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Multidimensional Perfectionism is Related to Burnout in Surgeons

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Abstract

Accounts of work-related pressure by surgeons suggest a link between burnout – an unhealthy occupational phenomenon – and perfectionism – the perceived or actual need to be perfect. Adopting a stress-based theoretical framework, the present study assesses the degree to which different dimensions of perfectionism are related to surgeon burnout. Using a cross-sectional design, 298 registered surgeons in the UK completed an online survey that included the brief Multidimensional Perfectionism Scale (Cox et al., 2002) and the Maslach Burnout Inventory (Maslach et al., 2016). Analyses showed that, when surgeons expected themselves to be perfect, they reported higher exhaustion and, when they reported that others expected them to be perfect, they reported higher levels of all three elements of burnout. Perceptions that others expected them to be perfect was the most important predictor of each element of burnout. Reducing these perceptions via targeted intervention, improved training, and workplace changes may help prevent surgeon burnout.

Keywords: wellbeing, motivation, performance

Introduction

Burnout is described by the World Health Organization (2025) in the International Classification of Diseases (ICD-11) as an occupational phenomenon related to chronic work-based stress. It has three core elements: emotional exhaustion, depersonalization and (low) personal accomplishment (Maslach and Jackson, 1981). While it is not formally recognized as a medical condition, it is related to a range of mental health and performance related problems which make it an important issue in a work context. This is especially the case in medical professions and for surgeons, in particular, for whom work demands are typically high and who routinely undertake life-changing and life-saving work. Accounts of surgeons reinforce the notion that burnout is a significant but underrecognized issue in the profession with recent work highlighting its importance to surgeons and patients alike (e.g., Al-Ghunaim et al., 2022a).

As reflected in its definition and description, the prevailing view of burnout is that it is the result of prolonged stress, occurring when emotional and situational demands exceed available resources over an extended period of time (Maslach et al., 2001). This explanation has been expanded in formal models to take into account job demands, job resources, and personal resources (Bakker and Demerouti, 2007). Other more social-based models also exist and have emphasized interpersonal relationships at work such as perceptions of effectiveness and supportiveness from others (Harrison, 1983), as well as reciprocity of relationships in the workplace (Schaufeli et al., 1996). However, overall, rather than offering alternative explanations for burnout, these models can also be understood within a broader stress-based perspective in which features of the work environment contribute to the overall balance between demands and resources.

The prevalence of surgeon burnout is difficult to estimate. This is because there are multiple instruments used to measure burnout and the thresholds for identifying levels of

burnout, when available, vary. However, by way of example, using the most common measure of burnout (the Maslach Burnout Inventory; Maslach and Jackson, 1981), one recent meta-analysis estimated that nearly a third of surgeons may exhibit high levels of at least one of its symptoms (Bartholomew et al., 2018). Estimates of the number of surgeons exhibiting high levels of all three symptoms was much lower at approximately 3%. However, of note, in absolute terms, this represents a significant number of practicing surgeons. In addition, these estimates are reasonably consistent with the prevalence of formally recognized mental health conditions (Kelloway et al., 2023).

Along with its prevalence, there are other reasons to be concerned about surgeon burnout. Namely, burnout is harmful to surgeons and their patients. In regard to surgeons, for instance, there is evidence that burnout is related to higher conflict at home (Dyrbye et al., 2011), depressive symptoms (Faivre et al., 2018), and thoughts of suicide (Shanafelt et al., 2011). In regard to patients, a recent review and meta-analysis on the topic showed that surgeon burnout is related to worse patient safety and patient care in the form of increased likelihood of medical errors and lower professionalism (Al-Ghunaim et al., 2022b). As such, burnout can have a profound and negative effect on many aspects of a surgeons personal and professional life.

In order to better support surgeons with these issues, research has identified a range of demographic, work-related, and personality factors related to surgeon burnout (see Galaiya et al., 2020). Surgeons who score higher on burnout tend to be younger, female, and single, for example. They also tend to work longer hours and nights, have poorer relationships at work, and lack mentorship opportunities. From a personality perspective, they also tend to be more neurotic, less extraverted, agreeable, conscientious, and less resilient and mindful. Some of these factors are modifiable and point to the need for better support during formative training and more manageable and positive work environments. However, paradoxically, some of the

risk factors appear to be attributable to recruitment and training practices within the profession, and the attitudes and values surgeons are encouraged to adopt to succeed (Cope et al., 2017).

Multidimensional Perfectionism

In keeping with this idea are the accounts of surgeons that suggest their proneness to burnout may partly reflect the tendency to be perfectionistic in their work (Al-Ghunaim et al., 2022; Robinson et al., 2021). Perfectionism has been defined as the perceived or actual requirement to be perfect (Hewitt and Flett, 2004). It is a complex and easily misunderstood personality trait. As perfectionism can underpin effort, commitment, and dedication, it might reasonably be seen as something desirable or even necessary in a profession such as surgery. It is a profession where both the stakes and threat of personal litigation can be extremely high so the goal of performing perfectly is alluring (Ahuja, 2024). However, perfectionism is also a major source of stress and mental health problems. As such, when the various ways perfectionism can be helpful or harmful are weighed against each other, it is typically regarded as something that needs to be reduced rather than encouraged (Hill et al., 2025a).

One influential approach to studying perfectionism is to distinguish between whether perfectionistic demands are imposed on the self (self-oriented perfectionism), imposed on other people (other-oriented perfectionism), or perceived to be imposed by others (socially prescribed perfectionism; Hewitt and Flett, 1991). This distinction is very important when seeking to understand the effects of perfectionism as they can differ. Research has shown that self-oriented perfectionism is typically related to an ambiguous mix of motivation, performance, and mental health issues, and is particularly problematic under conditions of stress (e.g., Besser et al., 2008). By contrast, other-oriented perfectionism is typically unrelated to personal problems but is related to social difficulties and trouble maintaining positive relationships with others (e.g., Stoeber 2014). Finally, socially prescribed

perfectionism, with its neurotic and oppressive undertones, is the unhealthiest of the three and is typically related to severe mental health issues (e.g., Smith et al., 2018)

The differences between the three dimensions extend to burnout, generally, with socially prescribed perfectionism typically being the strongest predictor and the role of the other two dimensions more uncertain (Hill and Curran, 2016). In the case of self-oriented perfectionism, the relationship is sometimes even negative, especially when statistically controlling for the other two dimensions (e.g., Childs and Stoeber, 2010). The relationship between these three dimensions of perfectionism and surgeon burnout has yet to examined. However, two qualitative studies exploring the experiences of burnout among current and training surgeons have noted that perfectionism tends to be high among those who choose surgery as a specialism and is an ongoing source of disappointment among surgeons in their careers (Al-Ghunaim et al., 2022a; Robinson et al., 2021). In addition, one recent study found that other forms of perfectionism are related to higher burnout in surgeons (Malempati et al., 2025). With these studies in mind, along with possible implications for intervention, training, and organisational change, we sought to provide a first test of the relationship between the three aforementioned dimensions of perfectionism and surgeon burnout.

The Present Study

The aim of the present study was to examine whether perfectionism predicts burnout in surgeons and, in doing so, seek to identify to what degree each of the three dimensions of perfectionism may be risk factors for burnout in surgeons. Based on existing research in this area, we hypothesised that (H1) self-oriented perfectionism would negatively predict all burnout symptoms, (H2) socially prescribed perfectionism would positively predict all burnout symptoms, and (H3) other oriented perfectionism would be unrelated to all burnout symptoms.

Method

Participants and Procedure

Following our preliminary analysis (see section below), participants were 298 GMC registered surgeons. Their mean age was 48.31 (SD = 10.23, 27 to 67 years old) and they were typically male (196 males, 100 females, 2 preferred not to say). The ethnicity of the surgeons was typically white-British (180) and Asian or Asian British – Indian (38), with a smaller number of other ethnicities also represented (e.g., Asian or Asian British – Pakistani [9], - Bangladeshi [5]). The surgeons were typically married (226) or in a relationship (39) with a smaller number single (15), divorced (9), separated (5) or reporting another status (4, engaged, widowed, or preferred not to say). The surgeons reported being qualified doctors for 24.07 years (SD = 10.44). The most common types of specialities were orthopaedic surgeon (65), general surgeon (37) colorectal (30), ENT (29) and urologist (22) with most being consultants (217) and the rest evenly split across other grades (CTI2/STI-2 = 13, SR3/4 = 16, STI5/6 = 14, ST7/8, post-CCT fellow = 15, non-consultant career grade doctor = 23).

Surgeons were recruited via personal networks, scholarly societies and private hospitals via advertisement and direct contact. All surgeons were required to be registered with the General Medical Council to take part in the study. We had a minimum target sample size of 109 surgeons based on an a priori power analysis. The power analysis was based on the effects observed in previous research examining the predictive ability of the three dimensions of perfectionism for burnout in other professions (Childs and Stoeber, 2010). Details of the power analysis are available in the preregistration document for the study (Hill et al., 2024). The final sample exceeded the target sample size as a consequence of a longer recruitment period and a larger than expected response rate. The larger sample permits greater precision in estimate of effects and additional analyses (identified below).

The study was granted ethical approval by the university of the first author (ETH2324-0202). We also confirmed that Health Research Authority approval was not required with our local NHS Trust. The hypotheses, analyses, and procedures were pre-registered (Hill et al., 2024). The preregistered protocol was followed with three exceptions:

(1) we excluded surgeons who responded to the questionnaire and were older than the pensionable age in the UK (>67 years old) as we considered it less reasonable to assess burnout in this group (n = 32) and the larger sample size allowed us to both (2) undertake additional tests of the psychometric properties of the instruments (Supplementary Materials, Table S1 and Table S2), and (3) undertake exploratory analyses that included controlling for age and sex which are two factors previously found to be related to surgeon burnout (Galaiya et al., 2020; Supplementary Materials, Table S3).

Data Availability Statement

Anonymised data for the study is publicly available along with code to reproduce the findings (Hill, Madigan, et al., 2025).

Measures

Perfectionism. Perfectionism was measured using the brief version of the Multidimensional Perfectionism Scale (HF-MPS; Hewitt and Flett, 1991) developed by Cox et al (2002). This version is a frequently used scale with the notable advantage of reduced participant burden due to shorter length and faster completion time. The brief HF-MPS contains five items to assess self-oriented perfectionism (e.g., "I am perfectionistic in setting my goals"), five items to assess socially prescribed perfectionism (e.g., "I feel that people are too demanding of me"), and five items to assess other-oriented perfectionism (e.g., "I do not have very high standards for those around me" [reversed]) with responses given on a seven-point Likert scale (1 = *strongly disagree* to 7 = *strongly agree*). Evidence to support the validity and reliability of scores when using the brief version has been provided by Cox et al. (2002) including evidence of better psychometric properties than the longer scale (e.g., factor structure).

Burnout. Burnout was measured using the Maslach Burnout Inventory[1] – Human Services Survey for Medical Personnel (MBI-HSS, Maslach et al., 2016) was used to burnout symptoms. The MBI and its different versions are the most used widely scales to measure burnout. It includes nine items to measure exhaustion (e.g., "I feel emotionally drained from my work"), five items to measure depersonalisation (e.g., "I don't really care what happens to some patients"), and eight items to measure professional accomplishment (e.g., "I have accomplished many worthwhile things in this job". Responses were recorded on a 7-point scale measuring frequency with which the burnout symptom is experienced (0 = "Never" to 7 = "Every day"). Scores of exhaustion > 27, depersonalisation > 13, and personal accomplishment < 31 are considered to indicative of high burnout (Maslach et al., 2016). Evidence of the validity and reliability of the scores of the instrument is provided by Maslach et al. (2016).

Statistical Analyses

Three OLS multiple regressions with dimensions of perfectionism as predictors and burnout symptoms as criterion variables were used to test H1 to H3. Bias corrected-accelerated bootstrap estimates of standard errors and 95% confidence intervals (CI) were also used to provide robust estimates (using 1000 random resamples and arbitrary seed [1234] for reproducibility). Variance explained in each model (R^2 and adjusted R^2) along with unstandardized (B) and unstandardized (β) regression coefficients served as effect sizes. Cohen's (1992) recommendations for standardized effect sizes (*r*; .10, .30, and. 50) and model variance (R^2; small = .20, medium = .13, and large = .26) were used to aid interpretation. Statistical significance was set at a conventional level (p <.05, two-tailed). IBM SPSS (version 28.0; IBM Corp, 2021) was used for screening data, descriptive statistics,

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correlations, and OLS multiple regression analyses. Mplus (version 8.1; Muthén and Muthén, 2020) was used to evaluate factor structures of the scales used.

Results

Preliminary Analyses

No participant data was included unless they had fully consented to the conditions of the project, completed the questionnaire form beyond just the consent form, and stated they were registered with the General Medical Council. Data were screened for errors and missing values (see Tabachnick and Fidell, 2013, for details of this procedure). There were 45 cases with missing data of which 37 cases had missing data above 5% and were therefore removed. Of note, of the 37 cases 15 did not complete both perfectionism and burnout instruments and 17 did not complete the burnout instrument (the other five cases had missed items across instruments)[2]. Frequency of missing data for the retained cases was minimal (8 cases with 1 missing time each). Missing values for these cases were replaced with the mean of the available items from the relevant subscale for that individual (Graham et al., 2003).

After computing scale scores, two univariate outliers (zscore > +/-3.29) and one multivariate outlier were removed (Mahalanobis distance, χ^2 [6] = 22.46, $p < .001$). Thereafter, most of the variables continued to deviate from a normal distribution. However, having removed both univariate and multivariate outliers, and intending to use bias corrected bootstrapping in the primary analysis (a technique that does not assume normality and addresses asymmetry in distributions of scores), we continued with the analyses.

[2]In inspecting missing data, we noted the following: (1) Little's Missing Completely at Random (MCAR) test suggested that the data were not missing completely at random, χ^2 (418) = 484.33, $p = .014$. (2) Comparison of surgeons with missing data with those with complete data revealed no significant differences on measured items (all $p > .05$), suggesting that missingness was not systematically related to observed variables (i.e., data may be missing at random, MAR). In other words, those missing perfectionism scores did not have significantly higher burnout and those missing burnout scores did not have significantly higher perfectionism. (3) For surgeons who did not complete the burnout instrument, it is possible that the non-completion of the instrument was due to their unobserved/missing level of burnout (i.e., missing-not-at-random, MNAR). However, this possibility cannot be empirically tested with our data so cannot be confirmed or ruled out. The implications are discussed in the limitations section.

The final sample size (N = 298) permitted a more detailed examination of the structure of the scales. Factor structures were assessed using Confirmatory Factor Analysis (CFA) and Exploratory Structural Equation Modelling (ESEM) both with Robust Maximum Likelihood estimation and using target rotation for ESEM. We used ESEM as well as CFA as ESEM permits cross-loadings of items (whereas in CFA they are all set to zero) and can therefore be more appropriate when assessing multidimensional instruments (Marsh et al., 2009). Conventional criteria were used as indicative of reasonable fit: χ^2 (df) p >.05, CFI and TLI > .90, RMSEA < .08, 90% CI < .05 to < .08; SRMR < .08, AIC and BIC (smaller indicates better fit in model comparison) (Marsh et al., 2004). With factor loading considered meaningful ≥.32 (Worthington and Whittaker, 2006). All results are reported in full in the supplementary materials (Table S1 and S2).

The brief HF-MPS provided fit marginally below criteria for reasonable fit: CFA - χ^2 (87) = 285.77, p < .001, CFI = .87, TLI = .85, SRMR = .07, RMSEA = .09 (90% CI .08, .10), AIC = 14934.79, BIC = 15112.25. All items loaded meaningful on subscales. Allowing item cross-loading to be non-zero (a less stringent but more reasonable test) in the ESEM provided a better fit that exceeded criteria for reasonable fit: ESEM - χ^2 (63) = 151.88, p < .001, CFI = .94, TLI = .91, SRMR = .03, RMSEA = .07 (90% CI .06, .08), AIC = 14832.56, BIC = 15098.75. Meaningful cross-loadings were minimal (1 of 30 instances) and included below meaningful loading on target factor (an item for SOP). Overall, the reasonable fit of the brief HF-MPS was confirmed by these analyses.

Undertaking the same analysis for the MBI-HSS provided similar results. CFA provided fit marginally below criteria for reasonable fit: χ^2 (206) = 614.89, p < .001, CFI = .85, TLI = .83, SRMR = .08, RMSEA = .08 (90% CI .07, .09), AIC = 21985.56, BIC = 22240.66. All items loaded meaningful on subscales. ESEM provided better fit that, overall, exceeded criteria for reasonable: χ^2 (168) = 421.54, p < .001, CFI = .91, TLI = .87, SRMR =

.04, RMSEA = .07 (90% CI .06, .08), AIC = 21832.06, BIC = 22227.32. Meaningful cross-loadings were minimal (2 of 44 instances) and no instances of items not loading on target factors meaningfully. Again, overall, the reasonable fit of the MBI-HSS was confirmed by these analyses.

Internal consistencies of the subscale scores were checked using Cronbach's alpha and MacDonald's omega (Table 1). All subscale scores displayed adequate internal consistencies (α and $\Omega \geq .70$).

Descriptive Statistics and Bivariate Correlations

Descriptive statistics and bivariate correlations are reported in Table 1. Based on the response format, participants reported high self-oriented perfectionism scores, moderate socially prescribed perfectionism scores, and low other oriented perfectionism scores. These scores are notably higher than observed in student samples (see Curran and Hill, 2019). Typical levels of reported burnout symptoms were indicative of experiencing exhaustion "once a week", depersonalisation in the "once a month or less," and professional accomplishment "a few times a week". When using cut-offs for the MBI associated with high burnout, 66.78% of the surgeons report high exhaustion, 36.24% of the surgeons reported high depersonalisation, and 4.03% reported low levels of personal accomplishment. Across all symptoms, 2.68% of surgeons reported high levels of burnout.

Based on the bivariate correlations, self-oriented perfectionism displayed a small-to-medium, positive, and statistically significant relationship with exhaustion and small, non-statistically significant relationships with depersonalisation and professional accomplishment. Socially prescribed perfectionism displayed a large, positive, and statistically significant relationship with exhaustion, a medium, positive, statistically significant relationship with depersonalisation, and a small, negative, statistically significant relationship with personal accomplishment. Other oriented perfectionism displayed small, and non-statistically significant relationships with all three burnout symptoms.

Multiple Regressions

Exhaustion. Perfectionism explained a large and significant amount of variance in exhaustion: F (3, 294) = 34.91, $p < .001$, $R^2 = .26$, adjusted $R^2 = .26$. Socially prescribed perfectionism was the only statistically significant unique predictor and was positively related to exhaustion (β = .55, $p < .001$). Self-oriented perfectionism (β = -.09, $p = .237$) and other oriented perfectionism (β = .00, $p = .951$) were not statistically significant unique predictors of exhaustion.

Depersonalization. Perfectionism explained a medium and significant amount of variance in depersonalization: F (3, 294) = 16.29, $p < .001$, $R^2 = .14$, adjusted $R^2 = .13$. Socially prescribed perfectionism was a statistically significant unique predictor and was positively related to depersonalization (β = .43, $p < .001$). Self-oriented perfectionism was a statistically significant unique predictor and was negatively related to depersonalization (β = -.15, $p = .028$). Other oriented perfectionism (β = -.09, $p = .109$) was not a statistically significant unique predictor of depersonalization.

Personal Accomplishment. Perfectionism explained a small-to-medium and significant amount of variance in personal accomplishment: F (3, 294) = 7.61, $p < .001$, $R^2 = .07$, adjusted $R^2 = .06$. Socially prescribed perfectionism was a statistically significant unique predictor and was negatively related to personal accomplishment (β = -.30, $p < .001$). Self-oriented perfectionism was a statistically significant unique predictor and was positively related to personal accomplishment (β =.25, $p < .001$). Other oriented perfectionism (β = -.09, $p = .120$) was not a statistically significant unique predictor of personal accomplishment.

Exploratory analyses. Non-preregistered analyses were conducted to re-examine the three aforementioned models controlling for gender and age. There was no substantive difference in the findings with dimensions of perfectionism remaining statistically significant predictors of burnout symptoms. The results are reported in the Supplementary Materials (Table S2).

Discussion

The aim of the present study was to examine the degree to which perfectionism predicts burnout in surgeons. It was hypothesized that (H1) self-oriented perfectionism would negatively predict all burnout symptoms; (H2) socially prescribed perfectionism would positively predict all burnout symptoms; and (H3) other oriented perfectionism will be unrelated to all burnout symptoms. We found mixed support for H1 - self-oriented perfectionism negatively predicted two burnout symptoms (depersonalization and professional accomplishment) and did not predict the other burnout symptom (exhaustion). However, H2 and H3 were fully supported.

Perfectionism and burnout

Our findings indicate that some, but not all, dimensions of perfectionism are related to surgeon burnout. Distinguishing between the source of perfectionistic demands matters. The main predictor of burnout symptoms was socially prescribed perfectionism. This is a dimension characterised by perceptions of external pressure and criticism from others. Note, in this form, these perceptions may or may not reflect the existence of specific sources of external pressure (Smith et al., 2017). Rather, largely via experience, individuals high in this dimension have learned and then internalised beliefs about the unrealistic expectations of others (Hewitt et al., 2017). In this regard, it is a firm feature and characteristic of the individual. However, in context of the exceptionally high standards expected from surgeons, experienced during education, training, and in the workplace, along with the wider culture within medical professions, these perceptions may well be strongly linked to tangible, observable, and ongoing features of their environment.

On this possibility we note that concerns about the unrealistic expectations associated with surgeon training and surgical practice are common. Indeed, “perfection as a minimum standard” is a reoccurring theme in reflective accounts of the surgical profession and medicine more widely (e.g., Arianna, 2017; Pfifferling, 2008; Yanes. 2017). These accounts are instructive in two ways. First, the accounts highlight the possible roots of socially prescribed perfectionism among surgeons in a culture that equates mistakes and imperfection

with incompetence, rather than something that is inevitable in a complex and difficult job. Second, the accounts also illustrate how the pursuit of perfection in medicine is regarded as an ethical and moral imperative. That is, unlike many other professions where burnout might arise, in surgery acceptance of anything less than perfection, regardless of how reasonable, is construed as a flaw in a surgeon's professionalism and character. The degree to which this culture alone is responsible for surgeon burnout versus perfectionism in trait form is an interesting question for future research.

Self-oriented perfectionism was more ambiguous than socially prescribed perfectionism. At a bivariate level, it was positively correlated to exhaustion and unrelated to the other two symptoms. However, after controlling for the other two dimensions of perfectionism, it did not predict exhaustion, negatively predicted depersonalisation, and positively predicted personal accomplishment. These findings are indicative of statistical suppression and require careful consideration (see Hill, 2014; Stoeber and Gaudreau, 2017). As dimensions of perfectionism are positively related, parsing their relationships with other variables like burnout can sometimes provide these types of effects. Rather than indicating that self-oriented perfectionism might be beneficial in regards to burnout, these findings signal that the source of its relationship with burnout is its overlap with other dimensions of perfectionism, socially prescribed perfectionism, in particular. As such, although nonintuitive, our understanding of these types of effects, and more general findings that link self-oriented perfectionism to mental health issues, provide a firm basis to warn surgeons of the dangers of placing unrealistic and irrational demands on themselves (Hill, Kim et al., 2025).

Expecting others to be perfect was not related to surgeon burnout. This is consistent with research more widely that has shown this dimension of perfectionism to be largely unrelated to personal outcomes. Reflecting its strong interpersonal focus, instead, it is typically influential in relationships with others. Callousness and competitiveness, along with

narcissism and dominance, are among the outcomes found to be related to other-oriented perfectionism, for example (Stoeber, 2014, 2015). With this in mind, it remains possible that this dimension of perfectionism may be indirectly related to burnout by increasing stressful relationships with others, poorer teamwork, less collegial relationships, and generally diminishing the quality of support that can be helpful in reducing stress. It is also possible that while this dimension does not predict personal burnout, it predicts burnout in work colleagues either directly or indirectly via, for example, rude, dismissive, and aggressive communication which has been found to be evident among some surgeons (Bradley et al., 2015). These possibilities are worthy of examination in future studies. In the meantime, the present findings suggest that this dimension of perfectionism may be less relevant to surgeon burnout than other dimensions despite its other undesirable effects.

As concerns regarding surgeon burnout continue to grow and more concerted efforts are made to intervene, the present study suggests that surgeon perfectionism is an important consideration. Perfectionism appears to be common in surgeons – the mean scores in our sample support this suggestion and were notably higher than in more general samples for all three dimensions (e.g., Curran and Hill, 2019). We can therefore expect many of the mental health issues associated with perfectionism to be especially prevalent in surgeons (see Hill, Kim et al., 2025). Indeed, initial work suggests as much with emerging links between perfectionism and issues closely related to burnout such as depression beginning to appear in research on surgeons (e.g., Malempati et al., 2025). However, overall, the trait is surprisingly understudied in this group given the ways striving for perfection and an intolerance of imperfection appear to feature so heavily in the culture of the profession. In this regard, we hope the present study provides impetus for further research and a better understanding of the relationship between perfectionism, burnout, and other important consequences in surgeons.

Applied Implications

Given the limitations of the design of the study, any applied implications are tentative and subject to additional research. However, the findings of this research and research in other medical professions (e.g., physicians; Martin et al., 2022) point to the benefits of reducing perfectionism in surgeons. Importantly, this does not mean advocating for a lower quality of performance or care. Rather, it entails reducing irrational and unhelpful ideals in support of surgeon mental health and, in turn, better patient care. There are currently no surgeon specific intervention studies focused on perfectionism. However, there is a substantial body of research that indicates formal interventions are effective in reducing perfectionism, generally, so provide a suitable starting point (e.g., Cognitive Behavioral Therapy, Galloway et al., 2022). There is also evidence that increasing knowledge of perfectionism may increase the likelihood of seeking support if needed so this approach provides a second avenue of preventive support via integration into routine training (e.g., Etherson et al., 2025). Finally, given the roots of perfectionism and burnout partly lie in workplace culture, supporting more positive work environments is also an important means of addressing both, too. Again, in the absence of specific work of this kind, work examining the effectiveness of organization interventions generally provides a starting point (e.g., workload reduction, peer support, and job crafting, Cohen et al., 2023) with other sources available to guide adaptation of existing work to surgeons (e.g., Hirayama et al., 2016).

Limitations and Future Directions

The present study has a number of limitations. First, a cross-sectional design was employed so no claims of causality can be made (the use of the term “predicts” and “predictor” in the aims and analyses is not intended to imply causality). Longitudinal examination of these relationships is needed to provide the next step towards such claims. Second, our approach to sampling was non-random and non-stratified, so caution is required in regard to generalisability of the findings. Based on respondents to the most recent UK surgical workforce census data, our sample includes more consultants, specialised surgeons, and are slightly older than is

typical, but is broadly similar in regards to gender and ethnicity (Royal College of Surgeons, 2025). In addition, we might expect an under-representation of surgeons with higher levels of burnout in the current study. This issue was alluded to in our examination of missing data which raised the possibility that surgeons who did not complete the questionnaire fully could have been those with higher burnout. Third, all instruments were self-report scales for which socially desirability and common method variance can be problematic. The former issue may be especially important for symptoms like depersonalization that require surgeons to provide information on the care they provide patients. Some surgeons may be reluctant to divulge the degree to which they are cynical towards patients or the degree to which they have detached themselves from this aspect of their work due to the ethical issues this raises, for example. The latter issue is important because common method variance can bias and inflate effect sizes (MacKenzie and Podsakoff, 2012). Fourth, again related to measurement, we used two particular instruments to measure perfectionism and burnout. Other instruments can vary in regard to item content and dimensions so it should not be assumed that the findings apply to other measures. They do, though, provide a strong basis from which to examine these relations further.

Conclusion

The present study provides evidence of a link between multidimensional perfectionism and surgeon burnout. Surgeons who perceived others expect them to be perfect reported higher levels of burnout. Reducing this dimension of perfectionism through targeted intervention, improved training, and workplace change may therefore be an important new means of preventing surgeon burnout.

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Table 1. Descriptive Statistics, Bivariate Correlations, and Internal Reliabilities

		1	2	3	4	5	6
1.	Self-oriented perfectionism						
2.	Socially prescribed perfectionism	.60***					
3.	Other-oriented perfectionism	-.09	.01				
4.	Exhaustion	.26***	.51***	-.01			
5.	Depersonalisation	.10	.34***	-.10	.63***		
6.	Personal accomplishment	.07	-.15*	.11	-.39***	-.43***	
M		5.35	4.01	5.09	3.92	2.54	5.52
SD		1.14	1.33	1.02	1.42	1.16	0.88
α / Ω		.84 / .85	.82 / .83	.76 / .75	.93 / .93	.76 / .76	.77 / .77

Note. * $p < .05$, ** $p < .01$, *** $p < .001$, two-tailed.

Table 2. Results of Regression of Burnout Symptoms on Perfectionism in Surgeons

	B	SE	β	t	*p*	SE_{BCa}	p_{BCa}	B 95% CI_{BCa}
Criterion Variable: Exhaustion								
Self-oriented perfectionism	-0.09	0.08	-.08	-1.18	.237	0.08	.268	-0.26, 0.07
Socially prescribed perfectionism	0.59	0.07	.55	8.80	<.001	0.07	<.001	0.47, 0.72
Other-oriented perfectionism	0.00	0.07	.00	0.62	.951	0.07	.959	-0.13, 0.15
Criterion Variable: Depersonalization								
Self-oriented perfectionism	-0.15	0.07	-.15	-2.21	.028	0.07	.024	-0.30, -0.14
Socially prescribed perfectionism	0.38	0.06	.43	6.39	<.001	0.06	<.001	0.27, 0.47
Other-oriented perfectionism	-0.10	0.06	-.09	-1.61	.109	0.06	.101	-0.22, 0.03
Criterion Variable: Personal Accomplishment								
Self-oriented perfectionism	0.19	0.06	.25	3.46	<.001	0.06	.003	0.07, 0.31
Socially prescribed perfectionism	-0.20	0.05	-.30	-4.19	<.001	0.05	<.001	-0.29, -0.10
Other-oriented perfectionism	0.08	0.05	.09	1.56	.120	0.05	.152	-0.02, 0.17

Note. B – Unstandardized regression coefficient. SE = Standard error, β = standardized regression coefficient, t = t value, BCa = Bias corrected accelerated bootstrap estimates, CI = Confidence intervals (confidence intervals that exclude zero are statistically significant, p <.05). * p < .05, ** p < .01, *** p < .001, two-tailed.

Table S1. Standardised Factor Loadings from CFA and ESEM for the brief Multidimensional Perfectionism Scale.

	SOP	SPP	OOP	SOP	SPP	OOP
1	.82***			.85***	-.02	-.00
3	.78***			.85***	-.08	-.06
5	.86***			.87***	-.02	-.03
7	.61***			.49***	.15	.08
9	.59***			.27***	.50***	.08
2		.68***		.30***	.48***	.02
4		.56***		-.10	.64***	-.08
6		.68***		-.11*	.80***	-.11*
8		.68***		.09	.64***	.05
10		.85***		.18**	.72***	.06
11			.42***	.11	-.01	.41***
12			.70***	-.02	-.14*	.70***
13			.74***	-.02	-.08	.74***
14			.74***	-.04	.12*	.76***
15			.58***	-.04	.02	.58***

Note. *** $p < .001$, ** $p < .01$, * $p < .05$; two-tailed. Cross-loadings that exceed .32 are underlined.

Table S2. Standardised Factor Loadings from CFA and ESEM for the Maslach Burnout Inventory - Human Services Survey for Medical Personnel

	CFA			ESEM		
	EX	DP	PA	EX	DP	PA
1	.87***			.91***	-.05	.02
2	.84***			.87***	-.06	-.01
3	.85***			.85***	-.04	-.07
6	.66***			.49***	.31***	-.09
8	.91***			.89***	.04	.01
13	.66***			.58***	.13*	-.06
14	.66***			.62***	.06	-.03
16	.65***			.49***	.31***	-.07
20	.81***			.77***	.10	.01
5		.60**		.06	.65***	-.05
10		.81***		.23***	.52***	-.15*
11		.74***		.40***	.32***	-.15*
15		.54***		-.03	.69***	-.03
22		.44***		.31***	.33***	.09
4			.33***	.26***	-.23**	.33***
7			.49***	.01	-.15	.40***
9			.70***	-.01	.15	.79***
12			.51***	-.43***	.20**	.42***
17			.51***	.10	-.26*	.41***
18			.59***	.08	.00	.63***
19			.68***	-.00	.15	.79***
21			.54***	.09	-.12	.50***

Note. *** $p < .001$, ** $p < .01$, * $p < .05$; two-tailed. Cross-loadings that exceed .32 are underlined.

Table S3. Results of Regression of Burnout Symptoms on Perfectionism in Surgeons (controlling for age and gender)

	B	SE	β	t	*p*	SE_{BCa}	p_{BCa}	B 95% CI_{BCa}
Criterion Variable: Exhaustion								
Age	0.00	0.01	.03	0.54	.593	0.01	.610	-0.01, 0.02
Gender	0.24	0.15	.09	1.62	.107	0.14	.087	-0.04, 0.51
Self-oriented perfectionism	-0.09	0.08	-.07	-1.12	.263	0.08	.298	-0.25, 0.08
Socially prescribed perfectionism	0.58	0.07	.54	8.45	<.001	0.07	<.001	0.46, 0.70
Other-oriented perfectionism	-0.01	0.07	-.00	-0.02	.987	0.07	.979	-0.14, 0.14
Criterion Variable: Depersonalization								
Age	-0.02	0.01	-.17	-2.90	.004	0.01	.010	-0.03, -0.01
Gender	-0.19	0.13	-.08	-1.47	.143	0.13	.153	-0.45, 0.04
Self-oriented perfectionism	-0.17	0.07	-.17	-2.47	.014	0.07	.010	-0.30, -0.04
Socially prescribed perfectionism	0.38	0.06	.44	6.39	<.001	0.06	<.001	0.27, 0.48
Other-oriented perfectionism	-0.07	0.06	-.06	-1.18	.240	0.06	.231	-0.19, 0.04
Criterion Variable: Personal Accomplishment								
Age	0.00	0.01	.04	0.70	.485	0.01	.484	-0.01, 0.01
Gender	0.09	0.10	.05	0.89	.374	0.11	.397	-0.10, 0.34
Self-oriented perfectionism	0.20	0.06	.25	3.51	<.001	0.06	.003	0.08, 0.32
Socially prescribed perfectionism	-0.21	0.05	-.30	-4.23	<.001	0.05	<.001	-0.30, -0.11
Other-oriented perfectionism	0.07	0.05	.08	1.44	.152	0.05	.187	-0.03, 0.17

Note. B – Unstandardized regression coefficient. SE = Standard Error, β = standardized regression coefficient, t = t value, BCa = Bias corrected accelerated bootstrap estimates. $p < .05$, ** $p < .01$, *** $p < .001$, two-tailed. Exhaustion: F (5, 292) = 21.51, $p < .001$, $R^2 = .27$, adjusted R^2 =

.26; Depersonalization: F (5, 292) = 11.74, $p < .001$, $R^2 = .17$, adjusted $R^2 = .15$; Personal Accomplishment: F (5, 292) = 4.75, $p < .001$, $R^2 = .08$, adjusted $R^2 = .06$.