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I want, I can, but am I able to? The Impostor Phenomenon among graduate students from the business field

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Abstract

Objective: To identify the factors characterizing the Impostor Phenomenon among graduate students in the business field.

Method: This study addressed the valid responses of 613 students in the pretest and 1,816 students in the final data collection. Data were analyzed using descriptive statistics, Confirmatory Factor Analysis, and Exploratory Factor Analysis.

Results: The indicators reveal that CIPS has two dimensions. One factor characterizes falsehood and underestimation feelings, and the other is related to luck or chance. The results also indicate that impostor feelings in the business field are more frequently related to falsehood and underestimation than to attributing success to luck or chance.

Contributions: Identifying the Impostor Phenomenon is essential to shape these feelings and prevent restricting and hindering students' academic performance and professional career.

Keywords: Impostor Phenomenon; Graduate Programs; Business Field.

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1. Introduction

Impostor Phenomenon (IP) is the term used to characterize individuals who attribute their success to luck or some other factor other than their own physical or intellectual capacity. This phenomenon arouses feelings of insecurity in successful individuals, making them believe that success is only achieved through luck or grandiose efforts (Clance & Imes, 1978; Cisco, 2020). This topic has gained attention after world celebrities (Celebrity Insider, 2017; Idiva, 2019; Marie Claire, 2019) and executives of large companies (Entrepreneur, 2017) publicly admitted that they experience impostor feelings. Experts have also gone public to warn that the "price could come in the form of stress; getting stuck in a job you've long outgrown; losing out on promotions, valuable learning experiences or connections; and burnout. And in almost all cases, there is a financial cost." (Young, 2019, n. p. published on The Enterprises Project, 2019).

IP feelings often manifest during graduate studies as students are involved in an environment that requires the development of creative activities, competition, meeting deadlines, and dealing with third parties evaluations, which outline a context that favors the manifestation of impostor feelings (Levecque et al., 2017; Cisco, 2020). Scientific studies in the academic milieu addressing IP along the lines of the survey carried out by Thompson, Davis, and Davidson (1998) are incipient and seldom explored, despite intensifying demands to investigate this phenomenon. Evidence from doctoral or master's programs is still embryonic and insufficient to understand IP and its consequences on this level of education (Craddock, Birnbaum, Rodriguez, Cobb, & Zeeh, 2011).

Research in the business field, composed of Business Administration, Accountancy, and Economics, is even scarcer, though studies report some peculiar behavior of students in this field compared to students from other programs (McCabe, Butterfield, & Treviño, 2006). Students in the business field tend to manifest IP because of the competitiveness and demands for efficiency that permeate this field of activity. This concern is relevant because students will become managers, professors, or leaders soon, and the college context is expected to support the development of these individuals' responsibility and leadership skills (Freire, 2014); hence the importance of directing attention to potential intervention strategies.

Additionally, excessive expectations from families, professors, and institutions toward higher education students may maximize impostor feelings. This problem is even more prominent in graduate programs because the students' different experiences and backgrounds may favor feelings of inadequacy and the emergence of IP (Craddock et al., 2011). Therefore, IP is characterized as an important problem to be investigated with a view to its identification, and actions are devised to help students improve their levels of well-being and assimilate their intellectual capacity and success. Strategies can be created to promote the academic performance and wellbeing of graduate students and enhance the environment of graduate programs. Therefore, this study aims to identify the factors that characterize the Impostor Phenomenon among graduate students in the business field.

This study's findings indicate that one in every five participants experience frequent or intense impostor feelings. These feelings involve underestimating one's skills and competencies or attributing success to luck. Hence, this study's relevance lies in the fact that, at the end of a graduate program, students are expected to have developed the ability to analyze and solve complex problems, manage projects, apply critical thinking, leadership skills, and be able to manage time (Andrade, 2018). Furthermore, these skills are directly or indirectly linked to one's self-assurance, proactivity, and having positive attitudes in a social environment. IP affects one's confidence though. Hence, identifying these feelings among students and identifying them timely is vital.

This study also contributes to the methodological field, as it presents the translation and validation of the CIPS (Clance, 1985), an instrument developed to measure IP. Hence, it is a direct contribution that enables future studies to analyze the phenomenon. This study also contributes to broadening investigations addressing the Impostor Phenomenon in the context of graduate programs.

2. Impostor Phenomenon: from its origin to consequences

The term Impostor Phenomenon originated in Clance and Imes' studies, in which the author monitored more than 150 successful women for approximately five years. Even though these women worked in varied professions and held undergraduate and graduate degrees, they doubted themselves, were insecure and experienced guilt for their success (Clance & Imes, 1978; Taylor, 2009). Their findings suggest that the main characteristics of impostors include the fear that their superiors will eventually realize that their competence levels are not as high as they initially thought, and difficulty in internalizing their success, which they believed was only achieved by a struck of luck or arduous work (Clance & O'Toole, 1987).

Clance and Imes (1978) initially mapped four symptoms frequently reported: (i) generalized anxiety; (ii) lack of self-confidence; (iii) depression; and (iv) frustration when unable to meet self-established standards and goals. Later, Clance and O'Toole (1987) reported IP is associated with different personality traits and feelings, compiling the main characteristics present among those experiencing intense impostor fears, namely: [1] Introversion; [2] Generalized anxiety; [3] Difficulty accepting compliments; [4] Overestimating others' skills and underestimating their own; [5] Feeling guilt for the success achieved; [6] Inadequate definition of intelligence; [7] Fear of evaluation; [8] Fear of failing; [9] Environmental and family messages; and [10] Impostor cycle.

These characteristics indicate that introverted people tend to externalize behaviors that diverge from their inner feelings. As a result, the personality identified in social relationships is not aligned with one's self-perception (Chassangre & Callahan, 2017). This dissonance characterizes one of the main elements of the Impostor Phenomenon: the perception of fraud. Introverts also have low self-confidence and self-esteem and experience greater anxiety that favors impostorism (Clance, 1985). In this sense, Kets de Vries (1989, p. 21-22) describes impostors as highly sensitive to rejection, excessively afraid of social failure, and suffering from persistence dependence, in addition to perfectionist expectations. It is as if they incorporated their parents' excessive expectations that were never properly "metabolized". As a result, they suffer from generalized anxiety, lack of self-confidence, and depression in many cases.

Low self-esteem impedes these individuals from accepting compliments and internalizing their success. When third parties recognize their competencies, impostors see this recognition as "an indication that they have managed to deceive others into believing that they are successful" (Sonnak & Towell, 2001, p. 864). Feeling insecure about one's own intellectual capacity lead individuals to overestimate other people's skills and underestimate their own, perpetuating low self-esteem and feelings of inferiority (Holmes et al., 1993; Chassangre, 2014). Sonnak and Towell (2001) present evidence that self-esteem is linked to IP in which an inverse relationship is established; the more significant the IP, the lower one's self-esteem.

Additionally, even though success is not internally assimilated, the recognition of success plays an ambiguous role in the lives of those experiencing impostor feelings. Even though they externally refuse compliments extolling their competencies, when they are recognized and complimented, these individuals believe they are creating a social image and deceiving people (Ferrari & Thompson, 2006). Part of this behavior derives from how these individuals assimilated the concept of intelligence. Usually, intelligence is distorted as a fixed entity based on achieving goals to prove one's intellectual capacity to others. When people with IP fail, they tend to feel inadequate, ashamed, and anxious and experience lower levels of wellbeing and self-esteem. Therefore, these people avoid situations in which they are evaluated. Those who do not experience impostorism believe that intelligence is malleable, something that can be improved with learning and intellectual development, in which failures are expected and even strengthen resilience and personal growth (Chassangre & Callahan, 2017). Part of this behavior originates from a family environment permeated by high demands and success expectations (Langford & Clance, 1993).

Attention focused on the social perception of one's image, instead of on the development of tasks, traps individuals with IP in a cyclical behavior that perpetuates and reinforces impostor feelings (Clance, Dingman, Reviere, & Stober, 1995). This behavioral pattern is called the "Impostor Cycle" and involves diverse characteristics and actions manifested throughout one's life (Thompson et al., 1998). Figure 1 presents this cycle's phases.

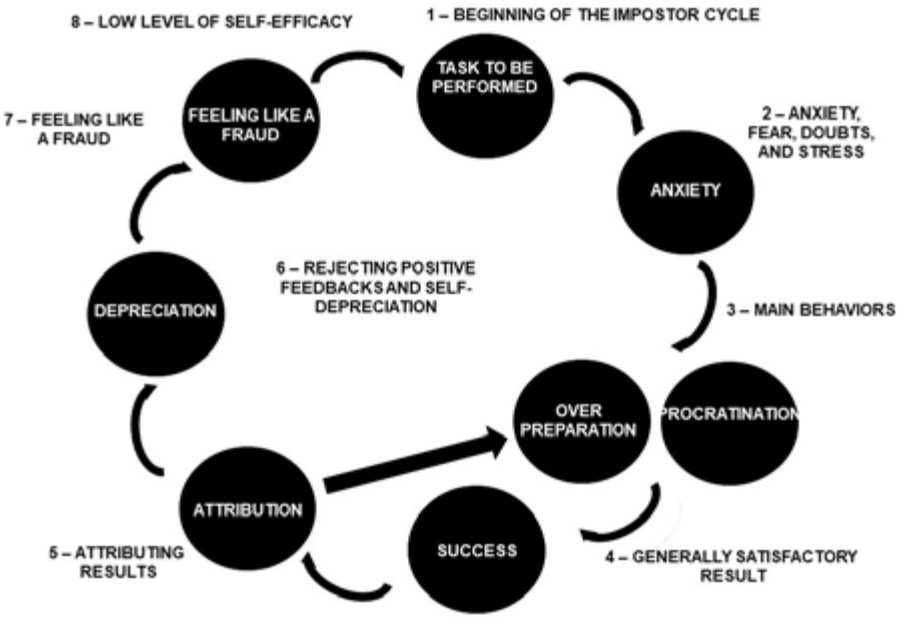

Figure 1. Impostor's Cycle

Source: Chassangre and Callahan (2017, p. 102) adapted from Clance (1985).

Figure 1 shows that whenever a new task is assigned, impostors experience anxiety (Chassangre & Callahan, 2017), insecurity, and fear (Clance, 1985) that they will not successfully overcome challenges. These individuals usually respond to the high levels of anxiety and insecurity in one of two ways: overpreparation or procrastination followed by heightened task dedication (Thompson et al., 1998).

Overpreparation is characterized by workaholic behavior, including many hours dedicated to work and/or study while forgoing other activities to overcome illegitimacy feelings, showing perfectionist tendencies. On the other hand, procrastination consists of low commitment toward an established goal and the desire to protect self-esteem by delaying a given task (Chassangre & Callahan, 2017). When close to the deadline, the procrastinating individual dedicates him/herself intensively to complete the task. Therefore, success is assimilated because of the attitude adopted to fulfill the task, either through overpreparation or procrastination followed by intense dedication. When the individual successfully performs the task, s/he tends to not recognize it as legitimate (Thompson et al., 1998). Success is credited to great effort if one is overprepared for a task or luck or the ability to manipulate the environment if one procrastinates (Thompson, Foreman, & Martin, 2000). Therefore, when complimented, these individuals tend to depreciate their skills and reject positive feedbacks because they do not feel deserving of recognition. If success is not achieved, then the feeling of deception, self-handicapping, or self-sabotage may be fostered and adopted to justify failures.

Thus, in any case, in the last stage of the cycle, these individuals feel like a "fraud" and do not internalize their achievements as a result of their competence and intelligence, fearing they will be unmasked and seen as incompetent (Clance & Imes, 1978; Chassangre, 2014). Therefore, "As new achievement situations are encountered, anxieties and self-doubts return and the cycle begins anew." (Thompson et al., 1998, p. 382), reinforcing their beliefs that they are incapable of succeeding (Chassangre, 2014).

Clance and Imes (1978) note that minimizing impostor feelings is a slow process because the individual needs to modify his/her personality perception. Weiner (1972) explains that performance standards and the number of successes and failures shape the attribution of achievements. In this sense, Thompson et al. (1998) believe that IP decreases with age as positive experiences become more frequent, enabling individuals to assimilate success and minimize impostor fears, reinforcing the belief that IP can be minimized over time.

Regarding previous studies, Thompson et al. (1998) analyzed impostors' attribution process after experiencing success or failure. Tests of group differences were performed, and the results indicated no differences between genders regarding IP levels—additionally, the older the individual, the less frequent impostor feelings. The findings show that impostors generalize their failures but attribute success to external factors and are more likely to experience depression.

Craddock et al. (2011) sought to understand the manifestation of the Impostor Phenomenon by interviewing doctoral students attending a program in the United States. They identified that the individuals routinely faced high-performance expectations and failure aversion during childhood, which instilled perfectionist personality traits. Not accepting failure leads individuals to seek positive feedbacks and avoid criticism constantly. Therefore, personal demands for academic success and high performance are internalized and become part of the student's mindset, which persists into adulthood. In addition, the reports indicate that racial and background issues, such as being the first generation in the family to attend a doctoral program, promote impostor feelings. The authors also note the need for students to balance their academic obligations with other social life aspects as well as provide social support to these students.

Sonnak and Towell (2001) indicate that parenting style is associated with the Impostor Phenomenon, mainly parental overprotection. Overprotection leads parents to assume their children's responsibilities and projects to minimize their chances of failure. As a result, overprotected children tend to consolidate desires for accomplishments and success and avoid failure. The problem is that failure is necessary for one's constructive formation of character and resilience, which persist during adulthood. Hence, one's perception of skills is compromised, and success is no longer satisfactorily assimilated because the child assumes that the accomplishment of tasks was not obtained by his/her competencies but due to others' interference (Want & Kleitman, 2006).

French, Ullrich-French, and Follman (2008) validated the Clance Impostor Phenomenon Scale (CIPS) among American Engineering students, and the model with the most appropriate indicators was composed of two dimensions: one related to falsehood and the other to luck. These findings may indicate that cultural changes society has witnessed over the years may have affected the CIPS' one-dimensionality, outlying a multidimensional construct.

Deffendall, Knutson, and Sacks (2011) investigated the profile of students who were the first generation in their families to attend an undergraduate program in a university in the United Kingdom. The findings indicated that these students presented higher dropout rates than those in which at least one of the parents had a higher education degree. The authors considered that the challenges experienced in higher education might make students feel like a "fraud" while not receiving proper counseling from their families to deal with these situations result in higher dropout rates and impostor feelings.

These studies lead to an evolving theoretical-empirical field that highlights the importance of measuring IP in the university context. Furthermore, validating the CIPS in the Brazilian context enables other studies to address the topic and confer greater reliability to comparisons between studies performed in Brazil.

3. Method

Data were collected between August and December 2018 using the Survey Monkey® online platform. The study population comprised 15,971 students enrolled in graduate programs in the business field: Business Administration, Accounting Sciences, and Economics. The sample was composed of 1,816 valid responses, considering a minimum sampling parameter of 375 participants, with a 95% confidence level and a 5% margin of error (Survey Monkey, 2021). Pretests were conducted with graduate students from other fields of knowledge to verify the instrument's reliability and prevent bias coming from the respondents. The Impostor Phenomenon was measured using the Clance Impostor Phenomenon Scale, which was originally composed of 20 statements measuring the respondents' level of identification with certain behaviors and feelings, rated on a five-point Likert scale: "1 = Not at all true"; "2 = Rarely"; "3 = Sometimes"; "4 =Often"; and "5 = Very true".

CIPS is the scale most frequently used to identify the Impostor Phenomenon and its total score ranges from 20 to 100 when all items are completed; the higher the score, the more intense one's impostor experiences and feelings (Clance, 1985). Scores equal to or below 40 indicate the individuals present fewer IP characteristics; between 41 and 60 present moderate impostor feelings; scores between 61 and 80 indicate impostor feelings are often experienced, while individuals scoring from 81 to 100 have intense impostor experiences. A form was also included to characterize the respondents.

The study project was submitted to and approved by the Institutional Review Board to which the authors are affiliated and registered it the Plataforma Brasil under No. CCAE 95480818.9.0000.0102. The form included a question to identify whether the respondents were graduate students and one question to determine the field of knowledge to which the respondent's program belonged.

The quantitative analyses performed during the pretest and final data collection followed the following Statistical Analysis Protocol (Figure 2).

Indicators	Parameter	Theoretical Framework
Scale Reliability Analysis		
Cronbach's alpha	≥ 0.70: Ideal ≥ 0.60 < 0.70: Satisfactory	Hair Jr, Black, Babin, Anderson, and Tatham (2009)
Confirmatory Factor Analysis (CFA)		
$\chi 2$	The smaller, the better	Marôco (2014)
p-value	> 0.050	
CFI	< 0.8: Very low ≥ 0.8 < 0.9: Low ≥ 0.9 < 0.95: Good ≥ 0.95: Excellent	
PCFI	< 0.60: Low ≥ 0.60 < 0.8:Good ≥ 0.8: Excellent	
GFI	< 0.8: Very Low ≥ 0.8 < 0.9: Low ≥ 0.9 < 0.95: Good ≥ 0.95: Excellent	
PGFI	< 0.60: Low ≥ 0.60 < 0.8: Good ≥ 0.8: Excellent	
RMSEA	> 0.10: Unacceptable > 0.05; 0.10 ≤: Good ≤ 0.05: Very Good	
MECVI	The smaller, the better	
Factor loadings	Ideal: above 0.50; Acceptable: above 0.40	Hair Jr et al. (2009)
Communalities	Preferably above 0.50	
Average Extracted Variance	Above 0.50	
Composite Reliability	Above 0.70	Hair Jr et al. (2009) e Marôco (2014)
Discriminant Validity	The Average Extracted Variance must be greater than the quadratic estimate of the correlation.	
Exploratory Factor Analysis (EFA)		
Measure of Sampling Adequacy (MAS)	< 0.50: Unacceptable ≥ 0.50 < 0.60: Low ≥ 0.60 < 0.70: Mediocre ≥ 0.70 < 0.80: Average > 0.80: Excellent	Hair Jr et al. (2009)
KMO	< 0.50: Unacceptable ≥ 0.50 < 0.60: Low ≥ 0.60 < 0.70: Reasonable ≥ 0.70 < 0.80: Average ≥ 0.80 < 0.90: Good > 0.90: Very Good	Fávero and Belfiore (2017)
Bartlett's test	*p-value* < 0.050	Field (2009) and Hair Jr et al. (2009)
Communalities	Preferably above 0.50. Acceptable 0.30.	
Factor loadings	Ideal: above 0.50; Acceptable: above 0.40	
Factor	Above 50%	Marôco (2007)

Figure 2. Statistical Analysis Protocol
Note. $\chi 2$ = Chi-square; CFI = Comparative Fit Index; PCFI = Parsimony Comparative Fit Index; GFI = Goodness-of-Fit Index; RMSEA = Root Mean Square Error of Approximation; MECVI = Modified Expected Cross-Validation Index; KMO = Kaiser-Meyer-Olkin.

Source: developed by the authors.

CIPS was originally developed in English, and some unofficial translations were found in Brazil. Hence, authorization to translate the scale was asked to its author by email. After she provided her consent, the scale was submitted to a sworn translation to be later adjusted. In Brazil, a certified translation is an official document of public faith, ensuring the content in Portuguese trustworthy reflects the best as possible the content written in a foreign language (ATPP, 2018). The translated version was then analyzed by two professionals who teach in graduate programs, one from the field of quantitative methods and one experienced in scientific research methodology; both affiliated with graduate programs in the business field. This verification focused on the scale's methodological structure, and no adjustment was required.

In the pretest phase 1, the scale was sent to 592 graduate students and researchers from different fields of knowledge. These participants were not included in the final sample. A total of 113 questionnaires were returned, and 100 valid answers were analyzed. Additionally, 37 graduate students provided suggestions and comments concerning the instrument. Each participant received an identification code.

The scale's reliability was verified using Cronbach's alpha, and this preliminary analysis indicated the instrument presented internal consistency, with a Cronbach's alpha equal 0.919 (Fávero & Belfiore, 2017). However, Field (2009) notes that Cronbach's alpha varies according to the scale's number of items. The higher the number of items, the higher the coefficient as the numerator of the equation squares the number of items. Additionally, all the suggestions provided by the graduate students were analyzed.

Graduate students 14 and 27 noted that the categories could induce the answers; for instance, statement 1 begins with the expression "*Eu frequentemente*" [I have often], while "4 = often" is one of the scale's categories. Hence, using the same term at the beginning of the statement and in the category may have induced answers, compromising internal consistency and the constructs' unidimensionality. Hence, the statements containing expressions with the potential to bias the answers were highlighted, and each item's mean and standard deviation were calculated for analysis. Figure 3 presents the statements with expressions that could lead to bias.

Statements	M	DP
1. I **often** succeed on a test or assignment, even if I am afraid I will not do well before taking on the assignment.	3.848	0.813
5. **Sometimes**, I think I got my current position or current success because I happened to be in the right place at the right time or knew the right people.	2.616	1.330
8. I **rarely** do a project or task as well as I would like.	2.808	1.322
9. **Sometimes**, I feel or believe that success in my life or work results from some kind of mistake.	1.990	1.241
11. **Sometimes**, I feel that my success was due to some sort of luck.	2.424	1.270
12. **Sometimes**, I get disappointed in my current accomplishments and feel I should have done a lot more.	3.323	1.194
13. **Sometimes**, I am afraid others will realize how much I lack knowledge or skill.	2.939	1.406
14. **Sometimes**, I am afraid that I might fail in a new task or endeavor, although I usually do whatever I try.	3.354	1.189
17. I **often** compare my ability to those around me and think they might be more intelligent than me.	3.455	1.272
18. I **often** worry about not succeeding with a project or exam, even though others around me are considerably confident that I will succeed.	3.303	1.173

Figure 3. Clance Impostor Phenomenon Scale – CIPS
Note. M = Mean; SD = Standard Deviation.

Source: Clance (1985).

Dispersion of the statements composing the CIPS was verified by the mean, standard deviation, and boxplot of each item, showing that the answers provided to some statements were concentrated on the categories that matched the beginning of the statement. For example, statement "1. *Eu frequentemente tenho sucesso em um teste ou tarefa, mesmo com medo de não me sair bem antes de assumir a tarefa*" [1. I have often succeeded on a test or task even though I was afraid that I would not do well before I undertook the task.]. Therefore, the terms that initiated statements 1, 8, 9, 11, 12, 13, 14, 17, and 18 were either changed or excluded because they matched the scale's categories and could potentially interfere with and direct the participants' interpretation. Statement 5 was adjusted to facilitate clarity, as suggested by graduate student 100. All the changes were implemented after discussing with a professor experienced in scientific research methodology, aiming to preserve the statements' content and meaning.

In the pretest phase 2, 453 coordinators of graduate programs in different fields of knowledge received an invitation for the pretest and were asked to disseminate it among the students; also, 1,316 graduate students were invited via email to participate in this stage of the study. A total of 558 students participated, and 513 questionnaires were valid and included in the analysis. The students attended 99 graduate programs from different subfields of knowledge. After tabulating data, the scale's reliability was verified using Cronbach's alpha, equal to 0.921.

Due to the limitations of Cronbach's alpha, Confirmatory Factor Analysis and Exploratory Factor Analysis were performed to verify the constructs' one-dimension. IBM SPSS AMOS v. 21.0.0® and IBM SPSS Statistics v. 19.1® were used. The Confirmatory Factor Analysis indicated outliers, confirmed by the square of Mahalanobis' distance and p1 and p2 smaller than 0.001. Even though eight observations presented unsatisfactory p1 and p2, the square of Mahalanobis' distance did not present large distancing that indicated the need to exclude the observations.

Regarding the statements, none of the variables presented extreme violation of normality that would indicate the need for exclusion, as all the values concerning asymmetry (*sk*) were below 2 and kurtosis (*ku*) were below 7, according to criteria established by Marôco (2014). Table 1 shows asymmetry and kurtosis values for each variable of the Impostor Phenomenon and goodness of fit.

Table 1
Asymmetry (sk) and kurtosis (ku) – CFA

Variable	Asymmetry(sk)	Kurtosis (ku)	Variable	Asymmetry(sk)	Kurtosis (ku)
F1	-0.695	1.454	F11	0.730	-0.706
F2	-0.343	-0.585	F12	-0.152	-1.112
F3	-0.018	-0.983	F13	-0.101	-1.218
F4	-0.404	-1.055	F14	-0.479	-0.554
F5	0.613	-1.031	F15	0.008	-1.072
F6	0.066	-1.305	F16	0.260	-1.229
F7	-0.288	-0.996	F17	-0.358	-0.984
F8	-0.043	-0.884	F18	-0.464	-0.612
F9	0.793	-0.475	F19	-0.805	-0.329
F10	0.005	-1.146	F20	-0.198	-0.953
Indicator		**Interpretation**	**Indicator**		**Interpretation**
χ2	1.138.544	Parameter not met	GFI	0.799	Very low
p-value	0.000	Parameter not met	PGFI	0.647	Good
CFI	0.816	Very low	RMSEA	0.105	Unacceptable
PCFI	0.730	Good	MECVI	2.387	Poor adjustment

Source: developed by the authors.

According to the analysis protocol, Table 1 shows that the goodness of fit of some indicators was not satisfactory. When the standardized factor loadings were verified, statements with values below 0.50 were found, suggesting that more than half of the item was explained by errors instead of variation *per se* (Hair Jr et al., 2009). The statements with values below the parameter proposed by Hair Jr et al. (2009) are presented in Table 2.

Table 2
Standardized Factor Loadings - CFA

ID	Standardized Factor Loadings	ID	Standardized Factor Loadings	ID	Standardized Factor Loadings	ID	Standardized Factor Loadings
F1	-0,098	F6	0,764	F11	0,700	F16	0,669
F2	0,221	F7	0,682	F12	0,686	F17	0,706
F3	0,601	F8	0,596	F13	0,792	F18	0,697
F4	0,723	F9	0,715	F14	0,730	F19	0,215
F5	0,624	F10	0,644	F15	0,826	F20	0,384
Composite Reliability (CR) = 0.9221				**Average Variance Extracted (AVE) = 0.519**			

Source: developed by the authors.

Even though the Average Variance Extracted was slightly higher than the ideal and the Composite Reliability was satisfactory, we opted for analyzing the origin of low standardized factor loadings of the statements with the worst results, i.e., F1, F2, F19, and F20, to improve the model's goodness of fit. A search in the literature identified studies that performed CFA and EFC in the CIPS (Chrisman, Pieper, Clance, Holland, & Glickauf-Hughes, 1995; French et al., 2008) and found similar problems for items 1, 2, 19, and 20, suggesting their exclusion and the existence and verification of two (French et al., 2008) or three (Chrisman et al., 1995) factors arising from the remaining statements.

Hence, an EFA was performed after excluding the four items to analyze CIPS' factor structure. Using the Principal Component Extraction and the Varimax rotation methods, two factors were found and explained 60.52% of the total variance. The Varimax method was chosen to maximize the sum of the variance with loadings required by the factorial matrix (Hair Jr et al., 2009). The anti-image correlations were higher than 0.70 on the diagonal, KMO was 0.946, Bartlett's test was significant, and commonalities presented indicators higher than or close to 0.50. Hair Jr et al. (2009) suggested that factor loadings below 0.40 were hidden because they were not significant. Table 3 presents the fitness of the variables in their factors.

Table 3
Adequacy of variables to factors - EFA – CIPS

Factor 1						Factor 2	
ID	Factor Loadings	ID	Factor Loadings	ID	Factor Loadings	ID	Factor Loadings
F14	0.778	F4	0.718	F10	0.627	FI11	0.875
F13	0.770	F7	0.657	F16	0.61	FI9	0.856
F15	0.767	F12	0.637	F3	0.563	FI5	0.831
F18	0.767	F6	0.631	F8	0.492		
F17	0.724						

Note. ID = Identification.

Source: developed by the author.

Similar to French et al. (2008), two factors were identified: "Factor 1 – *Falsidade e Subestimação*" [Fake], aligned with statements expressing the falsehood and underestimation of one's skills, and Factor 2 – *Sorte ou Acaso*" [Luck], inherent to beliefs that success was achieved due to chance or luck. Additionally, statements F6 and F8 share loadings with more than one factor. Hence, these statements were maintained not to impair the model's validity. A CFA was performed together with the two factors, and satisfactory goodness of fit indicators were found, Composite Reliability, Average Variance Extracted, and correlation between factors, as shown in Table 4.

Table 4
Goodness of fit indicators - CFA

Indicator		**Interpretation**	**Indicator**		**Interpretation**	
χ 2	390.089	Parameter not met	GFI	0.911	Good	
p-value	0.000	Parameter not met	PGFI	0.690	Good	
CFI	0.943	Good	RMSEA	0.074	Good	
PCFI	0.810	Good	MECVI	0.895	Good adjustment	
Correlation between Factor 1 and Factor 2					**0,696**	
Discriminant Validity (DV)					**0,484**	
					Factor 1	**Factor 2**
Composite Reliability (CR)					**0.9292**	**0.9149**
Average Variance Extracted (AVE)					**0.5046**	**0.7825**

Source: developed by the author.

The goodness of fit indicators found here were compared to those reported by French et al. (2008) for the two-factor model. French et al. (2008) obtained the following: $\chi 2 = 1472.85$, p-value < 0.050, CFI = 0.796. Thus, similar to French et al. (2008), the only parameter not met was the p-value of $\chi 2$, with the other indicators having good results and better goodness of fit than the ones reported by French et al. (2008). Statements F5, F8, and F11 explain 78.25% of the variance of "Factor 2 – *Sorte*" [Luck], while the others explain 50.46% of "Factor 1 – *Falsidade e Subestimação*" [Fake]. The factors are not highly correlated and the Discriminant Validity was confirmed. The explanatory power of these factors may change in the final sample, given its different characteristics, but provide evidence of the structure and indications for using the CIPS in the study's next phase. Given the feasibility of the model, the 16-statement version was adopted in the final data collection. The final version with adjustments was sent to the original scale's author and is presented in the analysis of the results. After completing the pretest, the final data collection was conducted with graduate students from the business field.

4. Results

A total of 2,259 responses were obtained, 1,816 of which were considered valid and were included in the analysis. Of these, 51.21% of the respondents reported being women; were aged between 21 and 66 years old; 2.42% were attending teaching institutions located in the North; 7.71% in the Mid-West; 14.98% in the Northeast; 28.64% in the South, and 46.25% in the Southeast.

Table 5 presents the 16 statements addressing the Impostor Phenomenon that remained after excluding statements F1, F2, F19, and F20 during the pretest after descriptive analysis.

Table 5

Clance Impostor Phenomenon Scale – Descriptive Statistics

Statement	M	Mo	Md	Dp
F18 – I often worry about not succeeding with a project or examination, even though others around me are considerably confident that I will do well.	2.992	3	3	1.249
F7 – I tend to recall the incidents in which I have not done my best more frequently than those times I have done my best.	2.843	3	3	1.252
F14 – I am afraid that I might fail in a new task or endeavor, although I usually do well whenever I try.	2.831	3	3	1.194
F17 – I compare my skills with those around me, and I think that they may be more intelligent than me	2.831	3	3	1.275
F8 – I hardly do a project or a task as well as I would like.	2.733	3	3	1.187
F12 – I am disappointed with my current achievements and think I should have done a lot more.	2.681	3	3	1.318
F4 – When people compliment me for something I have accomplished, I am afraid I will not live up to their expectations in the future.	2.593	2	3	1.220
F6 – I am afraid that important people realize that I am not as capable as they think.	2.386	1	2	1.308
F13 – I am afraid others realize how much I lack knowledge or skills.	2.366	1	2	1.256
F10 – It is difficult to accept praise or compliments about my intelligence or achievements.	2.358	1	2	1.216
F3 – If possible, I avoid evaluations and am afraid of others evaluating me.	2.299	3	2	1.065
F15 – When I achieve something and am recognized for my achievements, I doubt I can keep repeating that success.	2.275	1	2	1.158
F16 – If I receive much praise and recognition for something I have accomplished, I tend to disregard the importance of what I have done.	2.216	1	2	1.229
F5 – I think I got my current position or I got my current success by chance, because I was in the right place, at the right time or I knew the right people.	1.818	1	1	1.129
F11 – I feel my success was due to some luck.	1.718	1	1	0.984
F9 –I feel or believe that my success in my life or job has been the result of some kind of chance.	1.687	1	1	0.973

Note. M = Median; Mo = Mode; Md = Median; SD = Standard Deviation.

Source: Developed by the authors.

The scale's interval ranged from 1 to 5, in which none of the items reached a mean equal to or higher than 3; the three highest and lowest means are commented on as follows. The item with the highest mean was "F18 - *Me preocupo em não ter sucesso com um projeto ou avaliação, mesmo que outros à minha volta tenham confiança considerável de que eu terei sucesso*" [18. I often worry about not succeeding with a project or examination, even though others around me have considerable confidence that I will do well.] (M = 2.992; SD = 1.249), the category most frequently checked was "3 = Sometimes" (Mo = 3; Md = 3). F18 concerns the individuals' lack of confidence in their ability to succeed in certain tasks. This aspect is one of the main characteristics of impostors, already portrayed in the seminal study by Clance and Imes (1978), in which successful women doubted their competencies. In this sense, a great fear of not accomplishing goals was found among people with high educational levels with a Master's or Doctoral degree. These feelings may be heightened in the context of a graduate program, considering its complexity and the fact it leads to insecurities and imposes pressure on students (Levecque, Anseel, De Beuckelaer, Van der Heyden, & Gisle, 2017).

Statement "F7 - *Tenho a tendência de lembrar mais os incidentes em que não fiz o melhor que pude do que os momentos em que fiz o melhor que pude*" [I tend to remember the incidents in which I have not done my best more than those times I have done my best.] (M = 2.843; Sd = 1.252) obtained the second-highest mean, with the category "3 = Sometimes" (MO = 3; MD = 3), being the most frequently checked. Dudău (2014) found this characteristic among Romanian students attending a graduate program in Psychology, in which individuals with impostor feelings tended to pay greater attention to errors than to successes. Thompson et al. (1998) mentioned that assimilation of intellectual capacity tends to be maximized over time as individuals accomplish more goals. However, this process is often slow (Clance & Imes, 1978), leading students with high educational levels to feel impostors. Encouraging group conversations and graduate students' exchanging experiences can help those with impostor feelings assimilate their successes and intellectual capacities.

Statements "F14 - *Tenho medo de que eu possa falhar em uma nova tarefa ou empreendimento, embora eu geralmente faça bem o que tento*" [I'm often afraid that I may fail at a new assignment or undertaking even though I generally do well at what I attempt.] (M = 2.831; SD = 1,194) and "F17 - *Eu comparo minhas habilidades com aqueles que estão ao meu redor e penso que eles podem ser mais inteligentes do que eu*" [I often compare my ability to those around me and think they may be more intelligent than I am.] (M = 2.831; SD = 1.275) obtained the third highest mean, in which category "3 = Sometimes" (MO = 3; MD = 3) was the most frequently chosen. Regarding F14, Holmes et al. (1993) stress that individuals with such behavior tend to refuse opportunities to grow in their careers and prioritize low-level positions below their abilities to avoid others' criticism. Regarding F17, Craddock et al. (2011) report this characteristic is frequent among Doctoral students with impostor feelings, as feeling one does not have the same intellectual capacity as his/her peers results in feelings of not belonging to the context of a graduate program. Additionally, academic competitiveness inherent to a graduate environment (Levecque et al., 2017) favors the emergence of these feelings.

The statements with the lowest means were "F9 - *Sinto ou acredito que o sucesso em minha vida ou em meu trabalho é resultado de algum tipo de acaso*" [Sometimes I feel or believe that my success in my life or job has been the result of some kind of error.] (M = 1,687; SD = 0,973; MO = 1; MD = 1), followed by "F11 - *Sinto que meu sucesso foi devido a algum tipo de sorte*" [At times, I feel my success has been due to some kind of luck.] (M = 1,718; SD = 0,984; MO = 1; MD = 1), and finally "F5 - *Acho que obtive minha posição atual ou obtive meu sucesso atual por acaso, porque estava no lugar certo, na hora certa, ou conhecia as pessoas certas*" [I sometimes think I obtained my present position or gained my present success because I happened to be in the right place at the right time or knew the right people.] (M = 1,818; SD = 1,129; MO = 1; MD = 1). These statements characterize the perception that one's success is related to superstitious factors. In this context, even though one of the characteristics of impostors is to relate accomplishments to chance (Clance & Imes, 1978; Holmes et al., 1993), this aspect was not predominant in the sample addressed here.

Table 6 was developed based on the sum of the scores obtained by the students in the CIPS. It classifies the respondents according to the level of impostor feelings. Clance (1985) explains that the CIPS original version comprises 20 statements, in which the original score interval ranged from 20 to 100 points. In this study, the scale was reduced to 16 statements; hence, the interval ranges from 16 to 80 points.

Table 6
Scoring range of impostor feelings

Range	Description	F	%	Range	Description	F	%
16 to 32 points	Few characteristics of the Impostor Phenomenon	676	37.22	49 to 64 points	Frequent IP	352	19.38
33 to 48 points	Moderate IP	721	39.70	65 to 80 points	IP is intense and affects the assimilation of success and intellectual capacity	67	3.69

Note. F = frequency; % = percentage.

Source: Developed by the authors.

Most graduate students from the business field addressed in this study experienced moderate levels of impostor feelings, i.e., 721 respondents, representing 39.70% of the sample. Next is the group of students with few characteristics of the Impostor Phenomenon, with 676 graduate students representing 37.22% of the sample. The third group comprises 352 participants, i.e., 19.38% of the sample frequently experience impostor feelings. Finally, the group experiencing intense impostor experiences included 67 individuals, 3.69% of the sample.

After the descriptive analysis, the factorial structure was verified with EFA. Table 7 presents the commonalities and indicators of adequacy obtained in this stage.

Table 7
EFA – Communalities and Indicators of Adequacy

ID	Extraction	ID	Extraction	ID	Extraction	ID	Extraction
F3	0.296	F7	0,.96	F11	0.832	F15	0.686
F4	0.523	F8	0.449	F12	0.483	F16	0.467
F5	0.712	F9	0.813	F13	0.670	F17	0.525
F6	0.633	F10	0.455	F14	0.647	F18	0.588
Indicator		**Interpretation**		**Indicator**		**Interpretation**	
MAS minimum	0.863 (FI9)	Excellent		*Bartlett χ2*	16,197.32	Very good	
MAS maximum	0.976 (FI5)			*Bartlett Sig.*	0.000		
KMO	0.944	Very good					

Note. ID = Identification.

Source: developed by the authors.

Only statement "F3 - *Se possível eu evito avaliações e tenho medo de que outras pessoas me avaliem*" [I avoid evaluations if possible and have a dread of others evaluating me] obtained a communality value below 0.30, i.e., 0.296. However, we opted not to exclude this statement because its value is very close to the criterion, and also, the factors follow the same structure of the pretest, reported by French et al. (2008). Additionally, the remaining indicators were appropriate.

Note that the MAS indicators obtained through the diagonal correlations of the anti-image matrix are appropriate; they were above 0.70 and higher than the variable's remaining correlations. Additionally, KMO was satisfactory (0.944), well above 0.70, while Bartlett's test was significant, indicating the presence of significant correlations between the variables. Therefore, the factorial structure is presented in Table 8 together with the variance it explained.

Table 8

EFA – Factor loadings and explained variance

Factor 1						Factor 2	
ID	Factor Loadings	ID	Factor Loadings	ID	Factor Loadings	ID	Factor Loadings
FI14	0.792	FI17	0.705	FI16	0.585	FI11	0.875
FI13	0.770	FI4	0.699	FI8	0.570	FI9	0.856
FI15	0.770	FI7	0.660	FI10	0.563	FI5	0.831
FI18	0.760	FI12	0.632	FI3	0.536		
FI6	0.716						

Factor	Initial eigenvalues			Rotating sums of squared loadings		
	Total	% of variance	% cumulative	Total	% of variance	% cumulative
Factor 1 – Fake	7.773	48.580	48.580	6.163	38.516	38.516
Factor 2 – Luck	1.503	9.392	57.971	3.113	19.455	57.971

Note. ID = Identification.

Source: developed by the authors.

Similar to French et al. (2008), two factors were found, with statements F3, F4, F6, F7, F8, F10, F12, F13, F14, F15, F16, F17, and F18 composing "Factor 1 – *Falsidade e Subestimação*" [Fake] with a Cronbach's alpha of 0.922, and statements F5, F9 and F11 comprising "Factor 2 – *Sorte or Acaso*" [Luck] with a Cronbach's of 0.869. As argued by Diamantopoulos and Siguaw (2000), a minimum of three variables per factor was obtained.

Factor 1 was called "*Falsidade e Subestimação*" [Fake] because it represents feelings of fraud and self-doubt towards one's ability to succeed. Factor 2 was called "*Sorte ou Acaso*" [Luck] because it contains statements that indicate that success is attributed to randomness, destine, or coincidence. The factorial structure explains 57.971% of data variance. Hence, Factor 1 explains 48.580% of the variance in impostor feelings, and Factor 2 explains 9.392% of the variance.

Therefore, this study's objective was achieved. When analyzed from a two-dimension perspective, CIPS presents satisfactory indicators. Analysis of the sample shows that most students experienced moderate levels of impostor feelings. A portion of the respondents manifested all the characteristics of the Impostor Phenomenon. These characteristics were related to self-doubting their ability to succeed, fear of failure, underestimating their competencies while overestimating those of their peers. In general, the statements indicating that success is attributed to luck or chance did not obtain high scores. The analysis of the results suggests that the Impostor Phenomenon experienced by graduate students in the business field can be divided into two large groups: one representing falsehood and underestimation feelings and another representing luck or chance.

5. Conclusion

The findings indicate that doubting one's ability to succeed, fear of failure, underestimating one's competencies, and overestimating others' capabilities are the main characteristics of graduate students in the business field who experience impostor feelings. As described in the literature, these feelings can hinder the development of students in the academic milieu and the development of their professional careers.

In addition to sharing experiences and highlighting their accomplishments, group conversations can help students see themselves more realistic and minimize the Impostor Phenomenon. Hence, controlling the Impostor Phenomenon is vital for individuals to consolidate self-esteem and cope with the challenges imposed in the academic and professional spheres in a more self-assured, confident, and proactive manner.

This study presents contributions in the methodological and theoretical fields by validating the Clance Impostor Phenomenon Score and identifying its bi-dimensional nature, enabling further research. This study also contributes in social terms as it discusses Impostor Phenomenon and its consequences on graduate students, suggesting strategies to minimize these feelings.

This study's limitations concern a lack of studies developed in the business field and among graduate programs, which impedes the comparison of results. Additionally, as the sample was not randomly selected, the results cannot be generalized to this population. Future studies are suggested to investigate other fields of knowledge so that the Impostor Phenomenon characteristics are outlined in graduate programs.

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