



Impostor Phenomenon and Grit as Predictors of Job Satisfaction in Female Pharmacy Faculty

Lilia Z. Macias-Moriarity¹ · Starlette M. Sinclair² · Doretha Walker³ · Miriam Purnell⁴

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Abstract

Introduction Impostor phenomenon (IP), grit, and other factors impact job satisfaction for faculty, particularly female faculty.

Methods The Impostor Phenomenon Research Collaborative (IPRC) evaluated IP, grit, and job satisfaction in pharmacy faculty. A cross-sectional study was conducted with a convenience sample of faculty using a survey, which included demographic questions and validated instruments: Clance Impostor Phenomenon (CIPS), Short GRIT Scale, and Overall Job Satisfaction Questionnaire. Differences between groups, relationships, and prediction were evaluated using independent t-tests, ANOVA, Pearson correlation, and regression analyses.

Results A total of 436 participants completed the survey; 380 self-identified as pharmacy faculty. Two hundred and one (54%) reported intense or frequent feelings of IP. The mean CIPS score was above 60, indicating a risk of negative outcomes related to IP. There were no differences in the prevalence of IP or job satisfaction levels when female and male faculty were compared. Female faculty had higher GRIT-S scores. Faculty reporting more IP had lower grit and lower job satisfaction. Job satisfaction in faculty was predicted by IP and grit; however, grit did not provide a unique prediction when combined with IP for male faculty.

Conclusion IP was not more prevalent in female faculty. Female faculty were grittier than male faculty. Higher grit was associated with less IP and higher job satisfaction. IP and grit predicted job satisfaction for female and male pharmacy faculty. Our findings suggest that improving grit may help mitigate IP and impact job satisfaction. Further research on evidence-based IP interventions is needed.

Keywords GRIT · impostor phenomenon · job satisfaction · pharmacy education

Introduction

COVID-19 ushered in “The Great Resignation”, which refers to record numbers of employees quitting their jobs beginning in 2021 [1]. An alternative to resigning is “Quiet Quitting”, which occurs when employees become less psychologically invested in their work or they are not as willing to engage

in activities that are not required of them (e.g. staying late, attending non-mandatory meetings, etc.) [2]. Trends such as “The Great Resignation” and “Quiet Quitting” have caused employers in many sectors, including academia to consider why they are occurring and how they can prevent them from occurring. A Pew Research Survey found that low pay, lack of advancement at work, and feeling disrespected were the top three reasons why people quit their jobs in 2021 [3]. In academic environments, Webber *et al.* found that interactions, experiences, and institutional culture in the academic environment can affect satisfaction at work [4]. In academic pharmacy, one study (n = 811) reported that ~64% of faculty in the United States were very or extremely satisfied with their current position and ~86% indicated that they would like to remain in academia for the remainder of their career [5]. Further analysis of these results indicated that women pharmacy faculty in the United States are less satisfied with their current academic position than their male colleagues. This was true even after controlling for factors such as age, academic rank, and department [6]. However, there may be

✉ Lilia Z. Macias-Moriarity
lmacias-moriarity@southuniversity.edu

¹ Department of Pharmaceutical Sciences, South University School of Pharmacy, 709 Mall Boulevard, Savannah, GA 31406, USA

² Department of Psychology, Florida Gulf Coast University, Fort Myers, FL, USA

³ Research Affiliate, Florida Gulf Coast University, Fort Myers, FL, USA

⁴ Department of Pharmacy Practice and Administration, University of Maryland Eastern Shore, Princess Anne, MD, USA

other factors such as Impostor Phenomenon and GRIT that can play a role in keeping faculty, especially women in their academic jobs when they are not satisfied.

Impostor Phenomenon (IP) describes high-achieving individuals who, despite their successes, fail to attribute their achievements to their own work and instead associate it with luck. These individuals often display self-doubt and fear of being discovered as frauds [7]. The Impostor Cycle describes the process that individuals with IP go through as they approach a project or assignment [7]. When a person who experiences IP is faced with a task or project, they experience doubt and fear about their ability to complete it successfully. Although they may have had success with similar assignments previously, they question whether or not they will succeed *this* time. As a result, they may experience anxiety, psychosomatic symptoms, etc. They may work hard towards completing the assignment or over-prepare. Conversely, they may procrastinate and then frantically prepare. Because individuals with IP are high achieving, they will likely be successful with the assignment. Upon receiving positive feedback, they will ignore or push away the positive feedback, attributing the success to luck. Thus, self-doubt is reinforced and the cycle continues. Some groups are more susceptible to feelings of IP than other groups. For example, individuals who differ from the majority of their peers — whether by race, gender, sexual orientation or some other characteristic — may be more prone to the sense of being a fraud [7]. A study of IP in women in higher education found that ~95% of women experienced moderate, frequent, or intense feelings of IP [8]. Originally, IP was thought to be unique to women [7, 9]. However, subsequent research on the topic indicates that men also experience IP to a similar extent as women [10].

While IP isn't an official diagnosis listed in the Diagnostic And Statistical Manual Of Mental Disorders, Fifth Edition (DSM-5), psychologists and others acknowledge that it is a very real and specific form of intellectual self-doubt and is generally accompanied by anxiety and, often, depression [11]. Other manifestations of IP may include indecisiveness, procrastination, and avoiding responsibilities, which may ultimately have a negative impact on their career progression [12] and job satisfaction [13]. One study suggested that low job satisfaction may result from the emotional fatigue that is experienced by higher education faculty with high levels of IP [14, 15]. Grit is a character trait described as perseverance and passion towards long-term goals [16]. Schmidt *et al.* reported that grit had a negative correlation with procrastination [17]. Because people who experience IP have a tendency to procrastinate, grit may also have a direct effect on IP. This was found to be the case in a study by Ibrahim *et al.* that showed grit had a negative direct effect on IP [18].

A limited number of individual studies have assessed Impostor Phenomenon, grit, or job satisfaction in pharmacy faculty [6, 12, 19]. However, there are no studies examining the relationship

of these three variables to one another in female faculty. In this study, we evaluated IP and grit and job satisfaction in female pharmacy faculty. Specifically, we hypothesized: (H₁) female faculty will report greater IP experiences than male faculty, (H₂) grittier faculty will report less IP experiences and more job satisfaction, (H₃) IP and grit will significantly predict job satisfaction.

Methods

This cross sectional study was designed and conducted by the Impostor Phenomenon Research Collaborative (IPRC). The IPRC was established in 2020 to bring together like minded researchers interested in determining the prevalence of impostor phenomenon in higher education and health professions and to investigate relationships between IP and predictors of academic and professional achievement. A convenience sample of student pharmacists and faculty via an anonymous online survey was created and disseminated using Qualtrics (Qualtrics, Provo, UT). Using the AACP faculty listserv, faculty (8,535) were invited to participate in the survey. Reminder emails were sent to the listserv after the initial survey launch. Additionally, depending on the institution, IPRC collaborators distributed the survey link to faculty from other disciplines at their institutions. Given the varying recruitment methods, it is not possible to determine the exact number of faculty who received and/or accessed the link. All online participants were given the option to win a \$25 Amazon gift card as an incentive to complete the survey (where legally allowed). After completing the survey, participants could click on a separate link to submit their email address if they wished to be entered into a raffle to win the gift card. Data was collected April 2021 through July 2022, with most responses (98%) recorded by August 2021. The survey instrument was a compilation of validated instruments that measured the degree to which respondents self-reported impostor phenomenon feelings (Clance Impostor Phenomenon Scale: CIPS [7]), anxiety (Beck Anxiety Inventory: BAI [20]), grit (Short GRIT Scale: GRIT-S [21]), job satisfaction (overall Job Satisfaction Questionnaire: JS [22, 23]), burnout (Maslach Burnout Inventory: MBI [24]), resilient coping (Resilient Coping Scale [25]), and their Big 5 personality traits (Mini-IPIP scale [26]). For the purposes of this paper, the results from the CIPS, GRIT-S, and JS instruments will be presented.

The Clance Impostor Phenomenon Scale is composed of 20 items rated on a 5 point Likert scale ranging from 1 (Not true at all) to 5 (Very true). The CIPS measures the degree to which a person who is exceptional by external standards, has a fear of being incompetent, unable to repeat previous success, and less capable than others [27]. Summative scores of 40 or less represent few impostor characteristics, scores 41–60 exemplify moderate IP experiences, scores 61–80 indicate frequent impostor feelings, and respondents

who score 81 or higher exhibit intense IP experiences [7]. Job satisfaction has been operationally defined as a combination of two elements: feelings of fulfillment and enjoyment one gets from their job. The instrument was composed of five questions and the responses were rated between 1 (terrible) to 7 (delighted) where the middle value (4) was categorized as indifferent [22]. Duckworth *et al.* defined grit as trait-level perseverance and passion for long-term goals [21]. The Short Grit Scale (GRIT-S) is made up of 8 items rated on a 5 point Likert scale (1—Not like me at all; 5—Very much like me), which ask respondents to reflect on their tendency to sustain interest in and effort toward very long-term goals [21].

Participants were also presented demographic questions regarding their age, sex, ethnicity, race, relationship status, employment status, academic program, education level, and current/past military service (see Table I). Participants could choose to skip these questions if they were uncomfortable disclosing due to any perceived potential for identification based on their demographic characteristics being linked to their institutional affiliation and/or position title. Due to this, the included number of participants will differ depending on the variables included for analysis.

Differences between groups, relationships and predictive values were evaluated using the following statistical procedures: independent t-test, ANOVA, Pearson Correlation, and regression analysis using SPSS version 28. Specifically, to test the first hypothesis regarding proposed differences between female and male faculty on IP, grit, and job satisfaction, independent sample t-tests were used (group means are reported in Table II). To assess if IP, grit, and job satisfaction differed depending on faculty appointment type or rank, one-way ANOVA hypothesis tests were conducted (F values with significance are reported in Table III). Correlation analyses were run to test our second hypothesis regarding the relationships between grit and IP and job satisfaction. To address the third hypothesis, regression analyses were used to assess whether levels of job satisfaction in pharmacy faculty could be predicted from IP (as measured by the CIPS) and grit (as measured by the GRIT-S) scores. Alpha was set *a priori* at .05. The survey and methodology was approved by the South University IRB (ID:00009705). Though the research was deemed exempt, on-line informed consent was required by all research participants before entering the survey.

Results

Participants

A total of 579 faculty accessed the survey, and 436 completed the entire survey (75% completion rate). Of the 436 faculty who completed the survey, 380 self-identified

as pharmacy faculty from 121 different institutions. The results presented in this study are for pharmacy faculty only. The demographics are reported in Table I. Approximately 69% were female, 85% were White, and 92% were born in the United States. With regards to employment characteristics, 96% were employed full-time, 51% were non-tenure track, and 60% were at a faculty rank of Associate/Clinical Associate Professor or higher.

IP, Grit, and Job Satisfaction Scores

Approximately 54% of our faculty sample had CIPS scores above the moderate range (Fig. 1), indicating frequent or intense IP experiences for 201 individuals. There was no association between faculty sex (Female, Male) and IP category (Few, Moderate, Frequent, Intense) as we saw similar proportions of male and female faculty represented within the categories, $X^2_3 = 2.1$, $P = .55$ (Fig. 1).

Overall descriptive values (mean, standard deviation and observed range) for the main variables in this sample of pharmacy faculty are reported in Table II. The mean CIPS score for the entire sample was 61.8 (i.e. in the frequent IP experiences range), indicating a risk of negative outcomes related to IP. The mean job satisfaction score was 5.1 for all faculty, where a value of 4 indicates indifference. The GRIT-S score for all faculty was 3.5. Means for IP, GRIT-S, and job satisfaction separated by sex are in Table II. Of the three variables of interest, female faculty scored significantly higher than male faculty on grit only $t_{376} = 2.13$, $P = .02$. Female faculty did not report experiencing IP to a significantly greater extent than male faculty $t_{376} = 0.88$, $P = .19$, nor was there a significant difference with regard to job satisfaction $t_{376} = -1.42$, $P = .08$.

When assessing whether IP, grit, and job satisfaction differed depending on faculty appointment type, statistically significant differences were noted in IP and grit, but not in job satisfaction. Non-tenure track faculty reported significantly higher IP (mean 65.3, SD 16.3) and lower GRIT-S (mean 3.36, SD 0.73) compared to faculty who were tenured (IP: mean 58.9, SD 18.0; GRIT-S: mean 3.72, SD 0.67) or had administrative appointments (IP: mean 52.2, SD 15.4; GRIT-S: mean 3.82, SD 0.59). For faculty rank (i.e., Assistant or Clinical Assistant Professor, Associate or Clinical Associate Professor, Professor or Clinical Professor, Other), statistically significant differences were noted for all variables. While faculty at the assistant rank reported significantly more IP (mean 65.3, SD 16.1) and lower GRIT-S (mean 3.34, SD 0.69) than those at the full professor rank (IP: mean 58.4, SD 16.2; GRIT-S: mean 3.79, SD = 0.58), Associate Professors reported lowest job satisfaction (mean 4.9, SD = 1.1) compared to full professors (mean 5.3, SD = 0.89).

Table 1 Study Participant Characteristics (*N* = 380)

	Mean (SD)/ Frequency (%)	Observed Range
Age, years	44 (11)	24–82
Sex		
Female	264 (69%)	
Male	114 (30%)	
Did not respond	2 (1%)	
Gender		
Men	92 (24%)	
Women	201 (53%)	
Nonbinary/Nonconforming	3 (1%)	
Did not respond	84 (22%)	
Ethnicity		
Hispanic or Latino/a/x	18 (5%)	
Non-Hispanic or non-Latino/a/x	361 (95%)	
Did not respond	1 (<1%)	
Race		
Asian or Asian American	20 (5%)	
American Indian or Alaska Native	1 (<1%)	
Black or African American	15 (4%)	
Multiracial	12 (3%)	
White or Caucasian	323 (85%)	
Other (not specified)	7 (2%)	
Did not respond	2 (<1%)	
Place of birth		
United States of America (US)	347 (92%)	
Outside of the US	32 (8%)	
Did not respond	1 (<1%)	
Relationship status		
Partnered	323 (85%)	
Unpartnered	56 (15%)	
Did not respond	1 (<1%)	
Education, years	20 (3)	12–25
US Military Service history		
Yes, previously active	3 (1%)	
No, never served	376 (99%)	
Did not respond	1 (<1%)	
Employment status		
Full-time	366 (97%)	
Part-time	7 (2%)	
Not employed	6 (2%)	
Did not respond	1 (<1%)	
Appointment type		
Tenured	113 (30%)	
Tenure track	38 (10%)	
Non-tenure track	193 (51%)	
Administrative	29 (8%)	
Did not respond	7 (2%)	
Faculty rank		
Assistant or Clinical Assistant Professor	133 (35%)	
Associate or Clinical Associate Professor	130 (34%)	
Professor or Clinical Professor	97 (26%)	
Other (not specified)	12 (3%)	
Did not respond	8 (2%)	

Table II Descriptive Statistics for Main Variables of Interest^a ($N=379$)

	Mean (SD)	Observed Range
Impostor Phenomenon Score (CIPS)		
Overall Faculty	61.8 (17.1)	20.0—100.0
Female	62.3 (17.1)	20.0—100.0
Male	60.6 (17.1)	25.0—97.0
Prefer not to answer	53	
GRIT Score (GRIT-S)		
Overall Faculty	3.5 (0.7)	1.8—5.0
Female	3.6 (0.7)	1.8—5.0
Male	3.4 (0.7)	1.9—4.8
Prefer not to answer	4.3	
Job Satisfaction Score (JS)		
Overall Faculty	5.1 (1.0)	1.4—7.0
Female	5.0 (1.0)	2.4—7.0
Male	5.2 (1.1)	1.4—7.0
Prefer not to answer	4.8	

^aCIPS Clance Impostor Phenomenon Scale 20 items, GRIT-S the 8-item short form of the original 12-item Grit-O scale, JS 5-item job satisfaction index scale

Relationships between IP, Grit, and Job Satisfaction

We evaluated the nature of the relationships between our variables of interest. As predicted, IP and GRIT-S scores showed a significant negative correlation; faculty who reported higher GRIT-S had lower IP, $r=-0.40$, $P<.001$. GRIT-S was positively correlated with job satisfaction such that grittier faculty reported higher levels of job satisfaction, $r=0.22$, $P<.001$. Conversely, IP was negatively correlated with job satisfaction, as faculty reporting higher levels of IP reported lower job satisfaction, $r=-0.31$, $P<.001$. When the data were separated by faculty sex, the relationship patterns between IP, grit, and job satisfaction remained consistent (see Table IV for correlations).

Predictors of Job Satisfaction

To address our third hypothesis, regression analyses were used to assess whether levels of job satisfaction in pharmacy faculty could be predicted from IP (as measured by the CIPS) and grit (as measured by the GRIT-S) scores. Overall, there was a significant relationship between IP and grit and job satisfaction, $F_{2,377}=21.56$, $P<.001$. The multiple R squared showed that 10% of the variance in levels of job satisfaction could be explained by both variables. Looking at each predictor variable individually, both IP ($\beta=-.26$, $P<.001$) and grit ($\beta=.11$, $P=.04$) were unique and significant predictors of job satisfaction in pharmacy faculty overall.

Table III Comparisons of Impostor Phenomenon (IP), GRIT, and Job Satisfaction by Faculty Position Characteristics^{a,b} ($N=379$)

Characteristic (statistical test conducted, symbol)	CIPS	GRIT-S	JS
Appointment Type (ANOVA, F)	7.23***	8.39***	1.12
Faculty Rank (ANOVA, F)	3.65*	8.28***	4.73**

^aAppointment Type: Tenured, Tenure-track, Non-tenured, Administrative

^bFaculty Rank: Assistant or Assistant Clinical Professor, Associate or Associate Clinical Professor of Clinical Professor, Other

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

Specifically, more IP experiences were associated with lower job satisfaction, $r=-0.30$, $P<.001$, while higher grit was associated with higher job satisfaction, $r=0.21$, $P<.001$ (Fig. 2).

We repeated the same regression analysis after stratifying the dataset based on sex (Fig. 3). For female and male faculty, we observed the same pattern of results where job satisfaction was significantly predicted by IP and grit combined, $F_{2,262}=11.79$, $P<.001$ (female faculty) and $F_{2,111}=10.32$, $P<.001$ (male faculty). For female faculty, the multiple R squared showed that 8% of the variance in job satisfaction could be explained, while in male faculty, the multiple R squared showed that 16% of the variance in levels of job satisfaction could be explained by the regression model. While both IP ($\beta=-0.22$, $P<.001$) and GRIT-S ($\beta=0.13$, $P=.049$) provided unique prediction of job satisfaction for female faculty, this was not the case for male faculty where IP carried the prediction ($\beta=-0.34$, $P=.001$) and GRIT-S did not add uniquely to prediction when included in the regression model ($\beta=0.10$, $P=.34$).

Discussion

Our research focused on answering three central questions: do female pharmacy faculty have more IP experiences than their male counterparts, are grittier faculty reporting less IP experiences and in turn greater job satisfaction, and finally will IP and grit significantly predict job satisfaction. We found that more than half of pharmacy faculty experienced intense or frequent feelings of IP, indicating a risk of negative outcomes related to IP [7]. However, there were no significant differences in IP experiences between female and male faculty in our data. Though originally proposed as a female phenomenon, in 1993 Langford and Clance's summary of the current literature determined there were no differences in the prevalence of IP between sexes [28] and there was no difference in the prevalence of IP between female and male faculty in our sample. While there were

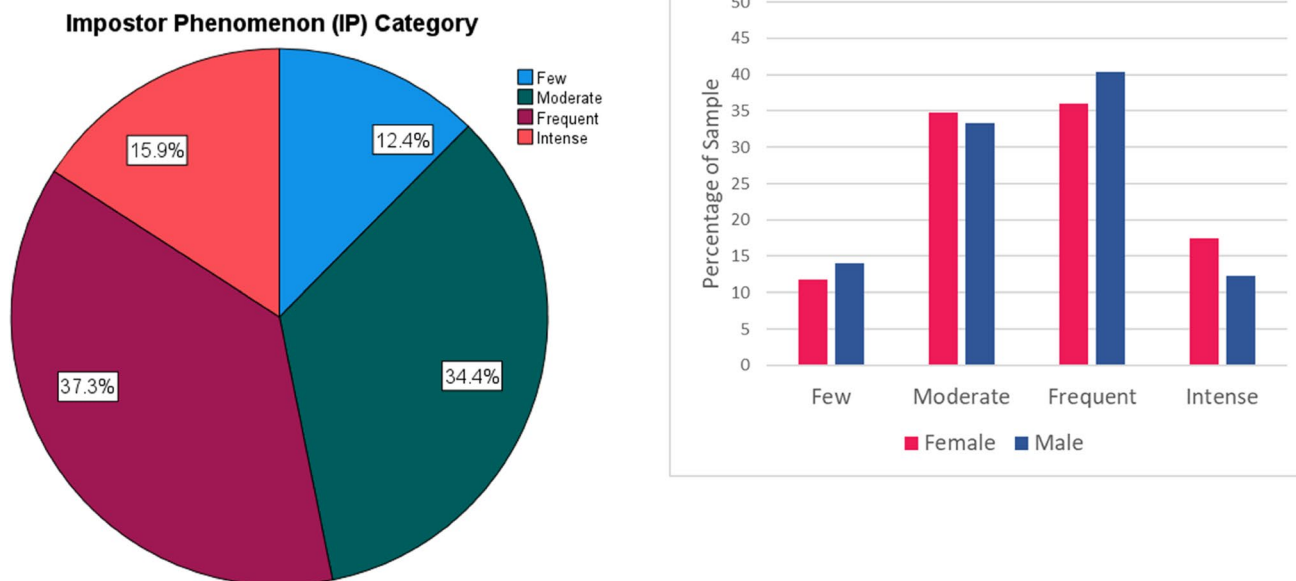


Fig. 1 Impostor phenomenon prevalence and comparison by sex in pharmacy faculty.

no significant differences seen in job satisfaction between female and male faculty, female faculty did have significantly higher GRIT-S scores when compared to their male counterparts. We also found that faculty who had higher grit had lower IP and greater job satisfaction. With regard to job satisfaction, faculty with greater IP reported lower job satisfaction. Lastly, we found that job satisfaction in pharmacy faculty could be predicted by IP and grit.

The mean CIPS score for our sample was moderately high, which was similar to observed scores in other studies in higher education faculty [8, 14, 28]. With regard to tenure status, non-tenured faculty reported higher IP scores. This is similar to results by Hutchins *et al.* that demonstrated the inverse correlation between IP and faculty tenure status, indicating impostor feelings may lessen among faculty who experience it as they move into a tenured position [14]. We also found that female faculty were grittier than male faculty, a phenomenon previously reported in a previous study [29]. We found no differences in job satisfaction between male and female faculty. This differs from the study by Ip *et al.* that found that male faculty were more likely to report being extremely satisfied with their current job [6].

Grit, IP, and job satisfaction were strongly related in our sample. Consistent with previous findings, higher levels of grit were associated with greater job satisfaction [30]. We also observed that faculty who reported higher grit indicated fewer IP experiences. This finding is particularly meaningful as research on these topics together typically focus on students [31]. For female faculty, both grit and IP play unique roles in prediction suggesting that interventions to improve grit and/or mitigate IP can be impactful on job satisfaction. Conversely, while the combined influence of grit and IP predicted job satisfaction in male faculty, when further investigated, IP by itself was the significant predictor and grit did not add significant unique prediction. This finding was surprising because, historically, the narrative about IP’s impact on career related outcomes has focused on female professionals [8, 32, 33]. This may explain why female faculty constitute 52% of all faculty in pharmacy education [34], yet make up 78% of our sample. Our results indicate that IP experiences were salient for male faculty and notably explained twice the amount of variation in job satisfaction compared to female faculty.

Table IV IP, GRIT, and Job Satisfaction Pearson Correlations (N=378)

	Female Faculty			Male Faculty		
	CIPS	GRIT-S	JS	JS	GRIT-S	CIPS
CIPS						
GRIT-S	-0.36***					-0.52***
JS	-0.26***	0.20***			0.27**	-0.39***

P < .01, *P < .001

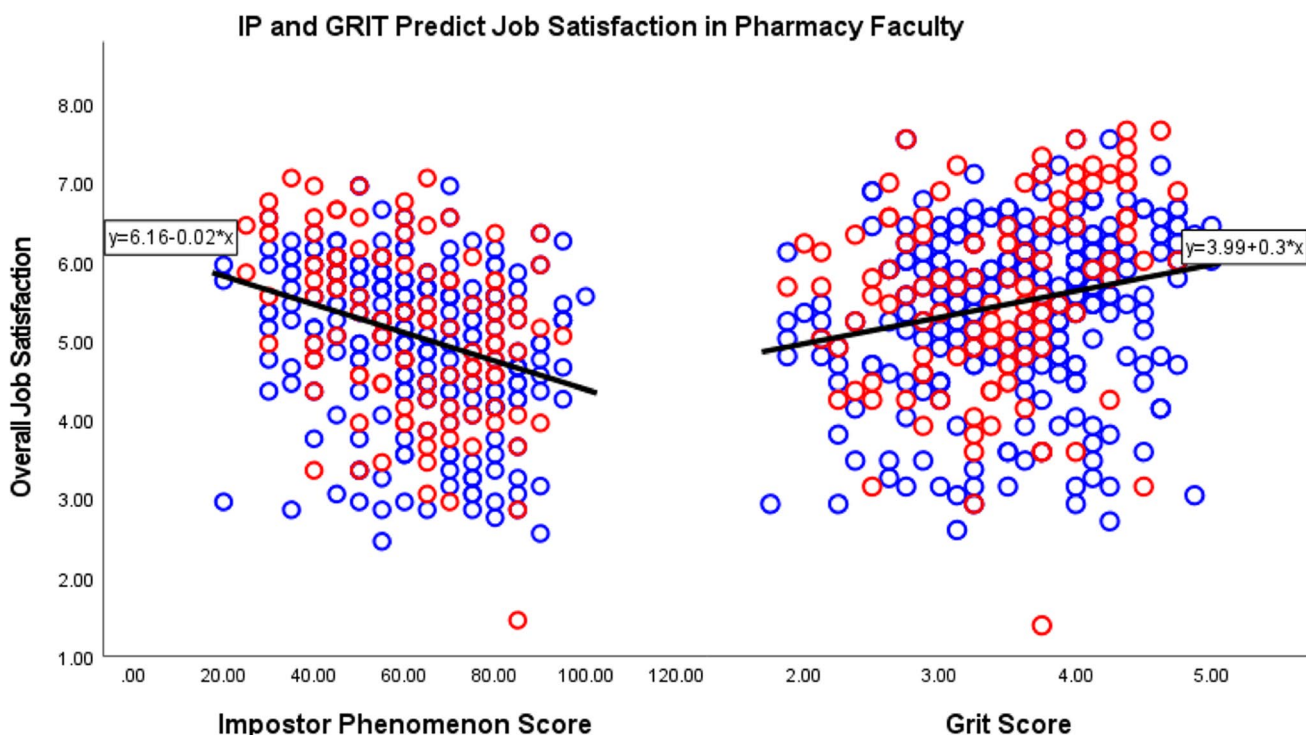


Fig. 2 IP and GRIT predicting job satisfaction for all pharmacy faculty.

Our study had several strengths. This is the first national survey of IP, grit, and job satisfaction in pharmacy faculty. Our large sample size and representation from over a hundred institutions of higher education contribute to our confidence in the generalizability of our results. Moreover, the racial demographics of our sample are generally representative of pharmacy faculty in the academy [34] with the exception of Asians who were underrepresented in our sample. The survey responses came from faculty holding tenured and non-tenured appointments at various types of institutions and at varied career levels (i.e. rank). Our respondents’ ages covered an observed range of 24–82, making it more likely that our data are from faculty at different stages of life as well. We made efforts to reduce errors typically seen with survey research. Specifically, nonresponse error was reduced by providing incentives, sending out reminders, and making responding to demographic question items optional. We wanted to ensure that participants who may have been hesitant to respond to the survey due to perceived risk of identification (e.g., due to their job title, affiliation with a minoritized group, or other demographic factors) could still contribute to the research. Measurement error was reduced by using validated and reliable survey tools.

Our study had some limitations. Although data collection for this data set ended in July 2022, the majority of our sample was collected from April 2021–August 2021. This was during a time period when society was still grappling with workplace disruptions due to the COVID-19 pandemic, which disproportionately impacted female faculty

and exacerbated gender inequity [35–37]. Although we did not see a difference between male and female faculty in the prevalence of IP in our study, we did see higher levels of grit in female faculty in our sample. The impact of pushing through the challenges that may have affected female faculty to a greater extent may have resulted in female faculty exhibiting more grit than their male counterparts. Another potential limitation was demand characteristics. Our survey took approximately 15–30 min to complete. This may have discouraged potential participants from attempting the survey. Additionally, although female faculty comprise more than half of all pharmacy faculty [34], there was an overrepresentation of female faculty in our study. This could be attributed to the narrative that IP is more prevalent in women although our results indicated that IP was a greater predictor for job satisfaction in men. Also, we did not ask respondents which department they belonged to. Females constitute 52% of pharmacy practice departments; however, only 31% of faculty in the pharmaceutical sciences (biomedical sciences, medicinal chemistry, pharmacology, pharmacognosy, toxicology, pharmacokinetics) [34]. Further research is needed to determine if differences exist between females in pharmacy practice *versus* pharmaceutical sciences departments. Impostor Phenomenon, male-centric networks, lack of female mentors in senior positions, and masculinized workspaces are well documented in female STEM faculty. Finally, our respondents may have been familiar with IP and therefore more interested in the survey resulting in self-selection bias.

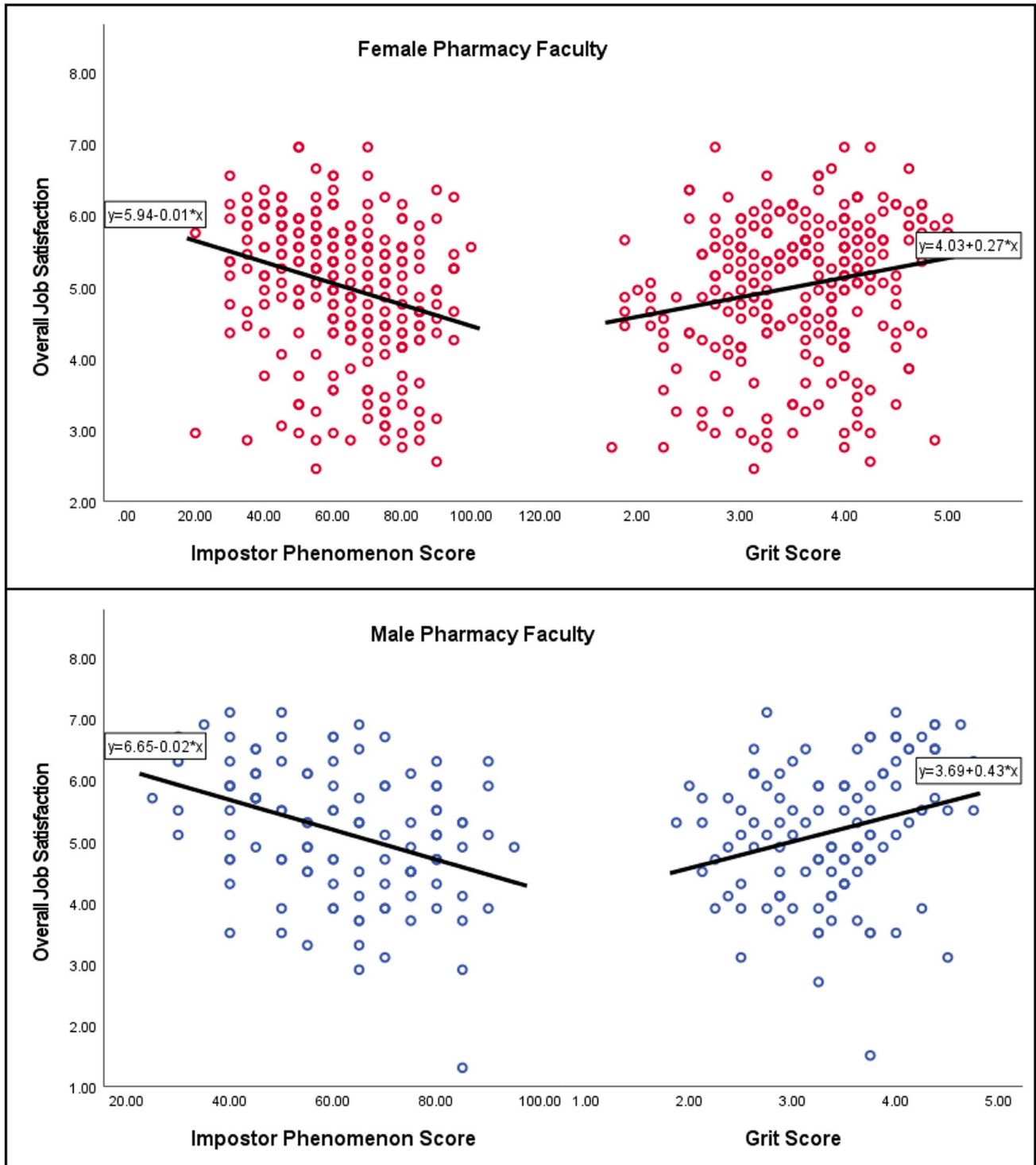


Fig. 3 IP and GRIT predicting job satisfaction by sex.

Conclusions

IP was not more prevalent in female faculty; however, more than half of faculty reported IP at levels indicative of risk of negative outcomes associated with these experiences. Female faculty were grittier than male faculty. Higher grit was associated with less IP and higher job satisfaction. Both IP and grit predicted job satisfaction for female faculty, while IP by itself was the significant predictor of job satisfaction for male pharmacy faculty. Interestingly, IP was also a stronger predictor of job satisfaction for male faculty (compared to female faculty), indicating a needed shift in the popular narrative of IP being mostly a concern for female professionals. There is a paucity of research on evidence-based interventions to address IP experiences. Future research on this topic needs to prioritize strategies for reduction of IP as well as if pharmaceutical science female faculty have similar IP experiences as female faculty in other STEM fields. Our findings suggest that improving GRIT may help mitigate IP and that matters for job satisfaction.

Author's Contributions All authors contributed equally to this manuscript.

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Declarations

Conflicts of Interests The authors have no conflicts of interest.

References

- Fuller J, Kerr W. The Great Resignation Didn't Start with the Pandemic. 2022. <https://hbr.org/2022/03/the-great-resignation-didnt-start-with-the-pandemic>. Accessed 16 Dec 2022.
- Klotz AC, Bolino MC. When Quiet Quitting Is Worse Than the Real Thing. 2022. <https://hbr.org/2022/09/when-quiet-quitting-is-worse-than-the-real-thing>. Accessed 16 Dec 2022.
- Parker K, Horowitz JM. Majority of workers who quit a job in 2021 cite low pay, no opportunities for advancement, feeling disrespected. In: Pew Research Center. 2022. <https://www.pewresearch.org/fact-tank/2022/03/09/majority-of-workers-who-quit-a-job-in-2021-cite-low-pay-no-opportunities-for-advancement-feeling-disrespected/>. Accessed 21 Dec 2022.
- Webber KL. Does the environment matter? Faculty satisfaction at 4-year colleges and universities in the USA. *High Educ*. 2019;78:323–43.
- Lindfelt TA, Ip EJ, Barnett MJ. Survey of career satisfaction, lifestyle, and stress levels among pharmacy school faculty. *Am J Health Syst Pharm*. 2015;72:1573–8.
- Ip EJ, Lindfelt TA, Tran AL, Do AP, Barnett MJ. Differences in Career Satisfaction, Work-life Balance, and Stress by Gender in a National Survey of Pharmacy Faculty. *J Pharm Pract*. 2020;33:415–9.
- Clance PR, OToole MA. The imposter phenomenon. *Women Ther*. 1987;6:51–64.
- Vaughn AR, Taasoobshirazi G, Johnson ML. Impostor phenomenon and motivation: women in higher education. *Stud High Educ*. 2020;45:780–95.
- Simon M. STEMming within a double minority: How the impostor syndrome affects Black women Ph.D. students. *Int J Mult Res Approaches*. 2020;12:185–201.
- Badawy RL, Gazdag BA, Bentley JR, Brouer RL. Are all impostors created equal? Exploring gender differences in the impostor phenomenon-performance link. *Pers Individ Dif*. 2018;131:156–63.
- Weir K. Feel like a fraud? *Grad Psych*. 2013. <https://www.apa.org/gradpsych/2013/11/fraud>. Accessed 11 Aug 2022.
- Boyle J, Malcom DR, Barker A, Gill R, Lloyd M, Bonenfant S. Assessment of Impostor Phenomenon in Student Pharmacists and Faculty at Two Doctor of Pharmacy Programs. *Am J Pharm Educ*. 2022;86:8474.
- Vergauwe J, Wille B, Feys M, De Fruyt F, Anseel F. Fear of Being Exposed: The Trait-Relatedness of the Impostor Phenomenon and its Relevance in the Work Context. *J Bus Psychol*. 2015;30:565–81.
- Hutchins HM. Outing the imposter: A study exploring impostor phenomenon among higher education faculty. *New Horiz Adult Educ Hum Resour Dev*. 2015;27:3–12.
- Hutchins HM, Penney LM, Sublett LW. What imposters risk at work: Exploring impostor phenomenon, stress coping, and job outcomes. *Hum Resour Dev Q*. 2018;29:31–48.
- Duckworth A. *Grit: The Power of Passion and Perseverance*. New York: Simon and Schuster; 2016.
- Schmidt FTC, Fleckenstein J, Retelsdorf J, Eskreis-Winkler L, Möller J. Measuring grit. *Eur J Psychol Assess*. 2019;35:436–47.
- Ibrahim F, Münscher J-C, Herzberg PY. The validation of the English Impostor-Profile 30 and the exploratory formulation of the learned helplessness model of the impostor phenomenon. *Acta Psychol*. 2022;226:103589.
- Steuber TD, Nisly SA, Gillette M, C. Grit in pharmacy faculty: A pilot analysis focused on productivity measures. *Curr Pharm Teach Learn*. 2019;11:1029–34.
- Beck AT, Epstein N, Brown G, Steer RA. An inventory for measuring clinical anxiety: psychometric properties. *J Consult Clin Psychol*. 1988;56:893–7.
- Duckworth AL, Quinn PD. Development and validation of the short grit scale (grit-s). *J Pers Assess*. 2009;91:166–74.
- Rentsch JR, Steel RP. Construct and Concurrent Validation of the Andrews and Withey Job Satisfaction Questionnaire. *Educ Psychol Meas*. 1992;52:357–67.
- Social Indicators of Well-Being. In: Andrews FM, Withey SB, editors. New York: Plenum Press; 1978, pp. 455; illustrated; \$30.00. *Psychol Med*. 8:531–532.
- Maslach C, Jackson SE, Leiter MP. Maslach Burnout Inventory. In: Zalaquett CP, editor. *Evaluating stress: A book of resources*, (Scarecrow Education, xvii). 3rd ed. Lanham; 1997, pp 191–218.
- Sinclair VG, Wallston KA. The development and psychometric evaluation of the Brief Resilient Coping Scale. *Assessment*. 2004;11:94–101.
- Donnellan MB, Oswald FL, Baird BM, Lucas RE. The mini-IPIP scales: tiny-yet-effective measures of the Big Five factors of personality. *Psychol Assess*. 2006;18:192–203.
- Chrisman SM, Pieper WA, Clance PR, Holland CL, Glickauf-Hughes C. Validation of the Clance Impostor Phenomenon Scale. *J Pers Assess*. 1995;65:456–67.
- Langford J, Clance PR. The impostor phenomenon: Recent research findings regarding dynamics, personality and family patterns and their implications for treatment. *Psychotherapy: Theory, Research, Practice, Training*. 1993;30:495–501.

29. Argon T, Kaya A. Examination of grit levels of teachers according to personal variables. *J Educ Train Stud*. 2018;6:45.
30. Danner D, Lechner CM, Rammstedt B. A cross-national perspective on the associations of grit with career success. *Comp J Comp Int Educ*. 2020;50:185–201.
31. Chakraverty D. Faculty Experiences of the Impostor Phenomenon in STEM Fields. *CBE Life Sci Educ*. 2022;21:ar84.
32. Hirschfeld MM. The impostor phenomenon in successful career women. In: ETD Collection for Fordham University. AAI8223604. 1982. <https://research.library.fordham.edu/dissertations/AAI8223604>. Accessed 2 Sep 2022.
33. Clance PR, Dingman D, Reviere SL, Stober DR. Impostor Phenomenon in an Interpersonal/Social Context. *Women Ther*. 1995;16:79–96.
34. Pharmacy faculty demographics and salaries reports. 2021–2022 Profile of Pharmacy Faculty. In: American Association of Colleges of Pharmacy. <https://www.aacp.org/node/2660>. Accessed 28 Dec 2022.
35. Yildirim TM, Eslen-Ziya H. The differential impact of COVID-19 on the work conditions of women and men academics during the lockdown. *Gend Work Organ*. 2021;28:243–9.
36. Deryugina T, Shurchkov O, Stearns J. COVID-19 Disruptions Disproportionately Affect Female Academics. *AEA Papers and Proceedings*. 2021;111:164–8.
37. Gabster BP, van Daalen K, Dhatt R, Barry M. Challenges for the female academic during the COVID-19 pandemic. *Lancet*. 2020;395:1968–70.

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