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Emotional demands, burnout, and mental wellbeing in healthcare, care, and service work: the mediating role of surface acting across age

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This study examines how emotional demands and surface acting contribute to burnout and mental wellbeing among professionals in healthcare, care, and service roles. A cross-sectional online survey was conducted with 1,506 participants involved in frequent patient, care-receiver, or customer interactions. Using Partial Least Squares Structural Equation Modelling (PLS-SEM), we tested a serial mediation model. Surface acting mediated the relationship between emotional demands and burnout, defined as exhaustion and disengagement. In turn, these burnout dimensions mediated a negative association with mental wellbeing. These effects were consistent across professional groups, indicating the widespread impact of emotional demands and surface acting across occupations. We found no significant linear or curvilinear age moderation effects in the relationships between emotional demands and surface acting, nor between surface acting and burnout. Only workers aged 60+ showed a slightly stronger reliance on surface acting in response to perceived (but not contact-related) emotional demands compared to those aged 50–59. The absence of broader age effects suggests that emotional demands and surface acting contribute to burnout and mental wellbeing similarly across ages. These findings underscore the importance of recognising emotional demands as key occupational hazards affecting workers across professions and throughout the working lifespan.

KEYWORDS

emotional demands, surface acting, burnout, mental wellbeing, age

Introduction

The impact of emotional labour on workers' health and wellbeing has long been recognised (Hochschild, 1983). Grandey (2000) proposed that emotional labour operates via mechanisms that align with Gross's (1998) model of emotion regulation. Gross conceptualises emotion regulation as a deliberate and effortful process aimed at influencing one's emotional experiences and behavioural expressions, and the model outlines one response-focused (expressive or behavioural suppression) and four antecedent-focused (situation selection/modification, attentional deployment, acceptance, cognitive reappraisal) strategies. Hochschild's (1983) emotional labour strategy of surface acting, that is inhibiting true emotional expressions and replacing them with expressions required by work, is analogous to the response focused strategy of suppression (Grandey, 2000). Deep

acting, aiming to modify emotional experiences before they fully develop, function by one of Gross's four response focused emotion regulation strategies. By examining emotional labour through the lens of emotion regulation, Grandey (2000) explained why surface acting and deep acting have varying impacts on employee wellbeing.

A large body of research suggest that the regulatory costs of surface acting is related to burnout, and mental health concerns, while deep acting does not have the same detrimental impact on workers' health (see Yang and Chen, 2020; Zapf et al., 2021 for reviews). Emotional labour comprises an occupational risk in various care, and customer-facing roles (including nurses, teachers, hotel workers, sales, and bank employees, etc., see Aung and Tewogbola, 2019). However, the emotional impact of work extends beyond displaying or hiding specific emotions. Emotional demands encompass broader affective challenges including job characteristics and requirements employees face during interactions with patients, care-receivers, clients, customers, colleagues, and supervisors, that require sustained emotional effort (Aiello and Tesi, 2017; Duarte et al., 2020; Zapf, 2002; Zapf et al., 2021; Xanthopoulou et al., 2013), for example encountering death, dying, illness, suffering, trauma, crisis, grief, social problems, aggressive, disruptive or disrespectful behaviours, and being exposed to conflicts (Ansari, 2022; de Jonge et al., 1999; Duarte et al., 2020; Hakanen et al., 2006; Kostka et al., 2021; Portoghese et al., 2020; Ruiz-Fernández et al., 2021; Sundin et al., 2008). Exposure to such emotionally demanding situations and interactions require effort from workers to regulate their emotions, and their behavioural expressions, to align with their professional roles, which create strain, and deplete workers resources, leading to exhaustion, burnout, and impact workers mental wellbeing negatively (Yang and Chen, 2020; Zapf et al., 2021). Thus, emotional demands and emotion regulatory efforts do not operate in isolation; rather, they can be understood as part of a sequential process, where emotional demands represent the workplace exposure to affective challenges, and emotional labour represent workers' emotion regulatory processes to create, express or hide emotional expressions, to align with organisational or professional requirements (Zapf et al., 2021).

To understand the impact of emotional labour on workers' health and wellbeing, Grandey (2000), drawing on the Conservation of Resources (COR) theory (Hobfoll, 1989), argued that the effortful regulation of emotions to meet workplace expectations (that is emotional labour) is inherently resource-depleting. COR theory posits that individuals strive to obtain, retain, and protect their resources, and that stress occurs when these resources are lost or threatened (Hobfoll, 1989). Surface acting exacerbates this depletion by creating an internal conflict between felt and expressed emotions. Totterdell and Holman (2003) supported this idea by demonstrating that surface acting, but not deep acting, mediated the relationship between negative work events and emotional exhaustion. Further, Sliter et al. (2010) found that customer incivility contributed to emotional exhaustion primarily through surface acting. Expanding on these findings, Adams and Webster (2012) found that mistreatment from customers, coworkers, and supervisors contributed to

psychological distress through surface acting, whereas deep acting did not play the same mediating role. Additionally, Wójcik et al. (2022) found that surface acting mediated the relation between interpersonal conflicts at work and burnout. Together, these studies underscore the critical role of surface acting in linking emotional demands to adverse health, and wellbeing outcomes among workers. The present study focuses on surface acting as a mediating mechanism. While the original conceptualisation of emotional labour (Hochschild, 1983; Grandey, 2000) includes both surface and deep acting, the role of deep acting in health outcomes, and its theoretical position within COR is unclear. Therefore, deep acting was not included as a mediator in the present model.

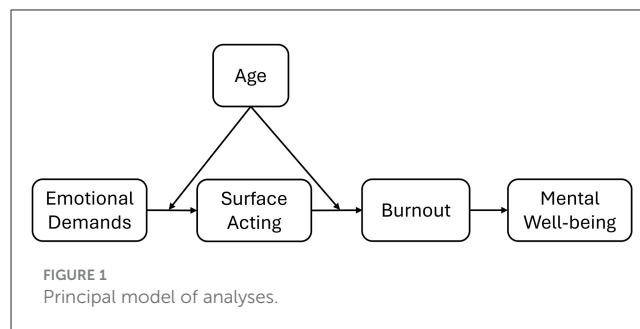
The impact of emotional demands and emotional labour is often examined in relation to burnout and mental health outcomes (e.g., de Jonge et al., 2008; Duarte et al., 2020; Jeung et al., 2018; van Vegchel et al., 2004). According to the Job Demand-Resources (JD-R) model, high job demands (e.g., emotional demands) can lead to strain, particularly when adequate resources are lacking, which over time contributes to the development of burnout (Demerouti et al., 2001). Burnout has been defined in various ways over the years, including three (Maslach and Jackson, 1981), or more recently two (Demerouti et al., 2001) core dimensions: exhaustion and disengagement. Exhaustion captures physical, cognitive, and emotional fatigue, reflecting the depletion of energy, while disengagement refers to emotional, cognitive, and behavioural detachment from work, integrating related concepts such as depersonalisation, reduced personal accomplishment, cynicism, and detachment. While burnout is primarily a work-related phenomenon, its effects can extend beyond the workplace, impacting employees' overall mental health and wellbeing (Chen et al., 2023). Employees facing high emotional demands and engaging in surface acting experience both increased strain and resource depletion, raising their risk of developing exhaustion and disengagement in relation to work (Maxwell and Riley, 2016). This can in turn extend beyond work, negatively affecting workers' overall mental wellbeing (see Salvagioni et al., 2017 for a review). Thus, exhaustion and disengagement can be seen as crucial mediators linking emotional work demands and surface acting to employees' mental wellbeing.

In addition, the effects of emotional demands and workers' use of regulatory strategies may vary with age. The Socioemotional Selectivity Theory (SST) (Carstensen, 1995; Carstensen et al., 1999) provides a theoretical foundation for understanding age-related differences in emotion regulation. The SST posits that as individuals age, they become increasingly motivated to prioritise emotionally meaningful experiences, optimising their emotional wellbeing by selectively engaging in situations that maximise positive emotions and minimise distress. This motivational shift leads older workers to adopt regulatory strategies, such as cognitive reappraisal and the avoidance of emotionally taxing interactions that support emotional wellbeing. Expanding on this, the Strength and Vulnerability Integration (SAVI) model (Charles, 2010) suggests that while older adults generally excel in regulating emotions, and avoiding unnecessary emotional distress, they are also more physiologically vulnerable to sustained and

intense emotional demands. Unlike younger workers, who may be more adaptable to fluctuating emotional stressors, older workers may experience heightened physiological strain when emotional demands are prolonged or intense, potentially amplifying the adverse effects of emotional labour. However, previous research has shown mixed results on how age influences the relationship between emotional demands, surface acting, and health. Van der Heijden et al. (2020) found that emotional demands predicted burnout among older but not younger Dutch nurses, whereas the opposite pattern was observed in Polish nurses. Similarly, Zoer et al. (2011) reported that emotional workload was linked to stress, fatigue, and burnout in middle-aged employees, but not in older workers. Additionally, Johnson et al. (2017) found that surface acting mediated the negative relationship between age and exhaustion, suggesting that the less frequent use of surface acting among older employees may partially explain their lower exhaustion levels. However, other research indicates that older employees experience fewer negative consequences from suppression, such as reduced stress and higher wellbeing (Yeung and Wong, 2020). Moreover, the relationship between emotional exposure and the effects of regulatory strategies may vary with age. Scheibe and Moghimi (2021) found that younger workers exhibited stronger maladaptive emotion regulatory responses to emotionally intense work events, compared to older workers. In another study, Scheibe (2021) found that age moderated the link between negative work events and emotion regulation, with older workers showing less activation in response to emotionally salient situations compared to younger workers. This suggests that age can influence the relationship between emotional demands and health at different stages, either by affecting the likelihood of using surface acting in response to emotional demands, or by moderating the link between surface acting and burnout. Understanding these dynamics is crucial for shaping workplace policies that support both younger and older workers in emotionally demanding jobs. However, since the direction and specific role of age in these processes remain unclear, and the relationship may not be linear, this study takes an exploratory approach concerning the role of age. Rather than proposing specific age-related hypotheses, we will examine age as a potential moderator in the relationship between emotional demands and surface acting, investigating whether workers of different ages engage in surface acting differently when facing emotional demands. Additionally, we will explore whether the link between surface acting and burnout (exhaustion and disengagement) varies by age. Furthermore, besides examining linear age effects, we will assess potential curvilinear age effects and compare age groups to comprehensively map possible age-related differences.

Aim

This study aims to investigate the complex relationships between emotional demands, surface acting, burnout, and mental wellbeing, and the role of age in shaping these relationships across three occupational groups. The principal model is presented in Figure 1.



Hypotheses

Direct effects

H1: Emotional demands are positively associated with surface acting, such that higher levels of emotional demands lead to increased use of surface acting.

H2a: Surface acting is positively associated with exhaustion, indicating that higher levels of surface acting leads to increased levels of exhaustion.

H2b: Surface acting is positively associated with disengagement, such that higher levels of surface acting leads to increased levels of disengagement.

H3a: Exhaustion is negatively associated with mental wellbeing, such that higher levels of exhaustion result in decreased mental wellbeing.

H3b: Disengagement is negatively associated with mental wellbeing, such that high levels of disengagement lead to decreased mental wellbeing.

Mediation hypotheses/indirect effects

H4a: Surface acting mediates the relationship between emotional demands and exhaustion, such that higher emotional demands indirectly lead to increased levels of exhaustion through surface acting.

H4b: Surface acting mediates the relationship between emotional demands and disengagement, such that higher levels of emotional demands indirectly lead to increased levels of disengagement through surface acting.

H5a: Exhaustion mediates the relationship between surface acting and mental wellbeing, where higher levels of surface acting indirectly result in decreased levels of mental wellbeing through increased levels of exhaustion.

H5b: Disengagement mediates the relationship between surface acting and mental wellbeing, where higher levels of surface acting indirectly result in decreased levels of mental wellbeing through increased levels of disengagement.

Serial mediation

H6a: Surface acting and exhaustion act as serial mediators in the relationship between emotional demands and mental wellbeing,

such that higher levels of emotional demands indirectly lead to decreased levels of mental wellbeing through increased levels of surface acting and exhaustion.

H6b. Surface acting and disengagement act as serial mediators in the relationship between emotional demands and mental wellbeing, such that higher levels of emotional demands indirectly lead to decreased levels of mental wellbeing through increased levels of surface acting and disengagement.

Robustness across groups

H7: The hypothesised relationships between emotional demands, surface acting, exhaustion, disengagement, and mental wellbeing hold across professional groups (healthcare, care, and service).

Methods

We conducted a cross-sectional online survey among professionals whose roles require regular interactions with patients, care-receivers, clients, or customers. The study received prior approval from the Swedish Ethical Review Authority (Nr: 2023-08117-01).

Power analysis

A priori power analyses using G*Power 3.1 (Faul et al., 2009) determined the minimum sample size for the model, with 800 responses needed to detect small effects ($f^2 = 0.02$) in the full sample. To ensure sufficient power for subgroup analyses, we tried to achieve 1,600 responses.

Data collection

Participants were recruited via employer-distributed emails and social media. Participation was voluntary, uncompensated, and conducted on a secure platform. Participants were informed about the study, data handling, and their rights. Eligibility criteria included: professionals in healthcare, care, or service roles who worked at least 40% full-time (i.e., ≥ 16 h/week), were not on sick or personal leave for more than 2 weeks, and had direct interaction with patients, care-receivers, clients, or customers. The healthcare group included roles within the healthcare system (e.g., nurse, doctor, care assistant, physiotherapist, psychologist); the care group encompassed human service roles (e.g., social worker, preschool teacher, nanny, eldercare worker); and the third group included roles involving human interaction outside of care provision (e.g., customer service, sales, hotel and restaurant staff, receptionist, real estate agent). Participants self-selected themselves into these categories and were encouraged to describe their roles. Recruitment targeted Swedish-speaking professionals through employers by social media.

Data collection occurred in two stages. Initially (Feb 17–June 20, 2024), organisations were recruited to distribute invitations

internally. However, only 33 individuals responded this way. In a later stage (Mar 26–June 24, 2024), social media ads were used. Posts on were shared via private accounts and in professional groups. In total, 1,506 participants completed the study. Among them, 1,406 (93.4%) were female, 93 (6.2%) male, and 7 (0.5%) unspecified. Ages ranged from 22 to 74 years ($M = 46.40$, $SD = 10.39$). SmartPLS 4 (Ringle et al., 2022) automatically imputed 17 missing data points in the data set. Full descriptive statistics, including occupational groupings, are in Table 1.

Measures

The questionnaire included demographics (age, gender, profession, education, work experience) and validated instruments. Data collection was part of a larger project.

Emotional demands were assessed using the six-item scale by Bakker et al. (2003), as presented in Xanthopoulou et al. (2013). The scale measures perceived emotional demands (e.g., “Is your work emotionally demanding?”) and challenging interactions (e.g., “Do you deal with clients who complain incessantly?”). Responses were given on a 5-point Likert scale.

Surface acting (3 items) was measured using the Surface Acting subscale of the Emotional Labour Scale (Brotheridge and Lee, 2003). Participants rated the extent to which they hide or fake emotions at work (e.g., “Hide my true feelings about a situation”) on a 5-point Likert scale.

The emotional labour and emotional demands scales were translated into Swedish by the authors and back-translated into English by a native speaker, with refinements through group discussions.

Burnout (16 items) was measured using the Swedish Oldenburg Burnout Inventory (OLBI) (Peterson et al., 2008), which assesses exhaustion (e.g., “There are days when I feel tired before I arrive at work”) and disengagement (e.g., “I tend to think less at work and do my job almost mechanically”). Responses were given on a 4-point Likert scale.

Mental wellbeing was measured using the Swedish version of the short-form Warwick-Edinburgh Mental Wellbeing Scale (SWEMWBS) (Ringdal et al., 2017). The seven-item scale assesses positive mental health (e.g., “I’ve been feeling optimistic about the future”). Responses were on a 5-point Likert scale (Tennant et al., 2007).

Analysis

PLS-SEM (using SmartPLS 4, Ringle et al., 2022) was chosen to ensure construct reliability and validity, validate the structural model, test hypotheses, explore age effects, and compare professional groups (Hair et al., 2019). Constructs were categorised as reflective or formative based on their theoretical and measurement rationale (Diamantopoulos and Siguaw, 2006), and were evaluated by principal component analysis (PCA), Variance Inflation Factor (VIF), significance and relevance of outer weights and loadings, and, when applicable, internal consistency reliability (Cronbach’s alpha, composite reliability [CR]), indicator

TABLE 1 Demographic characteristics of participants and subsamples.

Category	Total (N = 1,506)	Healthcare (N = 865)	Care (N = 453)	Service (N = 188)
Gender				
Female	1,406 (93.4%)	816 (94.3%)	425 (93.8%)	165 (87.8%)
Male	93 (6.2%)	47 (5.4%)	23 (5.1%)	23 (12.2%)
Unspecified	7 (0.5%)	2 (0.2%)	5 (1.1%)	0 (0.0%)
Age	M = 46.40 (10.39)	M = 45.70 (10.42)	M = 47.30 (10.34)	M = 47.53 (10.13)
Age range	22–74	22–69	22–72	24–74
Highest education				
Elementary school or less	10 (0.7%)			
High school	153 (10.2%)			
<3yearspost-secondary	213 (14.1%)			
3yearspost-secondary	281 (18.7%)			
>3yearspost-secondary	849 (56.4%)			
Work experience				
<3months	10 (0.7%)			
3–12months	70 (4.6%)			
1–3years	211 (14.0%)			
3–5years	165 (11.0%)			
5–10years	301 (20.0%)			
>10years	744 (49.4%)			

reliability (outer loadings), convergent validity (average variance extracted [AVE]), and discriminant validity (heterotrait–monotrait ratio [HTMT]) as recommended by Hair et al. (2022). The structural model was assessed for collinearity (VIF), explanatory power (R^2 , f^2), predictive relevance (Q^2), and coefficient strength (standardised beta [β]) and significance (p) for hypothesis testing. Measurement Invariance of Composite Models (MICOM) assessed construct validity and model equivalence, and Consistent bootstrap multigroup analysis (cb-MGA) compared path coefficients across occupational groups.

Results

Measurement model evaluation

Principal component analysis (PCA) was performed to assess the dimensionality of the constructs. The Kaiser–Meyer–Olkin (KMO) values ranged from 0.72 to 0.976, indicating adequate sampling for PCA. The PCA confirmed the unidimensionality of surface acting, exhaustion, and mental wellbeing, with only one eigenvalue >1 , and explained variance exceeding 50%. For emotional demands, two components emerged (eigenvalues: 2.99, 1.34), explaining 72.2% of the variance (49.9%, 22.4%). Item analysis identified two distinct dimensions: contact-related- and perceived emotional demands, leading to a two-factor model of emotional demands. For disengagement, two components

(eigenvalues: 3.46, 1.05) explained 56.5% of the variance (43.3%, 13.1%), suggesting borderline multidimensionality. The components aligned with positively and negatively phrased items, indicating a wording effect. Given the borderline eigenvalues and consistent unidimensional treatment in prior research, disengagement was retained as a single construct.

For the formative emotional demands construct collinearity was assessed using VIF values, with a threshold of 5 (Hair et al., 2022), confirming no multicollinearity concerns (Table 2). Examination of outer weights showed no significance for contact-related emotional demands item 5 ($p = 0.542$) and perceived emotional demands items 2 ($p = 0.382$) and 3 ($p = 0.139$). However, all had significant outer loadings ($p < 0.001$, see in Table 2), justifying their retention based on practical contribution (Hair et al., 2022).

Reflective constructs were evaluated by inspecting outer loadings, with values <0.40 considered unacceptable, 0.40 – 0.70 requiring further assessment, and >0.70 deemed reliable (Hair et al., 2022). Item 7 (“I find my work to be a positive challenge”) from disengagement was removed due to a low loading (0.323). Borderline indicators (exhaustion items 14 and 6, and disengagement item 13) were further examined for their impact on composite reliability (CR) and average variance extracted (AVE). CR and AVE results (Table 3) confirmed no reliability or validity issues for exhaustion. However, disengagement initially had low convergent validity (AVE = 0.477). Removing item 13 (“This is the only type of work that I can imagine myself doing”) improved

TABLE 2 Variance inflation factor (VIF), outer weights, and outer loadings for emotional demands indicators.

Indicator	VIF	Outer weight	<i>p</i>	Outer loading	<i>p</i>
Emotional_Demands_Contact_4	2.039	0.444	<0.001	0.857	<0.001
Emotional_Demands_Contact_5	1.762	−0.066	0.542	0.609	<0.001
Emotional_Demands_Contact_6	1.902	0.697	<0.001	0.947	<0.001
Emotional_Demands_Percieved_1	1.630	1.142	<0.001	0.978	<0.001
Emotional_Demands_Percieved_2	1.550	−0.108	0.382	0.398	<0.001
Emotional_Demands_Percieved_3	1.602	−0.193	0.139	0.381	<0.001

VIF, Variance Inflation Factor. *p*-values indicate significance levels for outer weights and outer loadings. Paths with *p* < 0.05 are considered statistically significant and are shown in bold.

TABLE 3 Reliability and validity of reflective constructs after removing item 7 and item 13 on the disengagement construct.

Construct	Cronbach's α	ρ_a	ρ_c	AVE
Disengagement	0.814	0.824	0.866	0.520
Exhaustion	0.858	0.866	0.891	0.508
Mental Wellbeing	0.847	0.851	0.884	0.521
Surface Acting	0.782	0.784	0.873	0.697

Thresholds for evaluating construct reliability and validity: Cronbach's alpha and composite reliability (ρ_a and ρ_c) >0.70 to demonstrate acceptable internal consistency reliability and average variance extracted (AVE) \geq 0.50 to confirm convergent validity (Hair et al., 2022).

AVE to 0.520. Internal consistency reliability was strong, with Cronbach's alpha and composite reliability (ρ_a , ρ_c) exceeding 0.80. HTMT values with a <0.90 threshold (Hair et al., 2022) indicated acceptable discriminant validity (Table 4).

Structural model evaluation

The structural model is presented in Figure 2. All VIF values (Table 5) were below the recommended threshold of 5.0 (Hair et al., 2022), confirming that multicollinearity posed no concern. The model demonstrated weak explanatory power for surface acting ($R^2 = 0.137$, $p < 0.001$), borderline weak-to-moderate power for exhaustion ($R^2 = 0.24$, $p < 0.001$), moderate power for disengagement ($R^2 = 0.26$, $p < 0.001$), and borderline moderate-to-substantial power for mental wellbeing ($R^2 = 0.499$, $p < 0.001$). Effect size analysis (Table 5) showed that surface acting had a large effect on disengagement ($f^2 = 0.329$, $p < 0.001$) and exhaustion ($f^2 = 0.302$, $p < 0.001$), while exhaustion strongly influenced mental wellbeing ($f^2 = 0.238$, $p < 0.001$). Emotional demands had small but significant effects on surface acting (contact: $f^2 = 0.077$, $p < 0.001$; perceived: $f^2 = 0.036$, $p = 0.002$), and disengagement had a small effect on mental wellbeing ($f^2 = 0.069$, $p < 0.001$). Age had no meaningful effects on surface acting, exhaustion, or disengagement ($f^2 \leq 0.010$, $p > 0.05$), nor did it interact significantly with other variables ($f^2 = 0$, $p > 0.05$).

The predictive relevance of the model was assessed using Q^2 values, calculated through the PLS Predict procedure, where $Q^2 > 0$ indicates that the model has predictive relevance for the given construct (Hair et al., 2022). Q^2 values for all endogenous constructs such as exhaustion ($Q^2 = 0.134$), disengagement ($Q^2 = 0.117$),

mental wellbeing ($Q^2 = 0.085$), and surface acting ($Q^2 = 0.126$) were positive, but weak, suggesting that while the model can predict omitted data, its predictive power remains limited.

Hypothesis testing

Contact-related ($\beta = 0.271$, $p < 0.001$) and perceived ($\beta = 0.184$, $p < 0.001$) emotional demands were positively associated with surface acting, confirming H1. Surface acting, in turn, were positively associated with exhaustion ($\beta = 0.481$, $p < 0.001$), and disengagement ($\beta = 0.495$, $p < 0.001$), confirming H2a and H2b. Exhaustion ($\beta = -0.451$, $p < 0.001$) and disengagement ($\beta = -0.245$, $p < 0.001$) both were negatively associated with mental wellbeing, confirming H3a and H3b.

Contact-related and perceived emotional demands had significant positive indirect effects on exhaustion ($\beta = 0.131$, $p < 0.001$; $\beta = 0.088$, $p < 0.001$), and disengagement ($\beta = 0.134$, $p < 0.001$; $\beta = 0.091$, $p < 0.001$) via surface acting, confirming H4a and H4b. Surface acting had a significant negative indirect effect on mental wellbeing via exhaustion ($\beta = -0.217$, $p < 0.001$) and disengagement ($\beta = -0.121$, $p < 0.001$), confirming H5a and H5b.

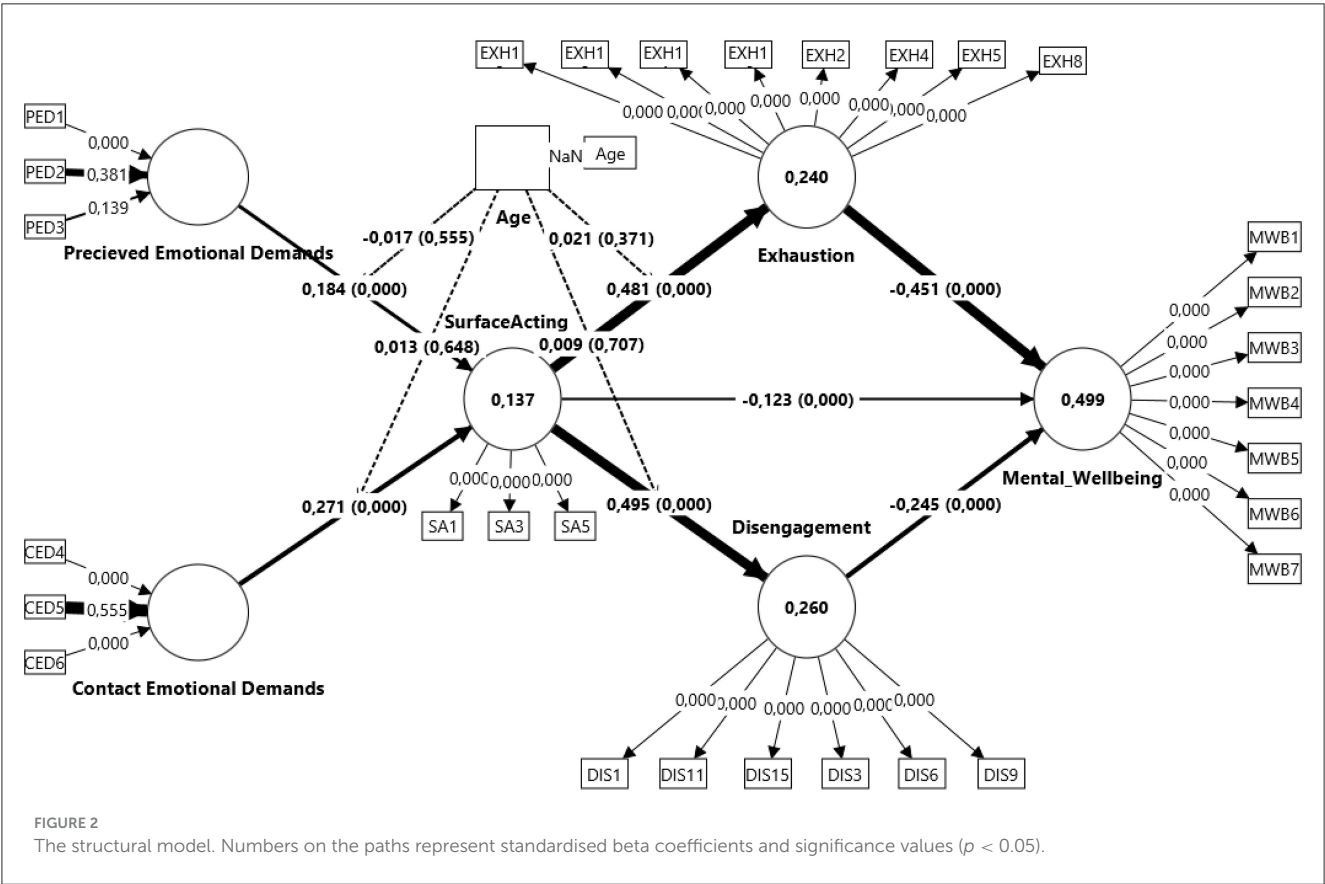
For the serial indirect effects, contact-related ($\beta = -0.059$, $p < 0.001$) and perceived ($\beta = -0.040$, $p < 0.001$) emotional demands were negatively associated with mental wellbeing through surface acting and exhaustion, confirming H6a. Similarly, contact-related ($\beta = -0.033$, $p < 0.001$) and perceived ($\beta = -0.022$, $p < 0.001$) emotional demands were indirectly negatively associated with mental wellbeing via surface acting and disengagement, confirming H6b.

The MICOM confirmed configural invariance as the structure remained the same across professional groups. Compositional invariance was largely supported, allowing path coefficient comparisons. However, scalar invariance was not met, necessitating caution when interpreting mean differences. The cb-MGA indicated no significant differences in path coefficients, explanatory power (R^2), or effect sizes (f^2), suggesting structural consistency across healthcare, care, and service professionals. This confirms that the model holds across the explored professional groups (H7). Although the path from perceived emotional demands to surface acting was non-significant, the standardised beta was higher in the service group than in the care group ($\beta = 0.152$, $p = 0.001$), suggesting that the non-significance likely reflects the smaller sample size rather than a true group difference.

TABLE 4 Heterotrait–monotrait (HTMT) Ratios of correlations.

Constructs	Disengagement	Exhaustion	Mental wellbeing	Surface acting
Disengagement	–	0.708	0.693	0.625
Exhaustion	0.708	–	0.756	0.580
Mental wellbeing	0.693	0.756	–	0.567
Surface acting	0.625	0.580	0.567	–

HTMT values <0.90, indicate acceptable discriminant validity (Hair et al., 2022).



Age analyses

Age had a small, significant direct negative linear effect on disengagement ($\beta = -0.086$, $p < 0.001$) and exhaustion ($\beta = -0.057$, $p = 0.012$), but not on surface acting (Table 5). However, linear age did not moderate the relationships between emotional demands and surface acting, nor between surface acting and burnout, suggesting no linear moderation effects. For the curvilinear effects of age, significant direct quadratic effects were found for disengagement ($\beta = 0.072$, $p = 0.004$) and surface acting ($\beta = -0.054$, $p = 0.029$), however, no quadratic effect was observed for exhaustion. Quadratic age did not moderate the relationships between emotional demands and surface acting, nor between surface acting and burnout, suggesting no curvilinear moderation effects (Table 5).

A consistent bootstrapped multi-group analysis (cb-MGA) across five age groups (under 30: $n = 77$; 30–39: $n = 368$; 40–49: $n = 402$; 50–59: $n = 793$; 60+: $n = 166$) revealed that only perceived emotional demands had a significantly stronger effect on surface

acting in the 60+ group compared to the 50–59 group ($\beta = -0.242$, $p = 0.010$), with a significant effect size, ($f^2 = -0.145$, $p = 0.044$), suggesting, that the oldest group used more surface acting when perceiving emotional demands are high, compared to 50–59 years old workers.

While no additional significant age group differences were found on the effect of emotional demands (perceived and contact) on surface acting, and on the effects of surface acting on exhaustion and disengagement, the trends (see Figure 3) suggest that the oldest group (60 and over) is less prone to use surface acting in relation to contact-related emotional demands, and that they tend to report slightly more exhaustion and disengagement when engaging in surface acting.

Discussion

We examined the relationships between emotional demands, surface acting, burnout, and mental wellbeing across healthcare,

TABLE 5 Results of hypothesis testing and structural model evaluation, including direct, indirect, and moderated effects with VIF and effect sizes.

H	Decision	Path	β	p	95% CI (2.5%–97.5%)	VIF	f^2
Direct effects							
H1	Confirmed	Contact Emotional Demands → Surface Acting	0.271	<0.001	[0.223, 0.323]	1.106	0.077
H1	Confirmed	Perceived Emotional Demands → Surface Acting	0.184	<0.001	[0.131, 0.240]	1.082	0.036
H2a	Confirmed	Surface Acting → Exhaustion	0.481	<0.001	[0.438, 0.523]	1.007	0.302
H2b	Confirmed	Surface Acting → Disengagement	0.495	<0.001	[0.455, 0.536]	1.007	0.329
H3a	Confirmed	Exhaustion → Mental Wellbeing	−0.451	<0.001	[−0.498, −0.404]	1.709	0.238
H3b	Confirmed	Disengagement → Mental Wellbeing	−0.245	<0.001	[−0.298, −0.195]	1.746	0.069
Indirect effects							
H4a	Confirmed	Contact Emotional Demands → Surface Acting → Exhaustion	0.131	<0.001	[0.104, 0.161]		
H4a	Confirmed	Perceived Emotional Demands → Surface Acting → Exhaustion	0.088	<0.001	[0.061, 0.119]		
H4b	Confirmed	Contact Emotional Demands → Surface Acting → Disengagement	0.134	<0.001	[0.107, 0.166]		
H4b	Confirmed	Perceived Emotional Demands → Surface Acting → Disengagement	0.091	<0.001	[0.064, 0.121]		
H5a	Confirmed	Surface Acting → Exhaustion → Mental Wellbeing	−0.217	<0.001	[−0.247, −0.190]		
H5b	Confirmed	Surface Acting → Disengagement → Mental Wellbeing	−0.121	<0.001	[−0.151, −0.094]		
		Age → Exhaustion → Mental Wellbeing	0.026	0.014	[0.006, 0.046]		
		Age → Disengagement → Mental Wellbeing	0.021	0.001	[0.009, 0.035]		
Serial indirect effects							
H6a	Confirmed	Contact Emotional Demands → Surface Acting → Exhaustion → Mental Wellbeing	−0.059	<0.001	[−0.074, −0.046]		
H6a	Confirmed	Perceived Emotional Demands → Surface Acting → Exhaustion → Mental Wellbeing	−0.040	<0.001	[−0.055, −0.027]		
H6b	Confirmed	Contact Emotional Demands → Surface Acting → Disengagement → Mental Wellbeing	−0.033	<0.001	[−0.045, −0.023]		
H6b	Confirmed	Perceived Emotional Demands → Surface Acting → Disengagement → Mental Wellbeing	−0.022	<0.001	[−0.032, −0.015]		
Age effects							
		Age → Exhaustion	−0.057	0.012	[−0.103, −0.013]	1.008	0.004
		Age → Disengagement	−0.086	<0.001	[−0.133, −0.041]	1.008	0.010
		Age → Surface Acting	−0.025	0.329	[−0.073, 0.025]	1.033	0.001
		Surface Acting → Mental Wellbeing	−0.123	<0.001	[−0.169, −0.075]	1.436	0.021
		Age → Surface Acting → Disengagement → Mental Wellbeing	0.003	0.336	[−0.003, 0.009]		
		Age → Surface Acting → Exhaustion → Mental Wellbeing	0.005	0.332	[−0.005, 0.016]		
Linear age moderation effects							
		Age × Contact Emotional Demands → Surface Acting	0.013	0.648	[−0.042, 0.068]		
		Age × Perceived Emotional Demands → Surface Acting	−0.017	0.555	[−0.073, 0.041]		
		Age × Surface Acting → Exhaustion	0.021	0.371	[−0.026, 0.066]		
		Age × Surface Acting → Disengagement	0.009	0.707	[−0.040, 0.058]		

(Continued)

TABLE 5 (Continued)

H	Decision	Path	β	p	95% CI (2.5%–97.5%)	VIF	f^2
Quadratic age direct effects							
		Z_Age ² → Disengagement	0.072	0.004	[0.023, 0.120]		
		Z_Age ² → Exhaustion	0.001	0.961	[−0.041, 0.044]		
		Z_Age ² → Surface Acting	−0.054	0.029	[−0.102, −0.004]		
Quadratic age moderation effects							
		Z_Age ² × Perceived Emotional Demands → Surface Acting	0.048	0.082	[−0.007, 0.100]		
		Z_Age ² × Contact Emotional Demands → Surface Acting	0.018	0.534	[−0.040, 0.071]		
		Z_Age ² × Surface Acting → Disengagement	−0.007	0.796	[−0.055, 0.045]		
		Z_Age ² × Surface Acting → Exhaustion	0.005	0.815	[−0.038, 0.051]		

H, Hypothesis. Paths with $p < 0.05$ are considered statistically significant and marked with bold. β , Standardised beta coefficient.



care, and service professionals. Moreover, we explored the role of age by testing linear and curvilinear moderation effects on the paths between emotional demands and surface acting, and between surface acting and burnout, and by comparing these relationships across five age groups. We found that higher emotional demands (both perceived and contact-related) were associated with increased surface acting, which in turn contributed to greater exhaustion and disengagement, ultimately reducing workers' mental wellbeing. These relationships were similar across healthcare, care, and service professionals. Age did not moderate the relationships between emotional demands and surface acting, nor between surface acting and burnout, regardless of whether age was examined as a linear or curvilinear factor. However, age group comparisons revealed that perceived emotional demands more strongly predicted surface acting in the 60+ group compared to the 50–59 group.

Direct and indirect effects

In line with previous research (Adams and Webster, 2012; Maxwell and Riley, 2016; Sliter et al., 2010; Totterdell and Holman, 2003; Wójcik et al., 2022), our findings confirm that exposure to emotional work demands, both perceived and contact-related were associated with an increased use of surface acting. This supports Grandey's (2000) and Zapf et al.'s (2021) suggestions that employees facing emotional demands use surface acting to create emotional expressions that align with the display requirements of their workplace or professional role. Surface acting, in turn, was strongly associated with both exhaustion and disengagement, supporting previous research suggesting that sustained effort of presenting inauthentic emotional expressions when facing emotional demands depletes psychological resources and contributes to burnout (Yang and Chen, 2020; Zapf et al., 2021). This confirms previous suggestions

that presenting inauthentic emotional expressions when facing emotional demands both drains employees' psychological resources and contribute to psychological withdrawal from work (Brotheridge and Grandey, 2002; Grandey, 2000; Hülshager and Schewe, 2011).

Our findings also align with research identifying surface acting as a key mechanism linking emotional demands to negative health outcomes (Adams and Webster, 2012; Maxwell and Riley, 2016; Sliter et al., 2010; Totterdell and Holman, 2003). High emotional demands were indirectly associated with increased exhaustion and disengagement, supporting the Job Demands–Resources (JD-R) model (Bakker and Demerouti, 2017; Demerouti et al., 2001). Additionally, our findings align with the suggestions based on the Conservation of Resources (COR) theory (Hobfoll, 1989), in that surface acting in response to emotional demands contributes to burnout and mental wellbeing, by the depletion of psychological resources (Totterdell and Holman, 2003). However, the persistence of direct effects indicates partial mediation, implying that while surface acting is a key pathway, additional factors also shape the relationship between emotional demands and burnout. This underscores the need to investigate additional mechanisms influencing how employees respond to emotional demands.

Emotional demands and surface acting were both indirectly associated with reduced mental wellbeing, suggesting that emotional exposure and regulation at work have psychological consequences that extend beyond the workplace (Maxwell and Riley, 2016; Salvagioni et al., 2017). Specifically, exhaustion and disengagement mediated the relationship between surface acting and mental wellbeing and together formed a serial pathway linking emotional demands (both perceived and contact-based) to reduced wellbeing. This suggests a process whereby high emotional demands lead to surface acting, which in turn increases exhaustion and disengagement, ultimately undermining mental wellbeing. Supporting this, emotional demands and surface acting together explained 24% of the variance in exhaustion and 26% in disengagement and collectively accounted for nearly half of the variance in mental wellbeing. These findings reinforce that emotional demands calling for emotion regulatory processes at work are key drivers of burnout and should be considered occupational health hazards (Bakker and Demerouti, 2017; Hülshager and Schewe, 2011). Proactive measures are therefore essential to mitigate their negative impact on employees' overall psychological wellbeing.

The investigated model confirmed that burnout (exhaustion and disengagement) and mental wellbeing represent related but distinct aspects of individual experience. Theoretically, exhaustion reflects the depletion of emotional and physical resources, disengagement indicates psychological withdrawal from work (Demerouti et al., 2001), while mental wellbeing captures a broader state of psychological functioning, including thriving, emotional wellbeing, and positive interpersonal relationships (Tennant et al., 2007). Empirically, this distinction was supported through the validation of the measurement model. The Heterotrait–monotrait (HTMT) ratio of correlations showed that exhaustion, disengagement, and mental wellbeing

are statistically distinct constructs, confirming that burnout is separate from mental wellbeing. These findings support the theoretical view that although burnout stems from work-related stressors (Bakker and Demerouti, 2017; Demerouti et al., 2001), its impact extends beyond the workplace, influencing employees' overall psychological health (Chen et al., 2023).

Professional groups

Our model was consistent across healthcare, care, and service professional groups, indicating that the relationships between emotional demands, surface acting, and burnout operate similarly across fields, underscoring their substantial impact in these occupations. The only exception was the non-significant path between perceived emotional demands and surface acting in the service group. However, as the path coefficient was stronger in the service group than in the care group, this likely reflected the smaller sample size rather than a true absence of effect. Smaller samples increase standard error variability, widening confidence intervals and reducing the likelihood of detecting significance despite meaningful effects (Hair et al., 2022).

Age-related findings

We found limited evidence of age-related differences in how emotional demands influence surface acting, or how age-related differences in surface acting affects burnout. Socioemotional Selectivity Theory (SST; Carstensen, 1995) and the Strength and Vulnerability Integration (SAVI) model (Charles, 2010) suggest that emotion regulation improves with age. Prior studies have reported age-related advantages in the use of surface acting and suppression among older workers (Johnson et al., 2017; Yeung and Wong, 2020; Scheibe and Moghimi, 2021; Scheibe, 2021). Additionally, SAVI highlights potential age-related vulnerabilities in response to emotionally salient stimuli, and earlier research showed mixed findings regarding the role of age in emotional demands (Van der Heijden et al., 2020; Zoer et al., 2011). In contrast to these findings, our results showed no significant linear nor curvilinear age effects, nor differences between age groups in the relationship between surface acting and burnout. This suggests that employees across age groups experience similar levels of exhaustion and disengagement when engaging in surface acting.

One exception to this pattern emerged: perceived emotional demands were more strongly associated with surface acting among workers aged 60 and above compared to those aged 50–59. This suggests that the oldest group may rely more on surface acting when experiencing high emotional demands. While this could reflect increased vulnerability when facing emotional work demands (Reh et al., 2021), it did not translate into significantly higher levels of burnout. However, a non-significant trend indicated that workers aged 60+ reported slightly more exhaustion and disengagement when using surface acting. This may suggest that

perceived emotional demands prompt greater reliance on surface acting among the oldest workers, which in turn could be more psychologically taxing, potentially due to the strain of emotional inauthenticity (Walsh and Bartikowski, 2013). Conversely, another non-significant trend suggested that the oldest group used less surface acting in response to contact-related emotional demands, aligning with findings that older workers may avoid maladaptive emotion regulation strategies in some contexts (Scheibe and Moghimi, 2021). Given the small sample size of the oldest group and the lack of statistical significance, these findings should be interpreted with caution. Nonetheless, they underscore the need for further research into how the oldest workers were affected by emotional exposure and the use of surface acting which can have consequences for their wellbeing.

Although, we found that age has a small significant negative direct effect (but with a negligible effect size) on disengagement and exhaustion, considering the age-moderation analyses, and age group comparisons, this effect could not be explained by age-related differences in the effect of emotional demands and surface acting. Instead, the slightly lower burnout rates might suggest a different mechanism buffering against workplace strain. Older workers might self-select into roles that better match their occupational capacities (Wong and Tetrick, 2017), potentially resulting in lower burnout levels. Another possible explanation is the healthy worker effect, where only those who develop effective strategies to manage workplace challenges remain in their careers at later stages (Chowdhury et al., 2017; Li and Sung, 1999) and, as a result, experience lower levels of burnout and disengagement compared to younger workers, and those who may have left such professions earlier.

Implications

To reduce the health impact of emotional demands and surface acting, organisations could implement supportive structural and cultural practises. Given the identified distinction between contact-related (task-based) and perceived (subjective experience) emotional demands, we recommend that organisations assess both types when planning interventions. This may help clarify whether strain stems from the amount of emotional exposure or from how emotionally taxing workers perceive their jobs to be, enabling more tailored support strategies. Where task-related emotional exposure cannot be reduced, resources such as job control, collegial support, and access to mental health services may help lower workers perceived emotional strain. Interventions that build psychological flexibility such as emotion regulation and value-based approaches might also help workers respond more adaptively. Promoting psychological safety and a strong psychosocial safety climate (Dollard and Bakker, 2010) may further support wellbeing through emotional authenticity, balanced workloads, and supportive leadership. Additionally, the absence of broad age differences suggests that these emotional burdens affect workers similarly across the lifespan. Given this null result, we cannot recommend specific age-based workplace adjustments related to emotional demands and surface acting. However, our findings do not rule out the possibility that age-related effects operate through other mechanisms (e.g., work experience, tenure,

type of emotional exposure, or the use of other regulatory or coping strategies). Therefore, organisations may remain mindful of age-related factors and consider offering targeted support to workers, to safeguard their health and promote sustained workforce participation.

Strengths and limitations

This study offers several notable strengths. We used a large, diverse sample from multiple occupations in healthcare, care, and service sectors, enhancing generalizability. The tested model supported all seven theory-driven hypotheses, with substantial effect sizes and explained variance. Measures were validated and the model structure was consistent across occupational groups. We also applied three complementary methods to explore age effects, ensuring a thorough examination despite null findings. However, several limitations should be acknowledged. Recruitment via social media may have introduced self-selection bias, though it likely enhanced authenticity compared to panel-based sampling. All data were self-reported and cross-sectional, limiting causal inference and raising the risk of common method bias (CMB; Podsakoff et al., 2003). However, procedural controls (e.g., anonymity, confidentiality, varied scale formats) were used, and statistical diagnostics (VIFs) indicated that CMB did not substantially influence the results. The predominantly female sample reflects gender distributions of these professions in Sweden (National Board of Health and Welfare, 2023), but limits generalisability. While this enhances ecological validity within Sweden's healthcare, care, and service sectors, it restricts the extent to which the findings can be applied to male participants or male-dominated occupational settings. Due to the small number of male participants, gender-stratified analyses were not feasible, and potential gender differences in emotional labour processes could not be explored in this study. Additionally, the smaller sample size in the service group may have reduced statistical power in subgroup analyses, though consistent patterns across groups suggest broader applicability. Finally, as only emotional demands were included in the model, the role of other work demands and resources in shaping these relationships remains unclear.

Future research

It would be desirable if future longitudinal or experimental studies could clarify how emotional demands and surface acting change over time, while accounting for factors such as early career exit and the healthy worker effect. Research focusing on workers aged 60 and above may reveal age-specific patterns in perceived emotional demands and surface acting, informing strategies to support longer workforce participation. Identifying protective factors across age groups would be crucial in designing interventions. Likewise, future studies should explore gender differences in emotional labour processes, ideally using more gender-balanced or stratified samples across occupational groups. Further studies may also examine alternative regulatory strategies, such as acceptance, reappraisal, or deep acting, in

response to emotional demands, and their links to health outcomes. These strategies, unlike surface acting may represent resource-based moderators rather than mediators, therefore future research should carefully consider their theoretical roles when designing mediation models. In particular, deep acting may be studied as a personal resource, potentially buffering against the negative health effects of emotional demands. Finally, exploration of additional job-specific emotional demands and resources is warranted to better understand their combined impact on wellbeing.

Conclusions

This study highlights the central role of emotional demands and surface acting in driving burnout and reduced mental wellbeing, as illustrated in the tested model. All hypotheses were supported, linking emotional demands to surface acting, burnout, and mental wellbeing both directly and indirectly. Surface acting emerged as a mediator between emotional demands and burnout, with the burnout components of exhaustion and disengagement further mediating the effects of these predictors on mental wellbeing. This pattern was consistent across healthcare, care, and service professions. While linear and curvilinear representations of age showed minor associations with burnout and surface acting, neither linear, nor curvilinear age moderated the main relationships. This suggests that lower burnout levels at older ages may be due to factors beyond differences in emotional demands or surface acting. One exception emerged: perceived emotional demands had a stronger effect on surface acting among workers aged 60+ than those aged 50–59, indicating greater reliance on surface acting in the oldest group. However, further studies replicating this finding is needed before any firm conclusions on age can be made. In sum, the present study has offered new insights into how emotional demands and surface acting shape wellbeing across professions and ages, underscoring the need to recognise them as key occupational health hazards.

Data availability statement

The datasets presented in this article are not readily available because due to ethical and privacy restrictions, the data are not publicly available but may be made available by TP upon reasonable request. Requests to access the datasets should be directed to timea.zsuzsanna.popucza@hig.se.

Ethics statement

The studies involving humans were approved by Swedish Ethical Review Authority (Reference Number 2023-08117-01). The studies were conducted in accordance with the local legislation and institutional requirements. The participants provided their written informed consent to participate in this study.

Author contributions

TP: Writing – review & editing, Writing – original draft. LE: Writing – review & editing. ME: Writing – review & editing.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Generative AI statement

The author(s) declare that Gen AI was used in the creation of this manuscript. To improve the clarity and readability of the manuscript, OpenAI's ChatGPT (OpenAI, 2023) was used for language editing, including grammar, phrasing, and structural refinements. The author(s) take full responsibility for the content of this manuscript.

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Supplementary material

The Supplementary Material for this article can be found online at: <https://www.frontiersin.org/articles/10.3389/forgp.2025.1628713/full#supplementary-material>

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