completing a series of validated psychological measures. These included the NPSS, TPSS, SWEMWBS, BMS and the APCL-C. The survey was designed to be anonymous, with each participant assigned a unique identifier to ensure privacy. The study's inclusion criteria focused on adults aged 18 and older, working in a health and social care workplace setting for a minimum of 6 months, ensuring that data gathered would be relevant to the study's objectives. Exclusion criteria, such as dementia, severe drug or alcohol dependency, active psychosis, or neuropsychiatric conditions requiring hospitalisation, were applied to help ensure participants had the capacity to provide informed consent and to maintain the reliability of self-reported data. This careful selection process aimed to capture a representative sample of the target population while excluding individuals whose specific conditions could limit accurate self-report.

The survey was structured to encourage honest and open responses, and it included a debrief section at the end, providing participants with information on available mental health support services such as helplines, online counselling resources, and local community organisations. This was particularly important given the nature of the survey, which dealt with sensitive issues like acute stress and mental wellbeing. Participants were assured of the confidentiality of their responses, which were anonymous with no personally identifiable information collected.

2.3. Ethics

Ethical approval for the study was obtained from the University Ethics Committee (Ref: 33/02/12/2020/A). Informed consent was obtained from all participants, who were given a clear explanation of the study's purpose, the voluntary nature of their participation. All data were securely stored on the University server, and no personally identifiable information was collected or linked to participants' responses. The findings were reported in aggregate form to further protect participant identities. The study adhered to the British Psychological Society's ethical guidelines for research involving potentially vulnerable populations, ensuring participants' well-being was prioritised throughout.

2.4. Analysis

Correlational and multiple regression analyses were conducted to examine the predictive role of psychological safety measured via individual psychological safety (NPSS) and team psychological safety (TPSS) in relation to well-being, burnout, and acute stress. Prior to analysis, the dataset was screened for missing values. Missing data were minimal and handled using pairwise deletion for correlations and listwise deletion within each regression model, consistent with recommended practices for large samples. Assumption checks were conducted before running the regressions. Tests of normality indicated significant deviations at $p < .05$, which is common in large datasets; however, visual inspection of histograms and Q-Q plots, along with skewness and kurtosis values, indicated that the variables were sufficiently normally distributed for parametric analysis. Given the large sample size ($N = 821$), minor deviations from normality were not considered problematic. Multicollinearity was assessed using Variance Inflation Factors (VIFs), all of which were below 2, indicating no multicollinearity concerns between NPSS and TPSS. Examination of standardised residuals and residual scatterplots confirmed that assumptions of homoscedasticity and linearity were met. Residual distributions also supported the assumption of normality. These checks indicated that the data were appropriate for regression analysis.

3. Results

3.1. Participants

The sample consisted of 821 HSCWs with a mean age of 38.65 years ($SD = 11.40$). The majority identified as female (70.0%), and most identified as White (74.2%), with additional representation

from Black African (14.4%), Asian (10.2%), and mixed ethnicity (1.1%) groups. Most participants lived in urban areas (70.8%) and were employed full-time (65.7%). Regarding occupational background, the largest proportion of respondents were nurses, followed by doctors/advanced clinical staff, allied health professionals, health and social care support staff, and mental health professionals. Collectively, these frontline groups represented over half of the sample, indicating strong representation from direct care roles. Workplace seniority varied, with 25.0% identifying as entry level, 46.5% as intermediate, 26.5% as senior, and 2.0% as executive, reflecting a broad distribution of responsibilities across the sector. Exposure to occupational trauma was highly prevalent: 44.5% reported direct exposure, 15.3% indirect exposure, and 25.2% both, meaning that 80.2% of the sample had encountered some form of traumatic experience at work. Notably, 44.5% reported that such exposure had adversely affected their psychological functioning.

Table 1. Participant Characteristics for Health & Social Care Workers.

Variable	n (%)
Age	$M = 38.65, SD = 11.40$ (valid $n = 809$)
Gender	
• Female	574 (70.0%)
• Male	240 (29.3%)
• Non-binary	6 (0.7%)
Ethnicity	
• White (British/Other)	594 (74.2%)
• Black African	115 (14.4%)
• Asian	82 (10.2%)
• Mixed/Multiple	9 (1.1%)
Community type	
• Urban	569 (70.8%)
• Rural	206 (25.6%)
• Other	29 (3.6%)
Employment status	
• Full-time	539 (65.7%)
• Part-time	235 (28.6%)
• Student	22 (2.7%)
• Voluntary work	8 (1.0%)
• Carer	7 (0.9%)
Seniority	
• Entry level	198 (25.0%)
• Intermediate	368 (46.5%)
• Senior	210 (26.5%)
• Executive	16 (2.0%)
Exposure to trauma at work	
• Direct	347 (44.5%)
• Indirect	119 (15.3%)
• Both	196 (25.2%)
• None	117 (15.0%)
Adverse impact of trauma on self	
• Yes	351 (44.5%)
• No	328 (41.6%)
• Don't know	109 (13.8%)

Note. Valid percentages are shown for each variable. Missing data: Age ($n = 12$), Gender ($n = 1$ excluded for non-valid categories), Ethnicity ($n = 21$ non-classifiable categories excluded), Community ($n = 17$), Employment ($n = 0$), Seniority ($n = 29$), Trauma Exposure ($n = 42$), Trauma Impact ($n = 33$).

The results presented in Table 2 offer a comprehensive overview of psychological safety, stress, well-being, and burnout among health and social care workers (HSCWs). Individual psychological safety, measured by the NPSS, showed a moderately high average score, suggesting that workers generally feel valued, understood, and emotionally supported at the individual level. In contrast, team psychological safety (TPSS) demonstrated a lower average score, indicating that while some team-based support and cohesion are present, the team environment is notably less safe and consistent than individual relational experiences. Acute stress scores were moderate, reflecting the ongoing exposure to emotionally demanding and safety-critical situations in frontline care. Burnout levels were also moderate to high, highlighting significant emotional exhaustion and strain across the workforce. Mental well-being, as measured by the SWEMWBS, fell in the moderate range, suggesting that although a portion of staff maintain positive psychological functioning, a considerable proportion experience reduced well-being likely linked to chronic workload pressures and insufficient recovery opportunities. These findings reveal a workforce experiencing elevated levels of stress and burnout, accompanied by only moderate well-being, despite relatively strong individual feelings of psychological safety. The lower levels of team psychological safety are especially noteworthy, as they may signal inconsistent support, communication, or emotional buffering within teams.

Table 2. Descriptive Statistics of Psychometric Measures.

Measure	M	SD
Mental well-being (SWEMWBS)	24.79	10.57
Burnout (BMS)	95.23	45.83
Acute stress (APCL-C)	12.84	6.97
Individual psychological safety (NPSS)	98.52	35.65
Team psychological safety (TPSS)	25.78	9.39

Note. Scale scores represent the sum of all items within each measure. Higher scores indicate better wellbeing (SWEMWBS), higher burnout (BMS), greater acute stress (PCL-6), and greater perceived psychological safety (NPSS/TPSS). All descriptive statistics are based on valid responses ($n = 821$).

The correlation analysis presented in Table 3 revealed robust associations among psychological safety, well-being, burnout, and acute stress. Individual psychological safety (NPSS) showed a strong positive association with mental well-being ($r = .68$, $p < .01$), indicating that workers who felt personally safe, valued, and understood reported significantly better psychological health. NPSS was also moderately negatively correlated with burnout ($r = -.46$, $p < .01$) and acute stress ($r = -.38$, $p < .01$), suggesting that greater individual psychological safety was linked to lower emotional exhaustion and fewer acute stress symptoms.

Team psychological safety (TPSS) demonstrated a strong correlation with NPSS ($r = .83$, $p < .01$), reflecting substantial overlap between personal and team-based safety experiences, although the two constructs remain distinct. TPSS was also strongly positively associated with mental well-being ($r = .68$, $p < .01$) and moderately negatively associated with both burnout ($r = -.59$, $p < .01$) and acute stress ($r = -.54$, $p < .01$). Notably, TPSS showed stronger associations with burnout and acute stress than NPSS, underscoring the influential role of team dynamics in shaping frontline workers' psychological outcomes. Mental well-being itself demonstrated strong negative correlations with both burnout ($r = -.73$, $p < .01$) and acute stress ($r = -.48$, $p < .01$), confirming that lower distress is closely tied to higher well-being. Burnout and acute stress were strongly positively correlated ($r = .70$, $p < .01$), reflecting the interconnected nature of short-term stress responses and longer-term emotional exhaustion. These findings highlight that while both individual and team psychological safety function as important protective factors, team psychological safety shows the strongest and most consistent associations with reduced burnout and acute stress, emphasising the central role of supportive team environments in safeguarding psychological health among health and social care workers.

Table 3. Correlation Matrix for Key Study Variables.

Measure	1	2	3	4	5
1. Mental Wellbeing (SWEMWBS)	—				
2. Burnout (BMS)	-.73**	—			
3. Acute Stress (PCL-6)	-.48**	.70**	—		
4. NPSS (Individual Safety)	.68**	-.46**	-.38**	—	
5. TPSS (Team Safety)	.68**	-.59**	-.54**	.83**	—

Note. NPSS = Neuroception of Psychological Safety Scale (29 items). TPSS = Team Psychological Safety Scale (7 items). SWEMWBS = Short Warwick–Edinburgh Mental Wellbeing Scale. PCL-6 = Acute Stress. BMS = Burnout Measure. All correlations are significant at $p < .01$.

3.2. Regression Analysis

Hierarchical multiple regression analyses were conducted to examine the relative contributions of individual psychological safety (NPSS) and team psychological safety (TPSS) in predicting mental well-being, burnout, and acute stress. NPSS was entered at Step 1, followed by TPSS at Step 2 to assess its incremental predictive value. For mental well-being, NPSS entered at Step 1 accounted for a substantial proportion of variance (46%). The addition of TPSS at Step 2 produced a significant improvement in model fit, $\Delta R^2 = .04$, indicating that team psychological safety explained an additional 4% of the variance in well-being beyond individual psychological safety. In the final model, both NPSS ($\beta = .38$, $p < .001$) and TPSS ($\beta = .36$, $p < .001$) were significant predictors and showed comparable effect sizes. For burnout, NPSS explained 21% of the variance at Step 1. When TPSS was included, the model showed a significant and notable increase in explanatory power, with $\Delta R^2 = .14$. In the final model, TPSS emerged as a strong and statistically significant predictor of burnout ($\beta = .67$, $p < .001$), whereas NPSS was weaker and no longer significant once team safety was accounted for ($\beta = -.09$, ns). For acute stress, NPSS explained 27% of the variance at Step 1. The inclusion of TPSS at Step 2 resulted in a further significant increase in explained variance, $\Delta R^2 = .16$, demonstrating that team psychological safety contributed an additional 16% of explanatory power. In the final model, both predictors were significant, with TPSS showing a markedly stronger association with acute stress ($\beta = .72$, $p < .001$) than NPSS ($\beta = -.22$, $p < .001$). Across all three outcomes, team psychological safety accounted for substantially more variance than individual psychological safety. Although NPSS contributed meaningfully in Step 1 models, the inclusion of TPSS consistently improved model performance, indicating that team-level relational safety plays a central role in predicting well-being, burnout, and acute stress among health and social care workers.

Table 4. Hierarchical Regression Analyses Predicting Well-being, Burnout, and Acute Stress.

Predictor	Well-being (β)	Burnout (β)	Acute stress (β)
NPSS	.38*	-.09	-.22***
TPSS	.36*	.67*	.72*
R ² (final model)	.50	.35	.30
ΔR^2 (TPSS after NPSS)	.04***	.14***	.16***

Note. Entries are standardised regression coefficients (β) from the final models. R² = variance explained by the full model (NPSS + TPSS). ΔR^2 = additional variance explained when TPSS was added after NPSS (Step 2 vs Step 1). NPSS = Neuroception of Psychological Safety Scale (29 items); TPSS = Team Psychological Safety Scale (7 items); SWEMWBS = Short Warwick–Edinburgh Mental Wellbeing Scale; PCL-6 = Acute Stress; BMS = Burnout Measure.

* $p < .05$, ** $p < .01$, *** $p < .001$.

4. Discussion

This study examined the predictive role of individual and team psychological safety in relation to well-being, acute stress, and burnout among HSCWs. The findings demonstrated that although

both individual psychological safety and team psychological safety were significantly associated with mental health outcomes, team-level psychological safety emerged as the stronger and more consistent predictor, particularly for burnout and acute stress. These results challenge assumptions that individual psychological safety alone is the primary protective factor and highlight the central importance of relational and interpersonal dynamics within teams.

From a Polyvagal Theory perspective, the NPSS provides a unique lens through which to understand individual experiences of safety. The NPSS captures neuroceptive cues, the body's automatic detection of threat or safety, through dimensions of social engagement, compassion, and embodied regulation (Porges, 2024; Morton et al., 2024). These neurophysiological states are critical in high-demand environments where HSCWs face emotional labour, trauma exposure, and cumulative stressors that can dysregulate the autonomic nervous system (Cogan et al., 2024; Melander et al., 2024; Peddie et al., 2025). NPSS therefore remains an important indicator of individual vulnerability and resilience, offering insight into how workers internally process safety signals that may buffer against stress.

However, the current findings clearly show that team-based psychological safety exerts a more powerful influence on psychological outcomes. TPSS demonstrated strong correlations with well-being and robust negative associations with burnout and acute stress. In the regression models, TPSS accounted for substantially more variance than NPSS in predicting both burnout and acute stress, with large effect sizes. This aligns with polyvagal and trauma-informed frameworks, which emphasise that safety is fundamentally co-regulated. The autonomic nervous system is highly sensitive to social cues, and team environments provide the most immediate signals regarding predictability, support, and relational protection. (Porges, 2025). In frontline settings, distress rarely emerges in isolation; it is shaped by collective workload pressures, shared exposure to traumatic incidents, communication patterns, and the emotional availability of colleagues (Griffith et al., 2023). Supportive, psychologically safe teams can diffuse acute stress, distribute emotional load, and prevent the build-up of chronic strain. Conversely, team environments marked by conflict, blame, or inconsistency may amplify threat signals, accelerating burnout and dysregulation (Rott et al., 2025). These findings therefore highlight the need to conceptualise psychological safety in HSCWs not only as an individual phenomenon but as a relational and systemic resource embedded within team functioning.

The NPSS still offers important added value. Although team experiences dominated prediction for burnout and acute stress, NPSS remained significantly associated with well-being and contributed additional nuance to the understanding of individual differences in sensitivity to threat or safety. This neuroceptive dimension may help explain why within the same team some individuals exhibit higher vulnerability or greater resilience (Peddie et al., 2025). Team-level surveys alone cannot capture this embodied variability, making NPSS a valuable complement to existing organisational metrics.

The implications of these findings are particularly salient in the context of ongoing workforce crises in health and social care. International evidence indicates rising absenteeism, turnover, and dissatisfaction (Fronteira et al., 2024; Jun et al., 2021; Mahat, et al., 2025), with burnout a major driver of attrition. The present results suggest that interventions designed to strengthen psychological safety should prioritise the team relationship climate, particularly enhancing trust, communication, and co-regulation. However, this does not diminish the value of individual-focused supports. Programmes that foster social engagement, compassion, and awareness of bodily safety cues, core NPSS dimensions, may offer additional protection against chronic stress, particularly for workers with heightened neuroceptive sensitivity. An integrated approach that strengthens both individual neuroceptive safety and team-level interpersonal safety is therefore likely to offer the greatest benefit. This dual focus aligns with contemporary trauma-informed frameworks, which emphasise that staff require environments where they both *are safe* and *feel safe* on a physiological and relational level (Domínguez-Salas et al., 2021; Roche et al., 2025).

5. Conclusion

This study demonstrated that psychological safety plays a central role in shaping the well-being, stress, and burnout of health and social care workers. Although individual psychological safety was significantly associated with all outcomes, team psychological safety emerged as the strongest predictor of burnout and acute stress, underscoring the fundamentally relational nature of psychological safety in high-pressure care environments. These results highlight that workforce well-being is not solely dependent on individual resilience but is profoundly shaped by the quality of team interactions, shared support, and interpersonal trust. Organisational interventions should therefore prioritise strengthening team psychological safety as a core strategy for preventing burnout and reducing acute stress. At the same time, NPSS offers a sensitive and theoretically grounded tool for identifying individual neuroceptive vulnerability or resilience, complementing team-based approaches. By embedding both NPSS and TPSS within routine workforce assessment, health and social care systems may be better equipped to detect risk early, tailor support, and promote sustainable, compassionate, and resilient workplace cultures.

Author Contributions: The study was conceptualised by Martin Smith, Nicola Cogan and Karen Deakin. Ethics approval was prepared and submitted by Nicola Cogan, Karen Deakin and Martin Smith. Data collection was coordinated and undertaken by Martin Smith and Nicola Cogan. Data analysis was led by Nicola Cogan and Martin Smith with contributions from Karen Deakin. Nicola Cogan prepared the initial draft of the manuscript, and all authors contributed to subsequent revisions, critically reviewed the intellectual content and approved the final version of the manuscript. All authors meet authorship criteria and accept responsibility for the content.

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Institutional Review Board Statement: Ethical approval for this study was granted by the University of Strathclyde Ethics Committee under reference number 33/02/12/2020/A. All procedures were conducted in accordance with institutional and national ethical standards and conformed to the principles outlined in the Declaration of Helsinki.

Informed Consent Statement: Informed consent was obtained from all participants prior to their involvement in the study. Participation was voluntary, and all individuals were provided with clear information about the study's purpose, procedures and their rights, including the right to withdraw at any time without penalty.

Data Availability Statement: The data supporting the findings of this study are stored securely within the University of Strathclyde research repository. Due to privacy and ethical restrictions, the dataset cannot be made publicly available. Data may be accessed upon reasonable request by contacting the corresponding author, provided that such access complies with ethical and confidentiality requirements.

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References

- Ahmed, F., Xiong, Z., Faraz, N. A., & Arslan, A. (2023). The interplay between servant leadership, psychological safety, trust in a leader and burnout: Assessing causal relationships through a three-wave longitudinal study. *International Journal of Occupational Safety and Ergonomics*, 29(2), 912-924. <https://doi.org/10.1080/10803548.2022.2086755>
- Amoadu, M., Agyare, D. F., Doe, P. F., & Abraham, S. A. (2025). Examining the impact of psychosocial safety climate on working conditions, well-being and safety of healthcare providers: a scoping review. *BMC Health Services Research*, 25(1), 90.

- Bahadurzada, H., Edmondson, A., & Kerrissey, M. (2024). Psychological safety as an enduring resource amid constraints. *International Journal of Public Health*, 69, 1607332-1607332. <https://doi.org/10.3389/ijph.2024.1607332>
- Bamforth, K., Rae, P., Maben, J., Lloyd, H., & Pearce, S. (2023). Perceptions of healthcare professionals' psychological wellbeing at work and the link to patients' experiences of care: A scoping review. *International Journal of Nursing Studies Advances*, 5, 100148. <https://doi.org/10.1016/j.ijnsa.2023.100148>
- Boitet, L. M., Meese, K. A., Hays, M. M., Gorman, C. A., Sweeney, K. L., & Rogers, D. A. (2023). Burnout, moral distress, and compassion fatigue as correlates of posttraumatic stress symptoms in clinical and nonclinical healthcare workers. *Journal of Healthcare Management*, 68(6), 427-451.
- Brennan, C. J., McKay, M. T., & Cole, J. C. (2024). Morally injurious events and posttraumatic embitterment disorder in U.K. health and social care professionals during COVID-19: A longitudinal web survey. *Psychological Trauma: Theory, Research, Practice, and Policy*. <https://doi.org/10.1037/tra0001723>.
- Cogan, N., Archbold, H., Deakin, K., Griffith, B., Sáez Berruga, I., Smith, S., ... & Flowers, P. (2022). What have we learned about what works in sustaining mental health care and support services during a pandemic? Transferable insights from the COVID-19 response within the NHS Scottish context. *International Journal of Mental Health*, 51(2), 164-188.
- Cogan, N., Campbell, J., Morton, L., Young, D., & Porges, S. (2024). Validation of the Neuroception of Psychological Safety Scale (NPSS) among health and social care workers in the UK. *International Journal of Environmental Research and Public Health*, 21(12), 1551.
- Cogan, N., Craig, A., Milligan, L., McCluskey, R., Burns, T., Ptak, W., ... & De Kock, J. (2024). 'I've got no PPE to protect my mind': Understanding the needs and experiences of first responders exposed to trauma in the workplace. *European Journal of Psychotraumatology*, 15(1), 2395113.
- Cogan, N., Kennedy, C., Beck, Z., McInnes, L., MacIntyre, G., Morton, L., ... & Kolacz, J. (2022). ENACT study: What has helped health and social care workers maintain their mental well-being during the COVID-19 pandemic?. *Health & Social Care in the Community*, 30(6), e6656-e6673.
- Cogan, N., Morton, L., Campbell, J., Irvine Fitzpatrick, L., Lamb, D., De Kock, J., ... & Porges, S. (2025). Neuroception of psychological safety scale (NPSS): validation with a UK based adult community sample. *European Journal of Psychotraumatology*, 16(1), 2490329.
- Das, M. (2023). Aligning emotions, thoughts, and feelings to build a high-performing team. *Global Journal of Business and Integral Security*.
- Domínguez-Salas, S., Gómez-Salgado, J., Guillén-Gestoso, C., Romero-Martín, M., Ortega-Moreno, M., & Ruiz-Frutos, C. (2021). Health care workers' protection and psychological safety during the COVID-19 pandemic in Spain. *Journal of Nursing Management*, 29(7), 1924-1933. <https://doi.org/10.1111/jonm.13331>
- Edmondson, A. (1999). Psychological safety and learning behavior in work teams. *Administrative Science Quarterly*, 44(2), 350-383. <https://doi.org/10.2307/2666999>
- Edmondson, A. C., & Bransby, D. P. (2023). Psychological safety comes of age: Observed themes in an established literature. *Annual Review of Organizational Psychology and Organizational Behavior*, 10(1), 55-78.
- Edmondson, A. C., Higgins, M., Singer, S., & Weiner, J. (2016). Understanding psychological safety in health care and education organizations: A comparative perspective. *Research in Human Development*, 13(1), 65-83. <https://doi.org/10.1080/15427609.2016.1141280>
- Edmondson, A. C., & Lei, Z. (2014). Psychological safety: The history, renaissance, and future of an interpersonal construct. *Annual Review of Organizational Psychology and Organizational Behavior*, 1(Volume 1, 2014), 23-43. <https://doi.org/https://doi.org/10.1146/annurev-orgpsych-031413-091305>
- Edrees, H. H., Ismail, M. N. M., Kelly, B., Goeschel, C. A., Berenholtz, S. M., Pronovost, P. J.,...Weaver, S. J. (2017). Examining influences on speaking up among critical care healthcare providers in the United Arab Emirates. *International Journal for Quality in Health Care*, 29(7), 948-960. <https://doi.org/10.1093/intqhc/mzx144>
- Eisenberger, R., Stinglhamber, F., Vandenberghe, C., Sucharski, I. L., & Rhoades, L. (2002). Perceived supervisor support: contributions to perceived organizational support and employee retention. *Journal of Applied Psychology*, 87(3), 565.

- Frazier, M. L., Fainshmidt, S., Klinger, R. L., Pezeshkan, A., & Vracheva, V. (2017). Psychological safety: a meta-analytic review and extension. *Personnel Psychology*, 70(1), 113-165. <https://doi.org/10.1111/peps.12183>
- Freeddy, J. R., Steenkamp, M. M., Magruder, K. M., Yeager, D. E., Zoller, J. S., Hueston, W. J., & Carek, P. J. (2010). Post-traumatic stress disorder screening test performance in civilian primary care. *Family Practice*, 27(6), 615-624.
- Fronteira, I., Mathews, V., dos Santos, R. L. B., Matsumoto, K., Amde, W., Pereira, A.,...Poz, M. R. D. (2024). Impacts for health and care workers of COVID-19 and other public health emergencies of international concern: Living systematic review, meta-analysis and policy recommendations. *Human Resources for Health*, 22(1), 10-10. <https://doi.org/10.1186/s12960-024-00892-2>
- Geoffrion, S., Goncalves, J., Robichaud, I., Sader, J., Giguere, C. E., Fortin, M., ... & Guay, S. (2022). Systematic review and meta-analysis on acute stress disorder: Rates following different types of traumatic events. *Trauma, Violence, & Abuse*, 23(1), 213-223.
- Ghahramani, S., Kasraei, H., Hayati, R., Tabrizi, R., & Marzaleh, M. A. (2023). Health care workers' mental health in the face of COVID-19: A systematic review and meta-analysis. *International Journal of Psychiatry in Clinical Practice*, 27(2), 208-217.
- Gilbert, P., McEwan, K., Mitra, R., Franks, L., Richter, A., & Rockliff, H. (2008). Feeling safe and content: A specific affect regulation system? Relationship to depression, anxiety, stress, and self-criticism. *The Journal of Positive Psychology*, 3(3), 182-191. <https://doi.org/10.1080/17439760801999461>
- Grailey, K. B., Lound, A. B., Murray, E. B., & Brett, S. B. (2023). The influence of personality on psychological safety, the presence of stress and chosen professional roles in the healthcare environment. *Plos One*, 18(6), Article e0286796. <https://doi.org/10.1371/journal.pone.0286796>
- Griffith, B., Archbold, H., Saez Berruga, I., Smith, S., Deakin, K., Cogan, N., ... & Flowers, P. (2023). Frontline experiences of delivering remote mental health supports during the COVID-19 pandemic in Scotland: innovations, insights and lessons learned from mental health workers. *Psychology, Health & Medicine*, 28(4), 964-979.
- Hoegh, J., Rice, G., Shetty, S., Ure, A., Cogan, N., & Peddie, N. (2024). Health and social care professionals' experience of psychological safety within their occupational setting: A thematic synthesis scoping review protocol. *COJ Nursing & Healthcare*, 8(5), 915-920.
- Isobel, S., & Thomas, M. (2022). Vicarious trauma and nursing: An integrative review. *International Journal of Mental Health Nursing*, 31(2), 247-259. <https://doi.org/10.1111/inm.12953>
- Jun, J., Ojemeni, M. M., Kalamani, R., Tong, J., & Crecelius, M. L. (2021). Relationship between nurse burnout, patient and organizational outcomes: Systematic review. *International Journal of Nursing Studies*, 119, 103933.
- Kahn, W. A. (1990). Psychological conditions of personal engagement and disengagement at work. *Academy of Management Journal*, 33(4), 692-724. <https://doi.org/10.2307/256287>
- Kim, H., Ji, J., & Kao, D. (2011). Burnout and physical health among social workers: A three-year longitudinal study. *Social work*, 258-268.
- Lang, A. J., & Stein, M. B. (2005). An abbreviated PTSD checklist for use as a screening instrument in primary care. *Behaviour Research and Therapy*, 43(5), 585-594.
- Maddock, A. (2024). The relationships between stress, burnout, mental health and well-being in social workers. *The British Journal of Social Work*, 54(2), 668-686.
- Mahat, S., Lehmusto, H., Rafferty, A. M., Vehviläinen-Julkunen, K., Mikkonen, S., & Härkänen, M. (2025). Impact of second victim distress on healthcare professionals' intent to leave, absenteeism and resilience: A mediation model of organizational support. *Journal of Advanced Nursing*, 81(9), 5376-5388.
- Malach-Pines, A. (2005). The Burnout Measure, short version. *International Journal of Stress Management*, 12(1), 78-88. <https://doi.org/10.1037/1072-5245.12.1.78>
- Melander, S., Dahl, O., Falk, A. C., Lindström, V., Andersson, E., Gustavsson, P., & Rudman, A. (2024). Critical incidents and post-traumatic stress symptoms among experienced registered nurses during the COVID-19 pandemic: A cross-sectional study. *International Journal of Nursing Studies Advances*, 6, 100194.
- Mittal, M., Morgan, A. A., Du, J., Jiang, J., Boekeloo, B., & Fish, J. N. (2023). "Each week feels like a mountain": The impact of COVID-19 on mental health providers' well-being and clinical work. *Professional Psychology: Research and Practice*, 54(1), 103.

- Morton, L., Cogan, N., Kolacz, J., Calderwood, C., Nikolic, M., Bacon, T.,...Porges, S. W. (2024). A new measure of feeling safe: Developing psychometric properties of the Neuroception of Psychological Safety Scale (NPSS). *Psychological Trauma-US*, 16(4), 701-708. <https://doi.org/10.1037/tra0001313>
- Mosheva, M., Gross, R., Hertz-Palmor, N., Hasson-Ohayon, I., Kaplan, R., Cleper, R., ... & Pessach, I. M. (2021). The association between witnessing patient death and mental health outcomes in frontline COVID-19 healthcare workers. *Depression and Anxiety*, 38(4), 468-479.
- Ng Fat, L., Scholes, S., Boniface, S., Mindell, J., & Stewart-Brown, S. (2017). Evaluating and establishing national norms for mental wellbeing using the Short Warwick–Edinburgh Mental Well-Being Scale (SWEMWBS): Findings from the health survey for England. *Quality of Life Research*, 26, 1129-1144.
- O'Donovan, R., & McAuliffe, E. (2020). A systematic review of factors that enable psychological safety in healthcare teams. *International Journal for Quality in Health Care*, 32(4), 240-250.
- O'Donovan, R., Van Dun, D., & McAuliffe, E. (2020). Measuring psychological safety in healthcare teams: Developing an observational measure to complement survey methods. *BMC Medical Research Methodology*, 20(1), 203-203. <https://doi.org/10.1186/s12874-020-01066-z>
- Oneal, G., Graves, J. M., Diede, T., Postma, J., Barbosa-Leiker, C., & Butterfield, P. (2019). Balance, health, and workplace safety: Experiences of new nurses in the context of total worker health. *Workplace Health & Safety*, 67(10), 520-528.
- Peddie, N., Hoegh, J., Rice, G., Shetty, S., Ure, A., & Cogan, N. (2025). Health and Social Care Professionals' Experience of Psychological Safety Within Their Occupational Setting: A Thematic Synthesis Review. *Nursing Reports*, 15(4), 131.
- Pinto, I. C. (2017). Stress, burnout and coping in health professionals: A literature review.
- Porges, S. W. (2011). The polyvagal theory; neurophysiological foundations of emotions, attachment, communication, and self-regulation. *Reference & Research Book News*, 26(3).
- Porges, S. W. (2022). Polyvagal theory: A science of safety. *Frontiers in Integrative Neuroscience*, 16, 871227-871227. <https://doi.org/10.3389/fnint.2022.871227>
- Porges, S. W. (2024). Polyvagal Theory: The neuroscience of safety in trauma-informed practice.
- Porges, S. W. (2025). Polyvagal theory: Current status, clinical applications, and future directions. *Clinical Neuropsychiatry*, 22(3), 169.
- Rott, C., Segers, M., & Van den Bossche, P. (2025). Expected to be calm in any storm: An exploration of the stress experiences of crisis team leaders. *International Journal of Disaster Risk Reduction*, 123, 105445.
- Tucci, J., Mitchell, J., Porges, S. W., & Tronick, E. C. (Eds.). (2023). *The handbook of trauma-transformative practice: Emerging therapeutic frameworks for supporting individuals, families or communities impacted by abuse and violence* (pp. 51-70). Jessica Kingsley Publishers.
- Rice, V., Glass, N., Ogle, K., & Parsian, N. (2014). Exploring physical health perceptions, fatigue and stress among health care professionals. *Journal of Multidisciplinary Healthcare*, 155-161.
- Ridge, L. J. (2024). Keeping nurses' mental health front and center. *Workplace Health & Safety*, 72(5).
- Riley, M. R., Mohr, D. C., & Waddimba, A. C. (2018). The reliability and validity of three-item screening measures for burnout: Evidence from group-employed health care practitioners in upstate New York. *Stress and Health*, 34(1), 187-193.
- Waddill-Goad, S. (2023). *Beyond burnout: Overcoming stress in nursing & healthcare for optimal health & well-being*. Sigma Theta Tau.
- Williamson, V., Lamb, D., Hotopf, M., Raine, R., Stevelink, S., Wessely, S., ... & Greenberg, N. (2023). Moral injury and psychological wellbeing in UK healthcare staff. *Journal of Mental Health*, 32(5), 890-898.
- Yu, B., Barnett, D., Menon, V., Rabiee, L., De Castro, Y. S., Kasubhai, M., & Watkins, E. (2022). Healthcare worker trauma and related mental health outcomes during the COVID-19 outbreak in New York City. *PloS One*, 17(4), e0267315.

Zhou, H., & Chen, J. (2021). How does psychological empowerment prevent emotional exhaustion? Psychological safety and organizational embeddedness as mediators. *Frontiers in psychology, 12*, 546687.

Zohn, J. H., & Hovis, S. (2024). The impact of the global COVID-19 pandemic on risk factors for suicide in healthcare workers: A narrative review. *Journal of Clinical Nursing, 33*(1), 224-241.

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