Adaptive and maladaptive humor styles are closely associated with burnout and professional fulfillment in members of the Society of Gynecologic Oncology

Connor C. Wang a,*, Amy Godecker b, Stephen L. Rose c

a Department of Obstetrics and Gynecology, University of Wisconsin School of Medicine and Public Health, Madison, WI, United States
b Department of Obstetrics and Gynecology, University of Wisconsin School of Medicine and Public Health, Madison, WI, United States
c Department of Obstetrics and Gynecology, Division of Gynecologic Oncology, University of Wisconsin School of Medicine and Public Health, Madison, WI, United States

ARTICLE INFO

Keywords:
Humor styles
Burnout
Professional fulfillment
Wellness
Gynecologic oncology
Burnout interventions

ABSTRACT

Differences in individual humor styles (adaptive: affiliative, self-enhancing; maladaptive: aggressive, self-defeating) are associated with various wellness measures. This study examines the association of humor styles with professional fulfillment (PF) and burnout (BO) among Society of Gynecologic Oncology (SGO) members. SGO members were surveyed in 11/2020. The survey included 64 questions (32-item Humor Styles Questionnaire, 16-item Professional Fulfillment Index, and 16-item demographic and practice characteristics). Differences among faculty physicians (FAC), physician trainees (Res/Fel), and advanced practice providers (APP) were compared. Multivariable linear regression adjusted the association of humor styles with BO and PF for possible confounders. Of 1982 members invited to participate, 320 (16.1%) returned completed surveys (69.4% FAC, 23.4% Res/Fel, and 7.2% APP). All provider types scored highest for affiliative and lowest for aggressive humor. Res/Fel more likely to employ aggressive and self-defeating humor styles than FAC and APP. One-third of respondents met criteria for BO and half experienced PF. FAC were more fulfilled than Res/Fel (p = 0.038). BO was negatively associated with self-enhancing and positively associated with self-defeating humor. Working > 60 h/week was associated with increased BO (p = 0.008) while trainee status (p = 0.010) and age > 55 (p = 0.008) were associated with decreased BO. PF was positively associated with self-enhancing and negatively associated with self-defeating humor. Spending > 10% of work hours on administrative duties led to lower PF (p = 0.008). Beyond advocating for less working hours and administrative duties, humor-based interventions to increase self-enhancing and reducing self-defeating humor use may lead to less BO and greater PF in SGO members, especially among trainees.

1. Introduction

Humor style refers to the various ways individuals employ humor to communicate and cope with daily stress. (Martin et al., 2003) Martin et al. described four humor styles based on their uses in interpersonal and intrapersonal settings and on being adaptive or maladaptive to relationships, health, and wellbeing. (Martin et al., 2003) The two adaptive humor styles are affiliative and self-enhancing styles; the two maladaptive styles are aggressive and self-defeating styles. Affiliative humor is used to facilitate interpersonal relationships and ease social tension through jokes and benign banter. Self-enhancing refers to having humorous outlooks on life and uses humor to cope with stress. Aggressive humor is humor used at the expense of interpersonal relationships and involves sarcasm, teasing, and derision. Self-defeating humor uses self-disparagement to enhance interpersonal relationship or to avoid stress.

The four humor styles are not mutually exclusive. Individuals who predominantly employ adaptive humor may also incorporate lesser degrees of maladaptive humor. (Martin et al., 2003) Research has linked maladaptive styles, specifically self-defeating humor, with increased...
depression levels (Rnic et al., 2016) and suicidal ideation. (Tucker et al., 2013) Adaptive styles have been associated with optimism, social support, and resilience. (Rnic et al., 2016) Individuals’ sense of humor can change with interventions, (Wellenzohn et al., 2018) and interventions may incorporate more adaptive humor use and decrease the use of maladaptive humor styles. (Tucker et al., 2013).

Burnout (BO) is characterized by unsuccessfully managed occupational stress. (Balch and Shanafelt, 2011) Professional fulfillment (PF) evaluates the positive aspects of work. (Trockel et al., 2018) Although humor styles and BO and PF may not be intuitively linked, BO research in physicians has identified associations between BO and lower career satisfaction, higher depression rates and suicidal ideation, and lower quality of care. (Balch and Shanafelt, 2011; Rath et al., 2015; West et al., 2016) Physicians with high PF have higher scores on quality-of-life indicators than do other physicians. (Trockel et al., 2018; Zhang et al., 2019; Burns et al., 2021) Wellness interventions aimed to combat physician BO and increase career satisfaction include work hour reductions, mindfulness workshops, cognitive behavioral therapies, resiliency trainings, or positive psychology interventions. (West et al., 2016; Carr et al., 2021) However, BO and PF remain difficult to tackle among medical providers. (Balch and Shanafelt, 2011; West et al., 2016; Burns et al., 2021).

In medicine, humor plays a pivotal role in the health of patients and providers through facilitating communications, coping, fostering relationships, and managing emotions. (Dyck and Holtzman, 2013; Navarro-Carrillo et al., 2020) People who use humor to cope demonstrate higher levels of self-esteem and lower levels of loneliness. (Martin et al., 2003; Rnic et al., 2016) Therefore, humor styles may represent an avenue to address BO and PF among medical providers. Gynecologic oncologists are susceptible to BO and lack of PF given our unique model of providing both medical and surgical oncology care. (Balch and Shanafelt, 2011; Rath et al., 2015) In this study, we examine the association between humor styles and BO and PF in Society of Gynecologic Oncology (SGO) members. Our hypothesis was that higher scores in adaptive humor style would be directly associated with PF and inversely associated with BO. Insights gained may inform interventions to improve provider wellbeing.

2. Methods

2.1. Ethics statement

The study was approved by the University of Wisconsin School of Medicine and Public Health Institutional Review Board (IRB#20200357).

2.2. Participants

U.S. SGO members with working emails whose member types were full, associate, fellow-in-training, and resident were emailed survey invitations. Members were surveyed in November 2020. Participation was voluntary and no incentives were provided. The survey was crafted with and distributed by the University of Wisconsin Survey Center (UWSC), a third-party organization, via the University of Wisconsin Qualtrics Survey Service. Per SGO guidelines, two reminder emails were sent prior to survey closure. UWSC recorded respondent emails to track responses but deleted the emails after survey closure and before investigator data analysis.

2.3. Survey measures

The survey comprised 64 closed questions pertaining to demographics, practice patterns, humor styles, BO, and PF. Humor styles were assessed using the validated Humor Styles Questionnaire (HSQ) to assess four different styles (8 items per style). (Martin et al., 2003) Items were scored on seven-point Likert scales from 1="totally disagree" to 7="totally agree." The summative score for each participant’s humor style was calculated (range 1–56). PF and BO were assessed using the Professional Fulfillment Index (PFI), a validated instrument to measure PF (6 items) and BO (10 items) among physicians and the impact of wellness interventions on these two measures. Item were scored on Likert scales from 0="not at all true"/"not at all" to 4="completely true"/"extremely." Scoring for BO and PF were previously described. (Trockel et al., 2018) In brief, BO is calculated by averaging the summed scores of work exhaustion (4 items) and interpersonal disengagement (6 items); a mean score ≥ 1.33 meets predefined criteria for BO. For PF, a mean score ≥ 3 meets predefined criteria for high PF.

2.4. Outcomes

The primary outcome was to examine the associations between humor styles and BO and PF in SGO members.

Secondary outcomes included predictors of BO and PF in SGO members and the differences in humor styles and scores for BO and PF among different SGO provider types. Providers were categorized into attending or faculty physicians (FAC), trainees including resident and fellow physicians (Res/Fel), and advanced practice providers (APP).

2.5. Statistical analysis

Demographic characteristics and practice patterns were reported categorically. Humor style scores were included as continuous variables, as distinctions between humor styles are best evaluated on non-dichotomous scales. Differences among FAC, Res/Fel, and APP were compared using two-tailed t-tests for continuous variables and chi-square tests for categorical variables. Linear regression assessed the association between humor styles, demographic and practice patterns characteristics, and BO and PF scores. Covariates in the adjusted BO and PF models were noted in the table footnotes. They included those shown in the literature to be significantly associated with BO or PF or thought to have theoretical significance. Statistical analyses were conducted using Stata 16 software (StataCorp, College Station, TX). P-values were deemed statistically significant at P < 0.05.

3. Results

3.1. Respondent characteristics

Of the 1,982 SGO members emailed to participate, 320 (16.1%) returned completed surveys. Respondents included 222 FAC (69.4%), 75 Res/Fel (23.4%), and 23 APP (7.2%). Table 1 summarized the demographic characteristics and practice patterns overall and by each provider categories.

Among faculty physicians, most respondents were female (56.1%), married (86.6%), and working in a hospital-based practice (73.0%) with varied ages, years of independent practice, and pay structures. Most FAC prescribed chemotherapy (77.9%), supervised trainees (88.3%), took 1–7 nights of call per month (57.5%), spent >10% of time on administrative duties (62.6%), and had no debt (64.1%).

Most Res/Fel respondents were aged 25–34 years old (81.9%), female (78.1%), married (52.0%), did not take call (80.0%), worked more than 50 h per week (82.5%), took 1–7 nights of call per month (63.5%), spent >10% of time on administrative duties (66.2%), and had no debt (59.5%).

All APP respondents were female and worked in a hospital-based practice with varied years of independent practice. The majority were aged 35–44 years old (39.1%), married (78.3%), did not have children (56.5%), worked <51 h per week (91.3%), did not take night call (81.8%), were salaried (87.0%), and had no debt (56.5%).
Table 1
Demographic characteristics and practice patterns of all survey respondents, faculty physician, resident and fellow physicians, and advanced practice providers.

| Characteristic                  | Total   | FAC     | Res/Fel | APP     |
|--------------------------------|---------|---------|---------|---------|
| **Age**                        |         |         |         |         |
| 25–34                          | 78 (25.3)| 13 (6.1)| 59 (81.9)| 6 (26.1)|
| 35–44                          | 110     | 88      | 13 (18.1)| 9 (39.1)|
| 45–54                          | 51 (16.6)| 49      | 0 (0.0)  | 2 (8.7)|
| 55–75                          | 69 (22.4)| 63      | 0 (0.0)  | 6 (26.1)|
| **Gender**                     |         |         |         |         |
| Male                           | 110     | 94      | 16 (22.9)| 0 (0.0)|
| Female                         | 200     | 120     | 57 (78.1)| 23     |
| **Marital status**             |         |         |         |         |
| Not married                    | 70 (22.2)| 29      | 36 (48.0)| 5 (21.7)|
| Married                        | 245     | 188     | 39 (52.0)| 18 (78.3)|
| **Parent of child < 18**       |         |         |         |         |
| No                             | 180     | 107     | 60 (80.0)| 13 (56.5)|
| Yes                            | 137     | 112     | 15 (20.0)| 10 (43.5)|
| **Age of youngest child < 18** |         |         |         |         |
| No child < 18                  | 180     | 107     | 60 (80.0)| 13 (56.5)|
| 0–3                            | 61 (19.2)| 44      | 13 (17.3)| 4 (17.4)|
| 4–9                            | 39 (12.3)| 34      | 2 (2.67) | 3 (13.0)|
| 10–17                          | 37 (11.7)| 34      | 0 (0.0)  | 3 (13.0)|
| **Currently practicing**       |         |         |         |         |
| No                             | 25 (7.8) | 4 (1.8) | 19 (25.3)| 2 (8.7)|
| Yes                            | 295 (98)| 218     | 56       | 21 (91.3)|
| **Years of independent practice** |       |         |         |         |
| <5                             | 29 (12.8)| 25      | 0 (0.0)  | 4 (26.7)|
| 5–9                            | 46 (20.4)| 42      | 0 (0.0)  | 4 (26.7)|
| 10–14                          | 33 (14.6)| 30      | 0 (0.0)  | 3 (20.0)|
| 15–19                          | 27 (12.0)| 25      | 0 (0.0)  | 2 (13.3)|
| 20–24                          | 23 (10.2)| 23      | 0 (0.0)  | 0 (0.0)|
| 25–45                          | 43 (19.0)| 42      | 0 (0.0)  | 0 (0.0)|
| **Not practicing**             | 25 (11.1)| 4 (2.1)| 75 (300.0) | 2 (13.3)|
| **Chemotherapy provider**      |         |         |         |         |
| No                             | 103     | 94      | 31 (31.1)| 23     |
| Yes                            | 217     | 173     | 44 (41.33)| 66 (100)|
| **Supervise residents**        |         |         |         |         |
| No                             | 87 (27.2)| 26      | 38 (50.7)| 23     |
| Yes                            | 233     | 196     | 37 (49.3)| 0 (0.0)|
| **Hours worked weekly**        |         |         |         |         |
| ≤40                            | 32 (10.2)| 17 (7.8)| 5 (6.8)  | 10 (43.5)|
| 41–50                          | 64 (20.3)| 45      | 8 (10.8) | 11 (47.8)|
| 51–60                          | 95 (30.2)| 76      | 19 (25.7)| 0 (0.0)|
| ≥61                            | 124     | 80      | 42 (56.8)| 2 (8.7)|

Table 1 (continued)

| Characteristic                  | Total   | FAC     | Res/Fel | APP     |
|--------------------------------|---------|---------|---------|---------|
| **% of time spent on administrative duties** |         |         |         |         |
| ≤10%                           | 117     | 83      | 25 (33.8)| 9 (39.1)|
| 10%+                           | 202     | 139     | 49 (66.2)| 14 (60.9)|
| Hospital-based practice        |         |         |         |         |
| No                             | 60 (18.8)| 60      | 0 (0.0)  | 0 (0.0)|
| Yes                            | 260     | 162     | 75       | 23     |
| **Pay structure**              |         |         |         |         |
| Salary only                    | 168     | 76      | 72 (97.3)| 20 (87.0)|
| Salary + bonus                | 55 (17.2)| 52      | 1 (1.35) | 2 (8.7)|
| Salary + productivity         | 81 (25.4)| 79      | 1 (1.35) | 1 (4.35)|
| Non-salary or other            | 15 (4.7) | 15 (6.8) | 0 (0.0)  | 0 (0.0)|
| **Debt**                       |         |         |         |         |
| None                           | 175     | 141     | 21 (28.4)| 13 (56.5)|
| <$75,000                      | 25 (7.9) | 16 (7.3) | 4 (5.4)  | 5 (21.7)|
| $75,000–124,000               | 30 (9.5) | 23      | 5 (6.8)  | 2 (8.7)|
| $125,000 or more              | 86 (27.4)| 40      | 44 (59.5)| 3 (13.0)|

Legend: FAC = attending and faculty physicians; Res/Fel = resident and fellow physicians; APP = advanced practice providers.

3.2. Humor styles analysis
The mean score for each humor style was shown in Table 2. All provider types scored highest for affiliative and lowest for aggressive humor. There were no significant differences between provider types in adaptive humor use. Res/Fel were significantly more likely to employ both aggressive and self-defeating humor styles than do FAC and APP.

3.3. Burnout analysis
Overall, 95 (29.7%) of respondents met criteria for burnout. No differences in mean burnout scores were observed among provider types.

Supplemental data 1 described unadjusted and adjusted analyses of the association of humor styles and demographics and provider characteristics with BO. Upon adjusting for demographic and provider practice characteristics (Fig. 1), self-enhancing humor had a significant inverse association (β = −0.025; 95% CI = −0.037 to −0.014) with BO while self-defeating humor demonstrated a significant positive association (β = 0.017; 95% CI = 0.007 to 0.025). Further, being a trainee (p = 0.010) or age ≥ 55 (p ≤ 0.046) were associated with lower BO scores.

Working > 60 h per week led to higher BO scores (p = 0.008) (S1).

3.4. Professional fulfillment analysis
Overall, 163 (50.9%) met criteria for high PF (Table 2). Res/Fel had significantly lower fulfillment scores than FAC but were not different from those of APP.

Supplemental data 2 described the unadjusted and adjusted humor styles and demographic and provider characteristics associated with PF.
Upon adjustment (Fig. 2), humor styles demonstrated the inverse of results seen with BO scores: self-enhancing humor scores were positively associated with PF ($\beta = -0.033; 95\% \text{ CI} = 0.018$ to $0.047$), while self-defeating humor was negatively associated with PF ($\beta = -0.012; 95\% \text{ CI} = -0.023$ to $-0.001$). Spending $> 10\%$ of work hours on administrative work was negatively associated with PF scores ($p = 0.008$) after adjustment (S2).

4. Discussion

This study investigated the association between adaptive and maladaptive humor styles and BO and PF in SGO members. Self-enhancing humor was negatively associated with BO and positively associated with PF. Self-defeating humor was positively associated with BO and negatively associated with PF. We also examined demographic and practice patterns characteristics for associations with BO and PF scores.

Interestingly, our study revealed that significant associations with BO and PF were only identified with intra-personal humor styles (self-enhancing and self-defeating). Respondents who score higher for self-defeating styles, the use of self-disparaging humor towards oneself to amuse others and avoid distress, (Martin et al., 2003) may experience more difficulty coping with stress due to lower levels of intra-personal competence, (Martin et al., 2003; Rnic et al., 2016) higher rates of depression or anxiety, (Tucker et al., 2013) and may be more prone to BO and low PF in this study.

Clinically, our findings suggest the possibility of humor-based interventions to address BO and improve PF in SGO members. Humor-based interventions could be humor-based positive psychology

| Table 2 |
| --- |
| Humor styles, professional fulfillment, and burnout scores by provider types. |

|                      | Total mean (SD) | FAC mean (SD) | Res/Fel mean (SD) | APP mean (SD) | FAC vs Res/Fel | FAC vs APP | Res/Fel vs APP |
|----------------------|-----------------|---------------|-------------------|--------------|---------------|------------|---------------|
| Adaptive Humor Styles |                 |               |                   |              |               |            |               |
| Affiliative          | 45.60 (8.08)    | 45.13 (8.47)  | 46.8 (6.73)       | 46.09 (8.24) | 0.113         | 0.604      | 0.657         |
| Self-enhancing       | 38.73 (8.27)    | 38.35 (8.71)  | 39.76 (6.99)      | 39.00 (7.70) | 0.206         | 0.732      | 0.657         |
| Maladaptive Humor Styles |               |               |                   |              |               |            |               |
| Aggressive           | 25.04 (7.56)    | 24.61 (7.70)  | 27.03 (6.94)      | 22.70 (7.11) | 0.017*        | 0.254      | 0.011*        |
| Self-defeating       | 29.36 (9.65)    | 28.84 (9.53)  | 32.09 (9.37)      | 25.43 (9.94) | 0.011*        | 0.106      | 0.004*        |
| Well-being measures  |                 |               |                   |              |               |            |               |
| Burnout composite    | 1.08 (0.72)     | 1.09 (0.05)   | 1.09 (0.04)       | 0.98 (0.15)  | 0.972         | 0.502      | 0.521         |
| Work exhaustion      | 1.46 (0.84)     | 1.47 (0.06)   | 1.47 (0.08)       | 1.39 (0.18)  | 0.966         | 0.982      | 0.650         |
| Interpersonal disengagement | 0.83 (0.75) | 0.84 (0.05)   | 0.84 (0.09)       | 0.71 (0.15)  | 0.430         | 0.690      | 0.462         |
| Professional fulfillment | 2.77 (0.86) | 2.83 (0.88)   | 2.59 (0.83)       | 2.81 (0.78)  | 0.038*        | 0.934      | 0.250         |

Legend: FAC = attending and faculty physicians; Res/Fel = resident and fellow physicians; APP = advanced practice providers; SD = standard deviation, bold and * denotes statistical significance.

Fig. 1. Adjusted linear regression results of humor style on burnout score and 95% confidence interval* * Model for association of humor styles with burnout adjusted for: provider type, age, sex, marital status, age of youngest child, amount of debt, currently practicing, hours worked weekly, number of nights on call per month, percent of time spent on administrative duties, hospital practice type.

Upon adjustment (Fig. 2), humor styles demonstrated the inverse of results seen with BO scores: self-enhancing humor scores were positively associated with PF ($\beta = -0.033; 95\% \text{ CI} = 0.018$ to $0.047$), while self-defeating humor was negatively associated with PF ($\beta = -0.012; 95\% \text{ CI} = -0.023$ to $-0.001$). Spending $> 10\%$ of work hours on administrative work was negatively associated with PF scores ($p = 0.008$) after adjustment (S2).

4. Discussion

This study investigated the association between adaptive and maladaptive humor styles and BO and PF in SGO members. Self-enhancing humor was negatively associated with BO and positively associated with PF. Self-defeating humor was positively associated with BO and negatively associated with PF. We also examined demographic and practice patterns characteristics for associations with BO and PF scores.

Interestingly, our study revealed that significant associations with BO and PF were only identified with intra-personal humor styles (self-enhancing and self-defeating). Respondents who score higher for self-defeating styles, the use of self-disparaging humor towards oneself to amuse others and avoid distress, (Martin et al., 2003) may experience more difficulty coping with stress due to lower levels of intra-personal competence, (Martin et al., 2003; Rnic et al., 2016) higher rates of depression or anxiety, (Tucker et al., 2013) and may be more prone to BO and low PF in this study.

Clinically, our findings suggest the possibility of humor-based interventions to address BO and improve PF in SGO members. Humor-based interventions could be humor-based positive psychology...
interventions (PPIs) or workshops. Humor-based PPIs can enhance psychological and emotional wellbeing, life satisfaction, mood, and lower depressive feelings. (Wellenzohn et al., 2018) They can also increase participants' sense of humor. (Wellenzohn et al., 2018) It may be constructive for providers to assess the humor type they utilize to cope with stress, and those who score high for self-defeating humor style may benefit from interventions that strengthen their use of self-enhancing humor over self-defeating humor style. (Tucker et al., 2013) Providers may follow their progress by tracking humor style scores on the HSQ. (Martin et al., 2003; Tucker et al., 2013) Our results further indicated that trainees were more likely than faculty and APP to employ aggressive and self-defeating humors, and trainees experienced significantly lower PF than did faculty. Therefore, trainees may benefit most from humor-based interventions.

Among our respondents, 29.7% met criteria for BO. This is comparable to a prior SGO survey reporting BO rate of 32%, which led to the establish of the SGO Wellness Committee. (Rath et al., 2015) BO prevalence among physician historically had been approximately 20–40%. (Balch and Shanafelt, 2011; West et al., 2016; Burns et al., 2021) Though other surveys were conducted with the Maslach Burnout Index (MBI), the PFI had been shown to correlate well with the MBI. (Trockel et al., 2018) In the literature, physician burnout is linked to female gender, younger age, lower academic rank, lack of control at work, and excessive administrative duties. (Balch and Shanafelt, 2011; Burns et al., 2021) After controlling for humor styles and known and theoretical risk factors for BO, not surprisingly, we found higher BO scores for those working > 60 h per week. Interestingly, age > 55 and being a trainee led to lower BO scores, which differ from previous studies reporting higher BO among trainees or younger physicians. These findings may be explained by the benefits of seniority in our older respondents, or it could be related to selection bias, as respondents with lower BO may be more likely to complete surveys or to register for or maintain SGO memberships. Nevertheless, the adjusted BO analysis further support that physician trainees may receive the most benefit from humor-based interventions.

Our results also indicated our respondents derive more fulfillment from direct patient care than from administrative duties, and 51% reported having PF. This is higher than other studies exploring PF in trainees and faculty. Other studies found PF rates from 23% (Winkel et al., 2020) to 43% (Zhang et al., 2019). Possible reasons include PF not being a widely used measure yet, our study including more faculty physicians, or selection bias.

Our study was limited by a 16% response rate, and it is unknown whether our respondents are a good representation of the SGO membership. However, our BO rates are comparable to prior SGO surveys, (Rath et al., 2015) contained more respondents than many other studies investigating BO or PF, and gave us power to assess detailed characteristics and use adjusted regression models. Other limitations include the cross-sectional nature of our study. Participants were surveyed at a single time point while, theoretically, the process of humor style impacting BO and PF may occur over their careers. Responses to questions assessing humor, BO, and PF may also be impacted by feelings at the time of survey completion. Additionally, responses were self-reported and liable to social desirability bias, but responses were assured of confidentiality. We cannot rule out, based on our data, whether humor styles precede BO and PF or if people who are experiencing BO or PF are more apt to use certain humor styles. Future investigations are needed to evaluate the causal relationships between humor styles and BO and PF. However, humor-based interventions, along with meaningful changes on the individual and institutional levels, may represent promising approaches to addressing burnout and professional fulfillment.

This study extends the landscape of BO and PF research in medicine by describing associations between humor styles with BO and PF by
identifying factors associated with wellbeing in SGO members. Beyond advocating for less working hours and less administrative duties, our findings are intriguing and lend themselves to future study on the effects of humor-based interventions.

CRediT authorship contribution statement

Connor C. Wang: Conceptualization, Methodology, Data curation, Writing – original draft. Amy Godecker: Methodology, Formal analysis, Writing – review & editing. Stephen L. Rose: Conceptualization, Methodology, Formal analysis, Writing – review & editing.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Appendix A. Supplementary material

Supplementary data to this article can be found online at https://doi.org/10.1016/j.gore.2022.101020.

Reference

Martin, R.A., Puhlik-Doris, P., Larsen, G., Gray, J., Weir, K., 2003. Individual differences in uses of humor and their relation to psychological well-being: Development of the Humor Styles Questionnaire. J. Res. Pers. 37, 48–75. https://doi.org/10.1016/S0092-6566(02)00534-2.

Rnic, K., Dozois, D.J.A., Martin, R.A., 2016. Cognitive distortions, humor styles, and depression, Europe’s. J. Psychol. 12, 348–362. https://doi.org/10.5964/ejop.v12i2.1115.

Tucker, R.P., Wingate, L.R.R., O’Keefe, V.M., Slish, M.L., Judah, M.R., Rhoades-Kerswill, S., 2013. The moderating effect of humor style on the relationship between interpersonal predictors of suicide and suicidal ideation. Personality Individ. Differ. 54, 610–615. https://doi.org/10.1016/j.paid.2012.11.023.

Wellenzohn, S., Proyer, R.T., Ruch, W., 2018. Who benefits from humor-based positive psychology interventions? The moderating effects of personality traits and sense of humor, Frontiers in Psychology. 9, 1–10. https://doi.org/10.3389/fpsyg.2018.00821.

Balch, C.M., Shanafelt, T., 2011. Combating stress and burnout in surgical practice: A review. Thoracic Surgery Clinics. 21, 417–430. https://doi.org/10.1016/j.thorsurg.2011.05.004.

Trockel, M., Bohman, B., Lesure, E., Hamidi, M.S., Welle, D., Roberts, L., Shanafelt, T., 2018. A Brief Instrument to Assess Both Burnout and Professional Fulfillment in Physicians: Reliability and Validity, Including Correlation with Self-Reported Medical Errors, in a Sample of Resident and Practicing Physicians. Acad. Psychiatry 42, 11–24. https://doi.org/10.10107/s40596-017-0849-3.

Rath, K.S., Huffman, L.B., Phillips, G.S., Carpenter, K.M., Fowler, J.M., 2015. Burnout and associated factors among members of the Society of Gynecologic Oncology Presented at the 45th Annual Meeting on Women’s Cancer, Society of Gynecologic Oncology, Tampa, March 22–25, 2014. Am. J. Obstet. Gynecol. 213 (824), e1–824.e9. https://doi.org/10.1016/j.ajog.2015.07.036.

West, C.P., Dyrbye, L.N., Erwin, P.J., Shanafelt, T.D., 2016. Interventions to prevent and reduce physician burnout: a systematic review and meta-analysis. The Lancet. 388, 2272–2281. https://doi.org/10.1016/S0140-6736(16)31279-X.

Zhang, J.Q., Riba, L., Magrini, L., Fleishman, A., Ukandu, P., Alapati, A., Shanafelt, T., James, T.A., 2019. Assessing Burnout and Professional Fulfillment in Breast Surgery: Results From a National Survey of the American Society of Breast Surgeons. Ann. Surg. Oncol. 26, 3089–3098. https://doi.org/10.1245/s10434-019-07532-3.

Burns, K.E.A., Pattani, R., Lorenz, E., Straus, S.E., Hawker, G.A., Hutchinson, G., 2021. The impact of organizational culture on professional fulfillment and burnout in an academic department of medicine. PloS ONE 16 (6), e0252778.

Carr, A., Cullen, K., Keeney, C., Canning, C., Mooney, O., Chinesialligh, E., O’Dowd, A., 2021. Effectiveness of positive psychology interventions: a systematic review and meta-analysis. Journal of Positive Psychology. 16, 749–769. https://doi.org/10.1080/17439760.2020.1811807.

Dyck, K.T.H., Holtzman, S., 2013. Understanding humor styles and well-being: The importance of social relationships and gender. Personality Individ. Differ. 55, 53–58. https://doi.org/10.1016/j.paid.2013.01.023.

Navarro-Carrillo, G., Torres-Martín, J., Corbacho-Lobato, J.M., Carretero-Dios, H., 2020. The effect of humour on nursing professionals’ psychological well-being goes beyond the influence of empathy: a cross-sectional study. Scand. J. Caring Sci. 34 (2), 474–483.

Winkel, A.F., Tristan, S.B., Dow, M., Racsumberger, C., Bove, E., Valantsevich, D., Woodland, M.B., 2020. A National Curriculum to Address Professional Fulfillment and Burnout in OB-GYN Residents, Journal of Graduate. Med. Educ. 12, 461–468. https://doi.org/10.4390/JGME-D-19-00728.1.