



Personality and Individual Differences

journal homepage: www.elsevier.com/locate/paid

Are all impostors created equal? Exploring gender differences in the impostor phenomenon-performance link



Rebecca L. Badawy^{a,*}, Brooke A. Gazdag^b, Jeffrey R. Bentley^c, Robyn L. Brouer^d

^a Department of Management, Williamson College of Business Administration, Youngstown State University, United States

^b Institute for Leadership and Organization, Ludwig-Maximilians Universität München, Germany

^c Department of Management/HRM, College of Business, California State University, Long Beach, United States

^d Department of Management, Canisius College, United States

ARTICLE INFO

Keywords:
Impostor phenomenon
Gender
Feedback
Accountability
Performance

ABSTRACT

Some individuals report feeling inauthentic at work, and fear being found out as a fake or as someone who does not deserve their status or reputation. Termed the imposter phenomenon (IP), this pervasive feeling has recently gained traction and recognition in organizational research. However, the relationship between IP and performance is still not well understood. We present two studies that explore the relationship between IP, performance, and gender under two different conditions: feedback (Study 1, $N = 268$) and accountability (Study 2, $N = 250$). Results indicate that male IPs react significantly more negatively under conditions of negative feedback and high accountability. These findings reveal a complex relationship between IP and gender which demonstrate that impostors' gender could potentially exacerbate the negative effects of IP on work outcomes.

1. Introduction

The imposter phenomenon (IP) refers to individuals who feel like intellectual fakes, believing they fooled the people around them into thinking they are competent individuals (Clance & Imes, 1978). Examples of this exist in all life spaces, from the student who believes they were accepted into college due to an administrative mistake to the CEO who feels woefully misplaced in their role. In the 2015 Harvard commencement address delivered by Natalie Portman, IP resonated in Portman's recollection of her own experience at Harvard, stating "I felt like there had been some mistake...that I wasn't smart enough to be in this company, and that every time I opened my mouth I would have to prove that I wasn't just a dumb actress." This is language typical of many successful individuals, and high-profile cases of IP are not hard to find. These individuals, called impostors, doubt their ability to be successful, feel inauthentic and deceptive, and that they do not belong in the roles they hold (Clance & O'Toole, 1987) - even when they experience success. As such, impostors have a difficult and complex relationship with their own performance.

Despite gaining achievements and holding accomplished roles, impostors experience and display negative feelings and attitudes (low self-efficacy, low affective commitment, lack of perceived organization support, maladaptive perfectionism) and engage in counterproductive behaviors (low citizenship behaviors, biased managerial decision

making, lack of career planning or striving) in the workplace that often stifle their progress (e.g., Bechtoldt, 2015; Grubb & McDowell, 2012; McDowell, Grubb III, and Geho, 2015; Neureiter & Traut-Mattausch, 2016, 2017; Vergauwe, Wille, Feys, De Fruyt, and Anseel, 2015). Together with research demonstrating no direct link between IP and task performance (e.g., Want and Kleitman, 2006; Thompson, Foreman, and Martin, 2000), we can conclude that the mechanisms connecting IP and achievement are not so clear and are likely influenced by boundary conditions. This inconsistency highlights the *enigmatic* nature of IP (e.g., Leary, Patton, Orlando, and Waggoner Funk, 2000), and begs the question: if impostors experience psychological barriers that have negative consequences on their careers (Jöbstl, Bergsmann, Lüftenegger, Schober, and Spiel, 2012), when are they high achievers and when do they succumb to these negative expectations of themselves? In these exploratory studies, we investigate the role of gender, accountability and feedback on impostors' tendency to experience performance anxiety, reduce their effort, and demonstrate lower performance.

1.1. Impostor phenomenon

Clance and Imes (1978) coined the term "impostor phenomenon" to describe the tendency of some high achieving women to feel they are essentially phonies and faking their own success. Such individuals experience intense feelings of inauthenticity in their accomplishments; as

* Corresponding author.

E-mail addresses: rbadawy@ysu.edu (R.L. Badawy), gazdag@bwl.lmu.de (B.A. Gazdag), jeffrey.bentley@csulb.edu (J.R. Bentley), robyn.brouer@canisius.edu (R.L. Brouer).

stated by Clance and Imes (1978): “despite their earned degrees, scholastic honors, high achievement on standardized tests, praise and professional recognition from colleagues and respected authorities, these women do not experience an internal sense of success” (p. 1). In this way, impostors experience an inconsistency between what they think about themselves and what they believe the external world thinks about them. They believe they are not deserving of their success and constantly fear being evaluated negatively (Clance, Dingman, Reviere, and Stober, 1995) or “found out” for their fraudulence. Beyond its general association with anxiety (e.g., negative affectivity, neuroticism; Ross, Stewart, Mugge, and Fultz, 2001; Thompson et al., 2000), avoidance (Ross & Krukowski, 2003), and poor self-views (e.g., low self-esteem, low self-perceived intelligence; Kumar & Jagacinski, 2006), IP is inherently and specifically linked with the externalization or downplay of personal agency for one's competence and performance.

Theories of the self-concept have long since highlighted the emotional (Higgins, 1987) and behavioral (Burke, 1991; Swann Jr, 1983) reactions to perceived self-discrepancies, or discrepancies between self-views (what I think I am) and other-views (what I think others think I am). Individuals develop their self-views during childhood and early adolescent experiences (e.g., through parenting; Li, Hughes, and Thu, 2014; Thompson, 2004; Want & Kleitman, 2006) which become stable parts of their adult self-concepts (Bian, Leslie, and Cimpian, 2017). As a normal part of the identity process, individuals constantly compare information from their environment to their own self-concept, and experience self-discrepancies when they perceive their environment views them differently than they view themselves. Individuals experiencing self-discrepancies feel discomfort and are motivated to behave in ways that reduce such discrepancies, except in cases where reducing self-discrepancies results in risk of rejection (i.e., when an individual feels rejection is likely if he/she does not act in ways consistent with the way others see them; e.g., Kwang and Swann Jr, 2010).

Impostors suffer from self-discrepancies about their competence (e.g., they do not feel as competent as other people think they are), while at the same time doubt their personal capacity to boost that competence through internal means. Because impostors experience these competence-based self-discrepancies *chronically*, they often adopt coping habits through which they use external means of justifying poor performance (e.g., making situational excuses, rationalization, etc.) in order to resolve their self-discrepancies and avoid both discomfort and the consequences of being “found out” by others. Workplace situations that make salient an impostor's competence are more likely than others to trigger their coping tendencies; we review two common ones below.

1.2. Feedback

The relationship between feedback and performance is potent but may be more complicated than it seems. In encouraging individuals to either continue or stop engaging in certain behaviors, feedback inherently reaffirms or denies a receiver's fundamental assumptions about themselves or their work (Ilgen, Fisher, and Taylor, 1979). Negative feedback could prompt a self-discrepancy for some individuals, as evidenced by research noting reactions such as defensiveness and denial, and corrective behavior (e.g., increased performance) when favorable contextual factors are present (i.e., feedback is high-quality coming from a credible source and delivered in a considerate manner; Steelman & Rutkowski, 2004). This research supports the notion that individuals deploy cognitive and behavioral tactics to reduce self-discrepancies in the face of negative feedback.

Impostors, however, likely have different reactions to negative feedback. As discussed, impostors suffer from a perceived lack of personal agency, and believe they are incapable of having the competence others believe they possess. To impostors, negative feedback should validate their belief that they indeed fundamentally lack the competence to perform well, reinforcing their lack of agency and consequently inhibiting an increase in subsequent work effort. Supportively, IP

research has found that impostors experience negative emotions, such as guilt and humiliation, when receiving negative feedback, and even internalize blame for the failure and interpret a single feedback instance as indicative of their entire sense of self (Thompson, Davis, and Davidson, 1998). This pattern is in direct contrast to more normative reactions such as defensiveness, denial, or corrective behavior. This is likely because feedback provides activation of competence-based components of the self-concept, and IPs believe they are lacking such competency. To avoid risks associated with decreasing this type of perceived self-discrepancy, impostors tend to create an impediment to their success (e.g., Cowman & Ferrari, 2002; Want & Kleitman, 2006), such as not exerting enough effort, and then blame their eventual poor performance on that impediment. Because impostors believe they cannot improve their performance (and thus cannot demonstrate their competence through these means), they are more likely to utilize alternate explanations for poor performance to preserve others' view of their competence than non-impostors.

1.3. Accountability

Much like negative feedback, accountability should also activate competence-based components of the self-concept, and we suggest that it may likewise constrain impostors' performance. Feelings of accountability in the workplace cause individuals to believe that failure to perform appropriate actions will be met with personal consequences (Hall, Frink, and Buckley, 2017). Those who feel high levels of accountability typically expect they will need to clarify or justify their actions to a specific audience (Frink & Klimoski, 1998) and feel pressure to adhere to specific behavioral and social norms (Tetlock, 1983). In terms of the self in the workplace, accountability heightens the salience of an individual's competence-based self-concept, and the importance of acting in line with others' view of their competence. Whereas accountability may motivate non-impostors to enhance their effort in anticipation of such expectations (Hall et al., 2017), it should have the opposite effect on impostors. Impostors under conditions of high accountability should expect to perform poorly because of their self-perceived lack of competence, which should trigger anxiety and negative emotions, and motivate them to reduce their initial effort as a means of preserving how others view their competency.

1.4. The role of gender

Because much of the concern impostors experience stems from violating expectations, gender is likely to play a unique role in the relationship between IP and performance-relevant outcomes. As social role theory explains, we expect communal (e.g., warm, nurturing, domestic) behaviors from females and agentic (e.g., self-interested, assertive, independent) behaviors from males (Eagly, 1983). Through interactions with others, these behavioral norms are communicated and reinforced, ultimately becoming a part of an individual's identity. One aspect of gender role prescriptions that tends to differ between males and females is individual competence, which has been considered a reason why females develop impostor feelings (i.e., young boys are socialized to be competent while young girls are socialized to be warm; Clance, Dingman, Reviere, and Stober, 1995). Fittingly, IP was originally studied to explain feelings of undeserved recognition and achievement specifically in professional women (Clance & Imes, 1978).

As such, gender was often studied in conjunction with IP and viewed as an important predictor. Currently, however, the evidence is contradictory. Some recent research points to a gender difference in prevalence and intensity of IP feelings (e.g., Jöstl, Bergsmann, Lüftenerger, Schober, and Spiel, 2012; Li, Hughes, and Thu, 2014), while others find no such relationship (e.g., Vergauwe, Wille, Feys, De Fruyt, and Anseel, 2015; Blondeau & Awad, 2016; Crawford, Shanine, Whitman, and Kacmar, 2016). Although these conflicting findings are likely due to sample context, it supports the notion that both males and

females are likely to experience these feelings at some point. Indeed, Gravois (2007) estimated that at least 70% of individuals of both genders will experience IP feelings. Thus, investigations into IP should expand beyond considering gender strictly as an antecedent and should also explore the likely different reactions between male and female impostors. As such, we make the general hypothesis that male and female imposters will react differently depending on feedback and accountability.

1.5. The current study

We conducted two online studies to explore the general notion that male IPs react more negatively than female IPs to similar performance demands. Under varying conditions of feedback (Study 1) and accountability (Study 2), we examined the interactive effect of gender and IP on state anxiety, effort, and performance.

2. Method

2.1. Participants and procedures

2.1.1. Study 1

Upper level undergraduate Communication students at a large public university in the Northeastern United States participated in an online experiment to fulfill a research requirement. Students were given an alternative non-research activity to complete as a means to fulfill their research requirement in the event they did not want to participate. Out of 354 participants who responded to the survey, we retained complete and useable data from 268 after screening the data. Specifically, we removed participants who elected to have their data removed after learning about the deception in the study (27), who reported knowing/guessing the deception in the study (6), finished under 7 min (reasonable time to complete both tasks; 38), and participants who did not pass the manipulation check (14). The final sample consisted of 58.5% male participants with a mean age of 20.07 ($SD = 2.24$). They were 57.8% White, 20.6% Asian, 6.4% African American, 3.5% Hispanic, and 11.7% other.

The online-experiment contained three parts: measurement of IP and demographics, Graduate Record Exam (GRE) performance, and post-experiment debrief. The order of the first two components was randomly varied to control for possible ordering effects. The GRE performance component was made up of two tasks, each consisting of GRE sample questions, and an experimental manipulation of feedback given after task 1 was completed. Participants were first informed that they will be completing two tasks that each consisted of five GRE-type questions, and it was explained that the GRE is a test used to determine admission into many graduate programs. They were also told that their performance on these tasks was important to this experiment and asked to remove all other distractions to focus solely on the tasks. GRE-type questions were chosen for this study because admission into graduate school is relevant for undergraduates and is considered an achievement. Before participants were shown task 1, they were again prompted about what they will be doing, were told they will have 10 min to complete the task and that they will be shown how well they performed in the page to follow. Participants were then presented with the first task consisting of five GRE questions from both verbal and quantitative reasoning.

After completing the first task, participants were shown fake feedback that was not tied to their actual performance. Instead, their feedback was based on random assignment into one of two experimental conditions: (a) participants receive positive feedback (informed that they successfully answered all 5 questions correctly), and (b) participants receive negative feedback (informed that they incorrectly answered all 5 questions). Similar research on the role of feedback direction and motivation has successfully manipulated feedback sign to either failing (negative feedback) and succeeding (positive feedback)

(van Dijk & Kluger, 2011). In this study, we classify negative feedback as failing by answering all questions incorrectly and positive feedback as succeeding by answering all questions correctly.

After receiving the feedback manipulation stimuli, participants were reminded that they would be completing a second set of five GRE-type questions. The second task consisted of another set of five different GRE questions from both verbal and quantitative reasoning. Participants were given their actual performance feedback after task 2 and debriefed so that they understood the task 1 feedback was fake. Lastly, they were given the opportunity to withdraw their data after they learned about the deception as a measure to maintain the ethical standards for human subjects research.

2.1.1.1. Manipulation check. Before the debrief, participants were asked to recall how many questions they got correct in the first task. A one-way ANOVA showed a significant mean difference between positive and negative feedback conditions [$F(1, 281) = 1762.50, p < 0.01$]. A stem and leaf plot identified that most participants in the negative feedback condition correctly recalled getting 0 questions correct whereas those in the positive feedback condition correctly recalled getting 5 questions correct. Fourteen participants did not correctly recall this information and were removed from further analyses.

2.1.2. Study 2

Upper level undergraduate Business students at a large public university in the Northeastern United States participated in an online experiment as a means to fulfill research credit. Again, students were permitted to complete an alternative assignment to ensure they were not pressured into participating. We conducted data screening procedures similar to Study 1. Specifically, of the 275 respondents, 10 requested to have their data removed after learning about the deception in the study, 8 were removed because they reported guessing/knowing the details of the study, and 7 had partial responses. Of the 250 participants with complete data, the average age was 21.78 ($SD = 3.01$) and they were 55.5% male. They were 41.6% White, 45.3% Asian, 4.7% African American, 1.8% Hispanic, and 6.6% other.

Similar to Study 1, participants in Study 2 were sent an online link via a study invitation email and were told that they will be answering sample GRE questions in the study. Once they accessed the link, participants were given information about *who* would be viewing their performance on the sample GRE questions. Respondents were randomly assigned to one of two conditions that gave different information about accountability (high accountability vs. low accountability). In the high accountability condition, participants were told that their performance would be shared with the professor of the management class in which they were currently enrolled. In the low accountability condition, participants were told that their performance would be shared with a random stranger that would not be able to identify them.

Immediately after reading information about who would have access to their performance, they were given instructions to complete five sample GRE questions. Afterwards, the participants were told their score, and it was explained that regardless of what they were told during the study, their work in fact would not be shared with anyone and would remain confidential. Again, participants were given the opportunity to withdraw their data after they learned about the deception.

2.1.2.1. Manipulation check. An ANOVA on the single item manipulation check ("Were you concerned your task would be viewed by others?") demonstrated that participants were sensitive to the accountability manipulation [$F(1, 249) = 7.06, p < 0.01$] such that participants in the high accountability condition agreed with this item ($M = 4.07, SD = 1.89$) significantly more than those in the low accountability condition ($M = 3.45, SD = 1.95$).

Table 1

Descriptive statistics and correlations among study variables.

		M	SD	1	2	3	4	5
Study 1 n = 268	1. Gender	–	–	–	–	–	–	–
	2. Impostor phenomenon	4.23	0.95	0.18**	–	–	–	–
	3. Feedback manipulation	–	–	–0.08	0.11 ^t	–	–	–
	4. State anxiety	2.49	0.71	0.30**	0.23**	–0.11 ^t	–	–
	5. Effort	165.81	113.56	–0.06	0.06	0.12 ^t	–0.03	–
	6. Performance	1.58	1.08	–0.15*	0.01	0.07	–0.15*	0.24**
Study 2 n = 250		M	SD	1	2	3	4	5
	1. Gender	–	–	–	–	–	–	–
	2. Impostor phenomenon	4.10	0.92	0.29**	–	–	–	–
	3. Accountability manipulation	–	–	0.07	0.01	–	–	–
	4. State anxiety	2.40	0.72	0.37**	0.31**	0.13*	–	–
	5. Effort	219.66	128.84	0.09	–0.03	0.06	–0.08	–
	6. Performance	1.59	1.08	–0.08	–0.08	0.09	–0.21**	0.23**

Gender coded 0 = male, 1 = female; Study 1 Feedback Manipulation coded 0 = Negative Feedback, 1 = Positive Feedback; Study 2 Accountability Manipulation coded 0 = Low Accountability, 1 = High Accountability; Performance out of 5; Effort is recorded time spent on task in seconds.

** $p < 0.01$.

* $p < 0.05$.

^t $p < 0.10$.

2.2. Measures

2.2.1. Impostor phenomenon

The 20-item Clance Impostor Phenomenon Scale (CIPS; Clance, 1985) was used in both studies. Sample items included “When people praise me for something I've accomplished, I'm afraid I won't be able to live up to their expectations of me in the future,” “I rarely do a project or a task as well as I'd like to do it,” and “Sometimes I'm afraid others will discover how much knowledge or ability I really lack.” Items were anchored on a 1–7 Likert-type scale (1 = strongly disagree; 7 = strongly agree) and demonstrated acceptable levels of reliability (Study 1 $\alpha = 0.93$; Study 2 $\alpha = 0.91$).

2.2.2. State anxiety

State anxiety was measured using Marteau and Bekker's (1992) six-item short form, which asks participants to indicate how much the following adjectives describes them at a specified time: calm, tense, upset, relaxed, content, and worried on a 4-point scale (1 = not at all to 4 = very much). Participants were asked “To what extent did you feel [X] while completing the task?” and were asked this immediately after completing the task (Study 1 $\alpha = 0.82$; Study 2 $\alpha = 0.82$).

2.2.3. Effort

Because we wanted to understand how participants increase or decrease their effort based on different moderating factors, effort was operationalized as the amount of time spent on a task. The studies were completed online, which allowed us to capture a direct measure of effort, recorded as the number of seconds spent completing the task.

2.2.4. Performance

Participants' scores represent the number of GRE sample questions the participant got correct. Because there was a total of five questions, possible scores range from zero (getting no questions correct) to five (getting all five questions correct).

2.2.5. Moderating factors

To explore how male and female IPs react to different stimuli we utilized different moderating factors in Study 1 and Study 2. For Study 1, the moderating factor was the manipulated performance feedback, which includes negative feedback (participants told they got 0 out of 5 questions correct) and positive feedback (participants told they got 5 out of 5 questions correct). Similarly, the moderating factor in Study 2

was the experimental manipulation, including low accountability (told a random-other would see their task performance) and high accountability (told their class professor would see their task performance).

2.3. Data analysis

We sought to explore the relationship between IP and state anxiety, effort, and performance at different levels of moderators for both males and females. We performed bootstrapped moderated multiple regression (MMR) analyses using Hayes' (2013) SPSS macro, Model 1 to test these relationships. Moderation effects are biased downwardly such that true population effects manifest as small and sometimes non-significant sample effects (Aguinis, 1995; Aguinis & Stone-Romero, 1997; Bobko & Russell, 1994; Russell & Bobko, 1992), leading researchers to draw inaccurate conclusions about true moderated relationships (Aguinis, Beatty, Boik, and Pierce, 2005). For this reason, we took several measures to ensure accuracy in the analysis and interpretation of our results by increasing power and conducting follow up analyses (see Aguinis & Gottfredson, 2010 for best practices).

First, in conducting a power analysis in G Power 3, it was determined that we need a minimum sample size of 115 to detect a moderate (small to medium) effect with a power of 0.80, thus we ensured all our samples met this minimum criterion for each condition. Second, we sought to eliminate measurement error wherever possible by including observed variables in place of self-report (e.g., experimentally manipulated moderating factors, computer-recorded effort, task performance scores) and self-report measures that are included in this study demonstrated strong reliability. Third, we mean centered IP because it is a continuous predictor variable and used bootstrapped analysis to improve statistical power because the resampling methods correct for non-normality of data (Preacher & Hayes, 2008). Fourth, we interpret moderation effects two ways: first through MMR first-order and interaction terms and second by reporting the relationship of IP on DVs in each condition in order to observe differential conditional direct effects not detected by the interaction terms (e.g., Aguinis et al., 2005). Lastly, we provide 95% confidence intervals to help interpret effect size.

Table 2

Moderated multiple regression broken out by condition.

			Dependent variables		
			State anxiety		Effort
			n = 134	n = 135	n = 135
Study 1	Negative feedback	IP	0.40**	-14.46	-0.10
		Gender	0.85**	-115.56**	-1.13*
		IP × gender	-0.25*	48.75**	0.37 ^t
	Positive feedback	IP	-0.00	2.67	-0.05
		Gender	0.10	-29.42	-0.49
		IP × gender	0.11	9.68	0.10
Study 2	High accountability	IP	n = 125	n = 127	n = 127
		Gender	0.41**	-54.36**	-0.35*
		IP × gender	0.48**	53.08*	-0.16
	Low accountability	IP	n = 125	n = 130	n = 130
		Gender	0.16 ^t	7.37	-0.07
		IP × gender	0.35**	12.88	-0.09
			0.05	-10.00	0.17

Unstandardized coefficients reported; Bootstrap sample size = 10,000; Gender coded 0 = male, 1 = female; All continuous predictor variables group mean centered; Study 1 controlling for actual performance on task 1.

** $p < 0.01$.

* $p < 0.05$.

^t $p < 0.10$.

3. Results

3.1. Preliminary analysis

Means, standard deviations, and intercorrelations among study variables are presented in Table 1. Females reported stronger impostor feelings in both Study 1 ($r = 0.18$, $p < 0.01$) and Study 2 ($r = 0.29$, $p < 0.01$). State anxiety was positively related to IP in Study 1 ($r = 0.23$, $p < 0.01$) and Study 2 ($r = 0.31$, $p < 0.01$), but IP scores were not related to effort or actual performance in either study. No correlation exceeds $r = 0.37$, providing initial support that multicollinearity is not an issue in the present samples. VIF analysis provides additional support for this claim as all VIF scores fall within an acceptable range (Study 1 range: 1.03 to 1.11; Study 2 range: 1.05 to 1.09). Furthermore, the Skewness and Kurtosis of our study variables fall within acceptable ranges (Gravetter & Wallnau, 2014; Kim, 2013) suggesting non-normality is not an issue in the present data.

3.2. Moderated multiple regression analysis

MMR results are reported in Table 2 and bootstrapped conditional direct effects (i.e., slopes) are reported in Table 3. The analyses are reported by dependent variable and broken up by experimental condition.

3.2.1. Study 1 results

3.2.1.1. Negative feedback. IP had a direct effect on state anxiety ($B = 0.40$, $p < 0.01$), but not effort or performance. The IP by gender interaction was significant for state anxiety ($B = -0.25$, $p < 0.05$) and effort ($B = 48.75$, $p < 0.01$), and marginally significant for performance ($B = 0.37$, $p < 0.10$) in the negative feedback condition. Table 3 reveals that male IPs experienced higher state anxiety ($B = 0.40$, $p < 0.01$), whereas female IPs demonstrated higher effort ($B = 34.29$, $p < 0.01$) and performed better ($B = 0.27$, $p < 0.10$) in the face of negative feedback.

3.2.1.2. Positive feedback. IP did not have a direct relationship with any of the study variables in the positive feedback condition. No meaningful differences were observed between male and female IPs in the positive

feedback condition as evidenced by the non-significant IP × gender interaction terms on all three dependent variables.

3.2.2. Study 2 results

3.2.2.1. High accountability. IP was positively related to state anxiety ($B = 0.41$, $p < 0.01$), and negative relationship with effort ($B = -54.36$, $p < 0.01$) and performance ($B = -0.35$, $p < 0.05$). Similar to negative feedback, the IP × gender interaction was significant for state anxiety ($B = -0.44$, $p < 0.01$) and effort ($B = 66.24$, $p < 0.05$), and marginally significant for performance ($B = 0.38$, $p < 0.10$) in the high accountability condition. Bootstrapped conditional direct effects (i.e., slopes) indicate that male IPs experienced higher state anxiety ($B = 0.41$, $p < 0.01$), reduced effort ($B = -54.36$, $p < 0.01$), and lower performance ($B = -0.35$, $p < 0.05$). Female IPs in this condition were largely unaffected.

3.2.2.2. Low accountability. IP was marginally related to state anxiety ($B = 0.16$, $p < 0.10$), but not to effort or performance in the low accountability condition. As with positive feedback, none of the IP × gender interactions were significant in the low accountability condition. Conditional direct effects mostly support this pattern. Interestingly, however, female IPs reported higher state anxiety in the low accountability condition ($B = 0.21$, $p < 0.05$).

4. Discussion

We tested the general idea that male impostors react more negatively to performance cues, namely negative feedback and perceived accountability, than do female IPs. Although prior research supports the notion that impostor feelings exist with higher frequency and intensity for females, males and females experience different societal pressures, and most studies have not explored how males experiencing impostor feelings might react differently than females experiencing these same feelings. Theories on the self-concept (e.g., Higgins, 1987; Burke, 1991; Swann Jr, 1983) suggest that when individuals believe that others expect certain characteristics of them that they do not feel they fully possess, they are motivated to correct that self-discrepancy; performance cues would heighten the salience of competence-based self-views, and any relevant self-discrepancies. In the case of IPs, although

Table 3

Slope values of impostor phenomenon on dependent variables at different levels of moderators.

			Males			Females		
Dependent variable			Slope	LLCI	ULCI	Slope	LLCI	ULCI
Study 1	State anxiety	Negative feedback	0.40**	0.23	0.56	0.15	-0.03	0.33
		Positive feedback	-0.00	-0.15	0.14	0.10	-0.10	0.31
	Effort	Negative feedback	-14.46	-37.54	8.63	34.29**	8.95	59.63
		Positive feedback	2.67	-26.14	31.48	12.35	-28.84	53.54
	Performance	Negative feedback	-0.10	-0.37	0.18	0.27 ^t	-0.03	0.57
		Positive feedback	-0.05	-0.28	0.18	0.04	-0.29	0.37
Study 2	State anxiety	High accountability	0.41**	0.21	0.62	-0.03	-0.22	0.16
		Low accountability	0.16 ^t	-0.00	0.32	0.21*	0.03	0.39
	Effort	High accountability	-54.36**	-0.93.66	-15.05	11.88	-25.19	48.95
		Low accountability	7.36	-25.56	40.28	-2.63	-39.85	34.59
	Performance	High accountability	-0.35*	-0.68	-0.02	0.04	-0.28	0.35
		Low accountability	-0.07	-0.34	0.21	0.10	-0.21	0.41

Unstandardized coefficients; Bootstrap sample size = 10,000; All continuous predictor variables mean centered; Study 1 controlling for actual performance on task 1; LLCI = Lower Level Confidence Interval; UUCL = Upper Level Confidence Interval.

** $p < 0.01$.

* $p < 0.05$.

^t $p < 0.10$.

they value being viewed as competent by others, they do not believe they are capable of heightening their competence to meet others' expectations, and instead seek alternate means of resolving their competence-based self-discrepancy, such as reducing their effort, when triggered by performance cues.

Collectively, our findings suggest that male IPs fair worse when confronted with performance cues than do female impostors. Male IPs experienced greater anxiety after receiving negative feedback and under conditions of high accountability than did female IPs, and exhibited less effort and poorer performance on a task when held accountable to a higher authority. Comparatively, females with higher levels of IP exhibited more effort and performed marginally better than their male IP counterparts after receiving negative feedback. In light of gender role theory (Eagly, 1983), the greater negative reaction of male impostors could potentially be linked to the expectations for agentic and competent behavior from males (Bian et al., 2017). Finally, this last finding stands in contrast to previous work and may offer insight into the dynamics between impostor self-concept and gender role expectations.

4.1. Theoretical and practical implications

Contrary to the assumption that females are impacted more by IP (e.g., Bernard, Lige, Willis, Sosoo, and Neblett, 2017), our studies find that though IP was reported to a higher degree by females, male impostors exhibited signs of distress and reducing their effort in situations that trigger concern about maintaining the positivity of their competence-based self-views, whereas females were unaltered and appeared resilient in such situations. Assuming that traditional gender role norms hold, male IPs may have exhibited stronger negative reactions because they believe that society at large values males who demonstrate high competence, and, at the same time, do not believe that they can fulfill this standard. Being less constrained by gender norm violations and backlash (i.e., they were already expected to perform poorly on competence-based tasks like exam questions), female IPs may have felt freer to attempt to improve their performance (and risk failure) rather than excusing it with lack of time or effort invested; this could have happened because competence-based self-discrepancies were not strongly felt, or were simply not activated. The reaction was opposite for the males, whose behavior and stress reactions indicate helplessness to change, and greater concern over being "found out." Our work builds on recent evidence of IP in males (e.g., Gravois, 2007), and offers preliminary evidence that agency perceptions may differentially affect the means by which male and female IPs react to self-discrepancies.

However, given the exploratory nature of these studies and because we do not assess gender-norm orientation specifically, we can only make a speculative, post-hoc explanation by drawing on the gender norm literature. More recent work supports the notion that gender norms impact IP. Specifically, Patzak, Kollmayer, and Schober (2017) explored the impact of gender-role orientation on IP feelings and found that femininity increased the intensity of IP among females, whereas masculinity was not related to impostorsim in the same population. Combining these findings with our current work, it might be that gender norm orientation moderates the relationship between gender, IP, and outcomes. For instance, males who strongly identify with the masculine gender norm might be most vulnerable to negative consequences, whereas females who highly identify with the female gender norm might experience the lowest amount of concern over backlash. Future research is needed that measures IPs' self-perceptions relative to gender-norm orientation and norm violation concerns.

Beyond gender, our study also adds clarity to the question of whether or not impostors are able to maintain high performance despite their self-doubt. Our findings suggest that impostors experience greater state anxiety when given negative feedback, but not under conditions of positive feedback. Further, impostors seem to experience higher state anxiety while performing tasks under high accountability, and react with decreased effort and lower performance under this same condition, which builds on past work that only linked IP with reducing effort or generating alternative explanations (i.e., self-handicapping; Cowman & Ferrari, 2002; Ferrari & Thompson, 2006; McElwee & Yurak, 2007; Ross et al., 2001). In our studies, we found support for this effect particularly when male IPs felt high accountability, which would likely be somewhat common in the workplace. Even when simply receiving negative feedback, male impostors may still feel heightened anxiety compared to female impostors, which could increase their likelihood of experiencing burnout or strain over time. If managers or organizational specialists observe evidence of IP in male workers currently performing at high levels, they may benefit from making attempts to restore those workers' sense of agency if they are placed under high accountability situations.

In terms of minimizing these reactions in academic and work contexts, organizations would benefit from facilitating the continued suppression of IP tendencies in both male and female employees. Mentoring by professors or managers may be beneficial for individual students or employees because a constructive relationship may help individuals draw competence expectations from a specific mentor, rather than broader societal gender norms. Skills training and stretch assignments may be useful in teaching impostors to recognize their own

agency over themselves. Such tactics would only be effective, however, if mentors are trained to downregulate their own gender role expectations. Organizations should take further efforts to bolster non-discriminatory practices and develop their own culture of equality.

4.2. Limitations and directions for future research

All research should be viewed in light of its limitations. First, although we aim to ultimately understand the relationship between IP and performance in an organizational context, our model was tested using data from a student sample. Inferences can be made about task performance in the work environment from these findings, though we do recognize how this sample limits generalizability. As such, future research should test the proposed relationships in a population that could generalize to a broader domain of working professionals. A further limitation is the way we assessed performance. Though practice GRE questions were an appropriate measure of performance for the population tested in our studies, we recognize that performance on this type of task may differ from task performance in the work context. Future research should measure performance within a work context to understand if social stress functions in a similar way. Namely, future work should explore the impact of feedback and accountability when tangible (i.e., real life) consequences are at stake.

While experimental design allows us to make causal claims, it would be a logical extension to observe how this interplay between IP, feedback/accountability, and gender would manifest in the organizational context. Additionally, future research should consider the interaction between feedback and accountability. For instance, are the effects observed under negative feedback exacerbated under conditions of high accountability? It could be that negative feedback coupled with the knowledge of a salient external audience not only seeing their performance, but also evaluating it, would be an overwhelming situation for impostors in general, and male impostors in specific. In our studies, female IPs increased effort when given negative feedback but experienced state anxiety under low accountability. Understanding the interactive effects might help shed some light on these interesting and seemingly conflicting findings. Moreover, it would be interesting explore the stable-nature of IP. IP scores were marginally higher in positive feedback conditions in Study1. Though this might be due to chance, future research should look into factors that might cause individuals to experience temporary feelings of IP, such as feeling accountable to a salient individual and receiving feedback from directly from them.

Clance et al. (1995) suggest that impostors will either start working on a challenge immediately and over prepare, or procrastinate as a self-handicapping measure. The current studies did not allow us to fully explore the over-prepare hypothesis, though our results do give initial evidence that female IPs might react in this way. Namely, in the negative feedback condition, female IPs demonstrated higher effort towards the task. It may be that female IPs, feeling they have less to lose from trying and failing, over-prepare, whereas male IPs, facing a greater backlash than females for not demonstrating competence, protect themselves by reducing effort (e.g., procrastinating). On a somewhat related notion, newer work has suggested that there are two types of IPs: true impostors (as described in this manuscript) and strategic impostors, who use impostorism as a deliberate form of self-presentation (Leonhardt, Bechtoldt, and Rohrmann, 2017), which might also account for this difference. Future work should address this question more specifically by exploring if male and female IPs differ in true vs. strategic impostorism, and how much they prepare for a given task and the psychological mechanisms that underlie this behavior.

5. Conclusion

We explored how male and female IPs might react to performance conditions (feedback and accountability) differently. We found that

male IPs experienced higher state stress than female IPs when given negative feedback, and exhibited lower effort and performed worse than female IPs under conditions of high accountability. Further, female IPs displayed higher effort and marginally higher performance when given negative feedback. These findings support the general idea that male IPs have more negative reactions to feedback and accountability. As research on IP continues to develop, we hope that our research might encourage further exploration into the role of gender in IP cognitive and behavioral reactions.

References

- Aguinis, H. (1995). Statistical power problems with moderated multiple regression in management research. *Journal of Management*, 21, 1141–1158. <http://dx.doi.org/10.1177/014920639502100607>.
- Aguinis, H., Beaty, J. C., Boik, R. J., & Pierce, C. A. (2005). Effect size and power in assessing moderating effects of categorical variables using multiple regression: A 30-year review. *Journal of Applied Psychology*, 90, 94–107. <http://dx.doi.org/10.1037/0021-9010.90.1.94>.
- Aguinis, H., & Gottfredson, R. K. (2010). Best-practice recommendations for estimating interaction effects using moderated multiple regression. *Journal of Organizational Behavior*, 31, 776–786. <http://dx.doi.org/10.1002/job.686>.
- Aguinis, H., & Stone-Romero, E. F. (1997). Methodological artifacts in moderated multiple regression and their effects on statistical power. *Journal of Applied Psychology*, 82, 192–206. <http://dx.doi.org/10.1037/0021-9010.82.1.192>.
- Bechtoldt, M. N. (2015). Wanted: Self-doubting employees—Managers scoring positively on impostorism favor insecure employees in task delegation. *Personality and Individual Differences*, 86, 482–486. <http://dx.doi.org/10.1016/j.paid.2015.07.002>.
- Bernard, D. L., Lige, Q. M., Willis, H. A., Sosoo, E. E., & Neblett, E. W. (2017). Impostor phenomenon and mental health: The influence of racial discrimination and gender. *Journal of Counseling Psychology*, 64(2), 155–166. <http://dx.doi.org/10.1037/cou0000197>.
- Bian, L., Leslie, S.-J., & Cimpian, A. (2017). Gender stereotypes about intellectual ability emerge early and influence children's interests. *Science*, 355, 389–391. <http://dx.doi.org/10.1126/science.aah6524>.
- Blondeau, L. A., & Awad, G. H. (2016). The relation of the impostor phenomenon to future intentions of mathematics-related school and work. *Journal of Career Development*, 1–15. <http://dx.doi.org/10.1177/0894845316680769>.
- Bobko, P., & Russell, C. J. (1994). On theory, statistics, and the search for interactions in the organizational sciences. *Journal of Management*, 20, 193–200. <http://dx.doi.org/10.1177/014920639402000111>.
- Burke, P. J. (1991). Identity processes and social stress. *American Sociological Review*, 56, 836–849. <http://dx.doi.org/10.2307/2096259>.
- Clance, P. R. (1985). *The impostor phenomenon: Overcoming the fear that haunts your success*. Atlanta, GA: Peachtree.
- Clance, P. R., & Dingman, D., Reviere, S. L., & Stober, D. R. (1995). Impostor phenomenon in an interpersonal/social context: Origins and treatment. *Women & Therapy*, 16, 79–96. http://dx.doi.org/10.1300/J015v16n04_07.
- Clance, P. R., & Imes, S. A. (1978). The imposter phenomenon in high achieving women: Dynamics and therapeutic intervention. *Psychotherapy: Theory, Research & Practice*, 15, 241–247. <http://dx.doi.org/10.1037/h0086006>.
- Clance, P. R., & O'Toole, M. A. (1987). The imposter phenomenon: An internal barrier to empowerment and achievement. *Women & Therapy*, 6, 51–64. http://dx.doi.org/10.1300/J015V06N03_05.
- Cowman, S. E., & Ferrari, J. R. (2002). "Am I for real?" Predicting impostor tendencies from self-handicapping and affective components. *Social Behavior and Personality: An International Journal*, 30, 119–125. <http://dx.doi.org/10.2224/sbp.2002.30.2.119>.
- Crawford, W. S., Shanine, K. K., Whitman, M. V., & Kacmar, K. M. (2016). Examining the impostor phenomenon and work-family conflict. *Journal of Managerial Psychology*, 31, 375–390. <http://dx.doi.org/10.1108/JMP-12-2013-0409>.
- Eagly, A. H. (1983). Gender and social influence: A social psychological analysis. *American Psychologist*, 38, 971–981. <http://dx.doi.org/10.1037/0003-066X.38.9.971>.
- Ferrari, J. R., & Thompson, T. (2006). Impostor fears: Links with self-presentational concerns and self-handicapping behaviours. *Personality and Individual Differences*, 40, 341–352. <http://dx.doi.org/10.1016/j.paid.2005.07.012>.
- Frink, D. D., & Klimoski, R. J. (1998). Toward a theory of accountability in organizations and human resource management. In G. R. Ferris (Vol. Ed.), *Research in personnel and human resources management*. Vol. 16. *Research in personnel and human resources management* (pp. 1–51). Elsevier Science/JAI Press.
- Gravetter, F., & Wallnau, L. (2014). Introduction to the t statistic. In J. Hague, T. Matray, T. Williams, & L. Sarkisian (Eds.), *Essentials of statistics for the behavioral sciences* (pp. 3–36). Wadsworth: Cengage Learning.
- Gravois, J. (2007). You're not fooling anyone. *The Chronicle of Higher Education*, 54, A1. Retrieved November 5, 2008, from <http://chronicle.com>.
- Grubb, W. L., & McDowell, W. C. (2012). The imposter phenomenon's impact on citizenship behavior and employee commitment: Flying under the radar. *Journal of Business Issues*, 1, 1–10.
- Hall, A. T., Frink, D. D., & Buckley, M. R. (2017). An accountability account: A review and synthesis of the theoretical and empirical research on felt accountability. *Journal of Organizational Behavior*, 38, 204–224. <http://dx.doi.org/10.1002/job.2052>.
- Hayes, A. F. (2013). *Introduction to mediation, moderation, and conditional process analysis: A regression-based*. New York: Guilford Press.

- Higgins, E. T. (1987). Self-discrepancy: A theory relating self and affect. *Psychological Review*, 94, 319–340. <http://dx.doi.org/10.1037/0033-295X.94.3.319>.
- Ilgen, D. R., Fisher, C. D., & Taylor, M. S. (1979). Consequences of individual feedback on behavior in organizations. *Journal of Applied Psychology*, 64, 349–371. <http://dx.doi.org/10.1037/0021-9010.64.4.349>.
- Jöbstl, G., Bergsmann, E., Lüftenegger, M., Schober, B., & Spiel, C. (2012). When will they blow my cover? *Zeitschrift für Psychologie*, 220, 109–120. <http://dx.doi.org/10.1027/2151-2604/a000102>.
- Kim, H. Y. (2013). Statistical notes for clinical researchers: Assessing normal distribution (2) using skewness and kurtosis. *The Korean Academy of Conservative Dentistry*, 38, 52–54. <http://dx.doi.org/10.5395/rde.2013.38.1.52>.
- Kumar, S., & Jagacinski, C. M. (2006). Imposters have goals too: The imposter phenomenon and its relationship to achievement goal theory. *Personality and Individual Differences*, 40, 147–157. <http://dx.doi.org/10.1016/j.paid.2005.05.014>.
- Kwang, T., & Swann, W. B., Jr. (2010). Do people embrace praise even when they feel unworthy? A review of critical tests of self-enhancement versus self-verification. *Personality and Social Psychology Review*, 14, 263–280. <http://dx.doi.org/10.1177/108868310365876>.
- Leary, M. R., Patton, K. M., Orlando, A. E., & Wagoner Funk, W. (2000). The imposter phenomenon: Self-perceptions, reflected appraisals, and interpersonal strategies. *Journal of Personality*, 68, 725–756. <http://dx.doi.org/10.1111/1467-6494.00114>.
- Leonhardt, M., Bechtoldt, M. N., & Rohrmann, S. (2017). All impostors aren't alike—Differentiating the imposter phenomenon. *Frontiers in Psychology*, 8, 1505. <http://dx.doi.org/10.3389/fpsyg.2017.01505>.
- Li, S., Hughes, J. L., & Thu, S. M. (2014). The links between parenting styles and imposter phenomenon. *Psi Chi Journal of Psychological Research*, 19, 50–57.
- Marteaum, T. M., & Bekker, H. (1992). The development of a six-item short-form of the state scale of the Spielberger State—Trait Anxiety Inventory (STAII). *British Journal of Clinical Psychology*, 31, 301–306. <http://dx.doi.org/10.1111/j.2044-8260.1992.tb00997.x>.
- McDowell, W. C., Grubb, W. L., III, & Geho, P. R. (2015). The impact of self-efficacy and perceived organizational support on the imposter phenomenon. *American Journal of Management*, 15, 23–29.
- McElwee, R. O. B., & Yurak, T. J. (2007). Feeling versus acting like an imposter: Real feelings of fraudulence or self-presentation? *Individual Differences Research*, 5, 201–220.
- Neureiter, M., & Traut-Mattausch, E. (2016). An inner barrier to career development: Preconditions of the imposter phenomenon and consequences for career development. *Frontiers in Psychology*, 7. <http://dx.doi.org/10.3389/fpsyg.2016.00048>.
- Neureiter, M., & Traut-Mattausch, E. (2017). Two sides of the career resources coin: Career adaptability resources and the imposter phenomenon. *Journal of Vocational Behavior*, 98, 56–69. <http://dx.doi.org/10.1016/j.jvb.2016.10.002>.
- Patzak, A., Kollmayer, M., & Schober, B. (2017). Buffering impostor feelings with kindness: The mediating role of self-compassion between gender-role orientation and the imposter phenomenon. *Frontiers in Psychology*, 8, 1289. <http://dx.doi.org/10.3389/fpsyg.2017.01289>.
- Preacher, K. J., & Hayes, A. F. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior Research Methods*, 40, 879–891. <http://dx.doi.org/10.3758/BRM.40.3.879>.
- Ross, S. R., & Kruckowski, R. A. (2003). The imposter phenomenon and maladaptive personality: Type and trait characteristics. *Personality and Individual Differences*, 34, 477–484. [http://dx.doi.org/10.1016/S0191-8869\(02\)00067-3](http://dx.doi.org/10.1016/S0191-8869(02)00067-3).
- Ross, S. R., Stewart, J., Mugge, M., & Fultz, B. (2001). The imposter phenomenon, achievement dispositions, and the five factor model. *Personality and Individual Differences*, 31, 1347–1355. [http://dx.doi.org/10.1016/S0191-8869\(00\)00228-2](http://dx.doi.org/10.1016/S0191-8869(00)00228-2).
- Russell, C. J., & Bobko, P. (1992). Moderated regression analysis and Likert scales: Too coarse for comfort. *Journal of Applied Psychology*, 77, 336–342. <http://dx.doi.org/10.1037/0021-9010.77.3.336>.
- Steelman, L. A., & Rutkowski, K. A. (2004). Moderators of employee reactions to negative feedback. *Journal of Managerial Psychology*, 19, 6–18. <http://dx.doi.org/10.1108/02683940410520637>.
- Swann, W. B., Jr. (1983). Self-verification: Bringing social reality into harmony with the self. *Social Psychological Perspectives on the Self*, 2, 33–66.
- Tetlock, P. E. (1983). Accountability and complexity of thought. *Journal of Personality and Social Psychology*, 45, 74–83. <http://dx.doi.org/10.1037/0022-3514.45.1.74>.
- Thompson, T. (2004). Failure-avoidance: Parenting, the achievement environment of the home and strategies for reduction. *Learning and Instruction*, 14(1), 3–26.
- Thompson, T., Davis, H., & Davidson, J. (1998). Attributional and affective responses of impostors to academic success and failure outcomes. *Personality and Individual Differences*, 25, 381–396. [http://dx.doi.org/10.1016/S0191-8869\(98\)00065-8](http://dx.doi.org/10.1016/S0191-8869(98)00065-8).
- Thompson, T., Foreman, P., & Martin, F. (2000). Impostor fears and perfectionistic concern over mistakes. *Personality and Individual Differences*, 29, 629–647. [http://dx.doi.org/10.1016/S0191-8869\(99\)00218-4](http://dx.doi.org/10.1016/S0191-8869(99)00218-4).
- van Dijk, D., & Kluger, A. N. (2011). Task type as a moderator of positive/negative feedback effects on motivation and performance: A regulatory focus perspective. *Journal of Organizational Behavior*, 32, 1084–1105. <http://dx.doi.org/10.1002/job.725>.
- Vergauwe, J., Wille, B., Feys, M., De Fruyt, F., & Anseel, F. (2015). Fear of being exposed: The trait-relatedness of the imposter phenomenon and its relevance in the work context. *Journal of Business and Psychology*, 30, 565–581. <http://dx.doi.org/10.1007/s10869-014-9382-5>.
- Want, J., & Kleitman, S. (2006). Imposter phenomenon and self-handicapping: Links with parenting styles and self-confidence. *Personality and Individual Differences*, 40, 961–971. <http://dx.doi.org/10.1016/j.paid.2005.10.005>.