

“I wasn’t that good at it but I pretended to be”: Students’ Experiences of the Impostor Phenomenon in Academic Settings

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The impostor phenomenon (IP) is an internalized feeling of fraudulence characterized by beliefs that one’s personal successes are due to external factors (e.g., luck) rather than internal attributes. Individuals who suffer from impostor feelings may feel that they are not really intelligent or capable but have instead fooled others. Written descriptions of IP experiences were provided by 879 graduate and undergraduate students and submitted to content analysis. Nine major themes were identified across three categories: causes (i.e., novel experiences, challenges, everyday academic interactions, and high expectations), feelings and impact (i.e., negative psychophysiological symptoms and negative thoughts and emotions), and management (i.e., negative, neutral, and positive). Implications for addressing these feelings in post-secondary settings are considered.

Le phénomène de l'imposteur (PI) est un sentiment de fraude intériorisé, caractérisé par la conviction que les succès personnels sont dus à des facteurs externes (par exemple, la chance) plutôt qu'à des attributs internes. Les personnes qui souffrent du sentiment d'imposture peuvent avoir l'impression qu'elles ne sont pas vraiment intelligentes ou capables, mais qu'elles ont plutôt trompé les autres. Des descriptions écrites d'expériences de PI ont été fournies par 879 étudiants de premier et deuxième cycles et ont été soumises à une analyse de contenu. Neuf thèmes principaux ont été identifiés dans trois catégories : les causes (expériences nouvelles, défis, interactions académiques quotidiennes et attentes élevées), les sentiments et l'impact (symptômes psychophysiologiques négatifs, pensées et émotions négatives) et la gestion (négative, neutre et positive). Les implications de la prise en compte de ces sentiments dans le cadre de l'enseignement post-secondaire sont examinées.

The impostor phenomenon (IP)¹ is defined by three main factors: 1) a belief that personal successes are due to external factors or errors in evaluation rather than internal attributes, 2) a belief that one is not intelligent or capable but has instead fooled others, and 3) a fear of being “found out” and judged by others as a fraud (Clance & Imes, 1978; Clance & O’Toole, 1987). Studies with student samples have found prevalence rates of serious impostor feelings of up to 82% (Bravata et al., 2020), making this a serious concern for students, academic staff/faculty, and administrators in higher education (Kearns, 2013; Parkman, 2016). Correlates of impostor feelings in students include increased levels of depression and anxiety, decreased self-esteem, and

self-handicapping behaviours in relation to academics and career (Ménard and Chittle, 2023). The purpose of this study was to shed light on the contributors to, experience of, and consequences of the IP in graduate and undergraduate students and to determine whether these were subject to demographic group differences.

The Impostor Phenomenon in Academic Settings

Interviews and focus groups have been used to identify the essential features of the IP in academic samples. Most of these studies have focused on the experience of graduate students and the findings have varied significantly across studies. Components of the IP identified in these studies include fear of being exposed, holding themselves to high standards, and procrastination (Cisco, 2020b); self-perceptions of inadequacy, lack of academic preparedness, challenges with first semester coursework, challenges with racial identity and family expectations, and fear of failure (Craddock et al., 2011); and attributions of success to the prestige of one's advisor, to other's mistakes or to other's lies or misrepresentations (Chakraverty, 2019). Contexts in which graduate students have reported that impostor feelings were triggered included speaking up in class, comparing themselves to colleagues and professors, reading academic articles and books, and writing academic manuscripts (Cisco, 2020b; Cutri et al., 2021). In one of the few studies involving undergraduate students, McElwee and Yurak (2010) analyzed 122 written descriptions and found that participants' narratives about IP experiences were characterized by desire for self-verification, fear of excessive future expectations, positive affect related to the perceiver's view, and motivation for future improvement.

A few studies have focused specifically on the experiences of Black graduate students and the intersection of impostor feelings and racial marginalization. Based on focus groups with 12 Black graduate students, Stone and colleagues (Stone et al., 2018) identified five major themes: awareness of low racial representation, questioning intelligence, expectations, psychosocial costs, and external explanations of success. In another study of 70 Black engineering PhD students and postdoctoral fellows, more than half of participants described impostor feelings and attributed them to their own achievement motivations and lack of belonging to the academic community (Robinson et al., 2016). However, little research has been done on the IP in other marginalized groups (e.g., other ethnicities, sexual orientation).

Group Differences in IP Experiences

Many researchers have considered the possibility of demographic group differences in experiences of impostor feelings but there are few investigations in this area. Quantitative studies on the IP and sex have found mixed results, with some showing higher scores among female participants compared to male (e.g., Badawy et al., 2018; Bernard & Neblett, 2018; Brauer & Proyer, 2019; Cohen & McConnell, 2019; Cokley et al., 2018; Holliday et al., 2020) and others showing no sex-based difference in IP scores (e.g., Blondeau & Awad, 2018; Castro et al., 2004; McClain et al., 2016; Wang et al., 2019). Likewise, the relationship between ethnicity and IP is unclear, with one study finding differences between groups of minority students (Cokley et al., 2013) but other studies finding no relationship (e.g., Cohen & McConnell, 2019; Cokley et al., 2017, 2018; Holliday et al., 2020; Tao & Gloria, 2019). To date, no studies focused on the relationship between IP and sexual orientation could be located. Likewise, no studies have been done on level of study (i.e., undergraduate vs. graduate) and impostor feelings.

Purpose of Study and Research Questions

To date, much of the qualitative research about the IP has focused on the experiences of graduate students and post-doctoral fellows or on specific racialized groups, with only one study focusing on experiences of impostorism in a broad sample of undergraduates (McElwee & Yurak, 2010). This is a major omission from the literature as impostor feelings can result in significant education and career-related decisions. Students who feel they are impostors might switch out of their current programs, choose not to apply to graduate or professional groups, or potentially leave post-secondary education altogether (e.g., Cisco, 2020b).

The questions guiding this investigation were the following:

1. How are impostor feelings triggered, experienced, and managed by students in academic settings?
2. Are there group differences in impostor experiences related to sex, ethnicity, sexual orientation, or level of study?

No predictions or hypotheses were made due to the qualitative nature of this investigation (Meinefeld, 2004).

Method

Participants

Data for this study were collected as part of a larger investigation on experiences of the IP. Analyses for this investigation were based on the participants who identified as students and who responded to an open-ended question about impostor experiences ($n = 879$); they were primarily female (69.1%), heterosexual (80.3%), aged 18–21 (52.2%), undergraduates (69.5%), and of European ethnic origins (45.9%) (see Table 1).

Measure

Survey participants were first asked to respond to a series of demographic questions including sex, sexual orientation, ethnicity, and level of study. Following the completion of several related quantitative measures, participants were asked an open-ended question about a time they felt like an impostor in an academic setting. Follow-up questions asked about the nature of the experience, contributors to the moment, how the respondent managed the situation, and the impact it had on them. Participants could respond with up to 20,000 characters (approximately 3,200 words); responses ranged from 1 to 369 words, with a mean of 52.6 words ($SD = 31.8$).

Procedure

This study received clearance from the Research Ethics Board at the university where data were collected (#19-135). Participants were recruited through mass emails, an announcement in the university newsletter, and social media posts (i.e., Instagram, Facebook, Twitter). Recruitment materials contained a link to an online survey hosted by Qualtrics, which was available for two and a half weeks; completion of the entire survey took approximately 15 minutes. Respondents who clicked on the survey link were first directed to an informed consent page; participants were

told that submission of survey responses implied consent to participate in the study. Participants who completed the survey were given the option to provide their email address to be entered in a draw to win one of five \$20 Tim Hortons gift cards.

Table 1

Participant Demographics (N=879)

Demographics	Number	Percentage
Sex		
Male	261	29.8
Female	606	69.1
Gender diverse	10	1.1
Ethnic background		
North American	57	6.8
North American Aboriginal	19	2.3
European	382	45.9
Latin, Central, South American	18	2.2
African	32	3.8
Asian	236	28.3
Multiethnic	79	9.5
Sexual orientation		
Asexual	56	6.7
Bisexual	72	8.6
Gay or lesbian	12	1.4
Heterosexual/straight	676	80.3
Pansexual	11	1.3
Queer	13	1.5
Level of study		
Undergraduate	610	69.5
Master's	222	25.3
PhD	44	5.0
Age		
<18	12	1.4
18-21	458	52.2
22-25	234	26.7
26-29	91	10.4
30-39	53	6.0
40-49	22	2.5
50+	8	0.9

Note. Across variables, frequencies (and percentages) are reported only for categories with more than 7 individuals, as per the research ethics board at the university where data was collected. In addition, participants were given the option "prefer not to say" for all demographic questions.

Analysis

Students' descriptions of impostor experiences were subjected to a qualitative content analysis (Neuendorf, 2017). Responses were reviewed by two coders who independently reviewed responses and generated a set of codes. Meetings to discuss grouping of codes into themes and sub-themes were followed by a return to the data until a consensus had been reached. A third coder (i.e., an auditor), who was experienced in qualitative content analysis but not involved in the development of the initial coding system (Morrow, 2005), reviewed the themes and sub-themes and made suggestions leading to further refinements and modifications of the coding system. The original coders and the auditor then classified a selection of participant statements to ensure that the proposed system demonstrated adequate reliability. Once the classification system had been agreed-upon, participants' statements were coded; each statement was reviewed by two coders for the presence/absence of the identified themes with the goal of achieving consensus. A new coder, who had not been involved in any of the earlier development, was introduced and assisted in this process. Further refinements and changes were made to the system (e.g., the addition of the "neutral management" theme).

Group differences in the descriptions of IP experiences were assessed via chi-square analyses (or Fisher's Exact Test in cases with fewer than five participants per cell) for sex, sexual orientation, ethnic origins, and level of study.

Results

Qualitative Results

Nine major themes across three different categories were identified. Under the Causes category, themes included 1) *novel experiences*, 2) *challenges*, 3) *everyday interactions*, and 4) *high expectations*. In the Feelings and Impact category, the two themes identified were 1) *negative psychophysiological symptoms*, and 2) *negative feelings and cognitions*. Finally, under the Management category, the themes were 1) *negative management*, 2) *positive management and benefits*, and 3) *neutral management*. Many themes were characterized by several additional subthemes (see Table 2). Note: participants' responses are presented verbatim, with errors in spelling, and grammar preserved.

Causes

Novel Experiences

Participants described many types of novel experiences as triggers for their feelings of impostorism. The first few days or weeks of starting post-secondary studies altogether, or just starting a new semester were often cited as difficult: "The first class of every course I take, I often feel inferior academically to those around me and feel the need to not talk for a couple weeks until I understand the climate of the room." Novel experiences also included being accepted into a new program or group, receiving a leadership position, or receiving a bad mark and/or failing for the first time. As one person explained, "The very first test I had in undergrad studied, I failed, I was embarrassed and severely disappointed, I questioned my suitability for University." Many responses cited the novelty associated with specific courses, such as in the STEM fields, or taking

a class outside of their primary area of study. Students also indicated feeling like an impostor when they were involved in experiential learning, whether it was joining a research lab, participating in co-operative education, or completing a clinical placement. “First time in clinical, it’s such a different experience, you don’t feel like you’re prepared or that you belong,” reported one student.

In some cases, the surprise was students did better than they expected. One student explained:

It was the time I had got 1500 in my SAT scores at my first attempt. I felt as if there was some kind of mistake. I had not practised hard enough in the time leading upto my examinations and I barely expected to get above 1300. I felt extremely shocked. I tried to downplay my situation in order to feel better because all the plaudits and recognition I was receiving felt empty to me. There were far better students than me who deserved this score but they ended up getting less. It kinda made me feel as if I took away someone else's moment to shine.

Finally, students described feeling like an impostor when receiving accolades or awards; again, many expressed a belief that others were more deserving, or that their intelligence was limited to “book smarts”.

Table 2

Student Experiences With Academic Belonging: Categories, Themes, and Subthemes

Categories	Themes	Subthemes	% of participant answers
Causes	Novel experiences	-	11.7
		Academic barriers	49.8
	Everyday academic situations	Marginalization and Isolation	
		Formal evaluations	37.1
		Classroom, club and community settings	
		Interactions with academic authority figures	
High expectations	Internal expectations	31.9	
	External expectations		
Impostor feelings	Negative psychophysiological	-	5.3
	Negative thoughts and emotions	-	73.2
Management	Positive	Emotion-focused	38.1
		Positive thoughts	
		Taking action and problem-solving	
	Negative	Avoidance	18.5
		Altering self-presentation	
		Overworking	
	Neutral	-	6.5
Other	Never IP	-	5.5

Challenges

Challenges were commonly cited as causes for impostor feelings in students' descriptions; these responses reflected experiences that were unanticipated or unexpected, as opposed to everyday academic interactions that could also prompt impostor feelings (see below). This theme was broken down into two subthemes: academic barriers and non-academic marginalization/isolation.

Academic Barriers. Academic barriers were defined as unanticipated challenges directly related to the academic experience, such as having a low GPA, failing an evaluation, having difficulties with studies, or being required to withdraw from a program. One person shared a difficult experience: "During first year statistics. I failed the first midterm and everyone I knew got a 90 or higher." Another person said, "When I got kicked out of my program for not having the required gpa but I didn't know anything about that and just thought as long as you passed your classes you would be fine." Students also identified formal rejection and/or criticism from professors or graduate teaching assistants as contributors to their impostor feelings. One person shared:

When a professor in the music program told me I was not talented or dedicated enough to be in the program. I ended up dropping and switching programs as a result. To this day, I do not feel like an adequate musician

Finally, students associated feeling unprepared, unexperienced, and having difficulty finding resources and learning material with their impostor feelings.

Non-academic Marginalization/Isolation. Student responses categorized within this subtheme were focused on challenges related to feelings of marginalization or isolation. Impostor feelings in these situations might arise due to perceived differences related to culture, race, language, sex, study status (international vs. domestic), learning disorders, age, mental and physical illness or disability, and socioeconomic status. One student shared their challenges related to a learning disability:

I have ADHD, which makes it hard for me to organize my thoughts and often means that my performance can be somewhat inconsistent. I often worry about people hearing me speak and judging me for not knowing the clinical terms and feel confused as to why everyone else seems to get it and I just can't. Before a presentation, I sometimes feel panicked because I expect that everyone will hear my talking and know that I don't know enough about the topic.

Another student shared how the conflict between the culture of their program of study conflicted with their religious culture:

Throughout my first 3 years in university, whenever I attended events for my students society I felt like an outsider due to being visibly Muslim and not being able to participate in most engineering traditions/culture because it was very drinking centric and catered mostly to white people.

Students also mentioned social challenges, including lack of social support, loss of a friend or family member, social rejection, having different values and opinions, and judgement from others. One person described the following IP experience related to social rejection:

Walking into classes the first few weeks - I am a mature student from another area. Many people had their high school friends. I don't necessarily share the same values and beliefs as many of the students so I felt different.

Group differences related to level of study were significant for this theme overall, $\chi^2(2, N = 875) = 10.70, p = .005; \phi = .111$: the theme was present in 326/610 (53.4%) of undergraduates' responses, 93/221 (42.1%) of Master's students, and 17/44 (38.6%) of PhD-level participants.

Everyday Situations

Many everyday, expected interactions associated with post-secondary studies could trigger impostor feelings. Three subthemes were identified in this category: formal evaluations, classroom/club/community settings, and interactions with academic authority figures.

Formal Evaluations. Respondents described feeling like an impostor when being evaluated in a variety of contexts, including academic assignments, exams, and standardized tests. One person shared their difficulties doing exams:

Every time I have to write exams I feel incompetent, worried, insecure. I feel as though I will fail. I get so anxious that I cannot remember what I have learned. Sometimes I answer questions incorrectly because I overthink so much during the exam, and then when I leave I am so mad at myself because I know with certainty the correct answer but I confused myself because I was so overwhelmed and nervous. I worry about future testing and that professors will think I am dumb and wonder why I am in their class.

Competitions, performances, and presentations were also mentioned frequently. One student reported that their impostor feelings were triggered by a role-play: "During my third year of BSW [Bachelor's of Social Work], we had a project for one of our classes where we had to act as a family counsellor and counsel a pretend family in front of the class." Finally, students indicated that applying for jobs and/or co-op positions could bring on feelings of impostorism.

Classroom/Club/Community Settings. This subtheme was comprised of responses describing interactions and discussions with others on campus, including participation in class debates, interactions in clinical settings, and involvement in community or volunteer events. One student explained:

Any time there is groupwork or group discussions, I am hesitant to speak at all in those situations. I don't doubt my competence, however I have little to no confidence in myself. I am afraid I am getting judged for anything I say or do, and it makes it difficult to be engaged in my program. I am this way in every one of these situations, and I have often skipped classes or dropped them entirely when there are presentations, groupwork, or class participation involved.

Students indicated feeling like an impostor in situations where they were required to give an answer or an opinion, whether in a classroom lecture setting or during group work. "In a group setting discussing a project, I felt I had none of the expertise required to join in on the conversation. I felt panicked and tried to bluff my way through. I still feel clueless about it," said one person. Many expressed fears of not knowing an answer, answering incorrectly, or voicing an opinion that others do not share; some had seen these fears realized.

Interaction With Academic Authority Figures. Responses in this subtheme related specifically to conversations and interactions with academic authority figures, including professors and research supervisors, graduate/teaching assistants, and individuals who were interviewing them for a job. "Every time I meet with a professor I feel like I don't know enough and am faking my way through and aren't well prepared," said one student. Another person shared an upsetting experience: "I did poorly on an assignment (60%) and I went to the GA to ask for constructive criticism and all she said was that it was boring. I feel unconfident in my writing abilities- all of my abilities actually."

Everyday interactions as a theme showed significant differences based on sex, $\chi^2(1, N = 867) = 7.20, p = .007; \phi = .091$; this theme was present in 80/261 (30.6%) of responses from male participants but 244/606 (40.2%) of responses from female participants.

High Expectations

Students described how having high expectations could contribute to their experiences of the IP. This theme could be broken down into two subthemes: high internal expectations (i.e., expectations they held for themselves) and high external expectations (i.e., expectations imposed on them by others).

Internal. Student responses in this subtheme focus on the high standards they set for themselves. Respondents wrote about feeling like an impostor due to internal pressures to prove themselves and to find purpose, as well as basing their worth on academic success or failure. They also indicated that they experienced impostor feelings when they perceived their peers as being more knowledgeable than themselves. One participant wrote, "When I studied at the same time and same amount as everyone for an exam yet I found that all of my friends received a higher mark than I." Another person shared, "I'm surrounded by these amazing creatives and I feel like I fall short when comparing myself to them." Previous academic excellence (i.e., being identified as gifted) could also contribute to impostor feelings.

External. Many students also described feeling like an impostor as a result of pressure from external sources, including parents, professors, siblings, and friends. One participant wrote, "I feel like my family thinks I'm doing well in my studies and assignments but I really don't think I am. I feel guilty that my final marks will not be what they imagine." Students also mentioned having a large responsibility (such as a heavy course load) or being relied upon as situations that caused feelings of impostorism. One student shared:

When I was in my music classes and I needed to play in front of the class I always felt like others would either have too high of expectation or too low of one before I played. Sometimes I would be praised by some and others would say I didn't deserve the grade I got.

Another student wrote, "Sometimes feel like an imposter within my research lab because it is full of MSc and PhD students and candidates who have high expectations from me that I am afraid I cannot meet."

The expectations theme showed significant group differences related to level of study, $\chi^2(2, N = 876) = 6.17, p = .046; \phi = .084$; it was present for 210/610 (34.4%) undergraduate students, 58/222 (26.1%) Master's students, and 11/44 (25.0%) PhD students.

Feelings and Impact

Participants described how their IP experiences affected them as they occurred. Two themes were identified: negative psychophysiological symptoms and negative thoughts and feelings.

Negative Psychophysiological Symptoms

When asked about a time students felt like an impostor, many wrote about the physical symptoms they experienced in that moment. These bodily symptoms often emerged in conjunction with examinations, evaluations, presentations, public speaking, performances, meetings with academic figures, and confrontations with others. “Whenever I write my exams and tests and I can’t find the words to write I feel like a mess and find it hard to breathe,” said one person. Physical symptoms shared in participants’ responses include sweaty palms, difficulty breathing, feeling sick to their stomach, increased heartbeat, and shaking. One student described the difficulties they faced in giving solos for their music class: “There were times where I was given solos that I wasn't the most confident at playing. I felt my heart beating faster whenever I played those parts, and my mouth would dry up or I would quiver, which makes the playing of an instrument even harder to do.” Participants also wrote about experiencing panic, turning red in the face, feeling tense, nervous, and even crying.

Negative Feelings and Cognitions

Impostor experiences often resulted in negative emotions and thoughts for students. In many cases, respondents did not distinguish between emotions and thoughts and so these were organized together (e.g., students who reported that IP experiences made them “anxious” with no further description or clarification). Two subthemes were identified: thoughts and feelings that were related to self-perceptions and concerns about thoughts and feelings held by others towards them.

In Relation to Self. Impostor feelings could result in many different negative feelings and thoughts about participants’ selves. Students wrote about feeling embarrassed, discouraged, undeserving, ashamed, unmotivated, overwhelmed, and depressed. One participant described feeling, “embarrassed, lost, unskilled, inarticulate on the subject, scared” on their first day of class. Impostor feelings also led to negative thought patterns such as chronic rumination, all-or-nothing thinking, and catastrophic thinking. Specific examples of negative thoughts were also frequently shared, such as they were only there to fulfill a quota, that they are not qualified or achieved a position because of luck/pity. A graduate student shared their frustration at not being able to complete their dissertation:

My self-doubt and lack of motivation had me feeling like I couldn't do it. And seeing other students, who entered the program after me, finish, made me feel like I don't belong here. What is wrong with me? Why can't I just pull up my socks and get it done? I just feel/felt defeated and continued to lose motivation to work on my dissertation, and take too long to submit things to my advisor because this is the last step before I graduate, and I'm sure they'll realize this was all a mistake and I don't deserve a PhD.

In Relation to Others. Students who experienced feelings of impostorism described many concerns about how others might view them. Examples included fear of public embarrassment, worries about appearing incompetent, and being “found out” or exposed as someone who does not belong. One person wrote, “I often feel like an imposter at the end of a semester when my average comes out quite high- it makes everyone around me believe I’m much smarter than I believe myself to be.” Another person shared:

I go into presentations with extreme nerves and anxiety and no matter how much I prepare, when I stand there I forget everything. I feel like everyone is laughing at me and mocking me even when they're smiling and nodding their heads.

Many students wrote about a fear of judgement or criticism from others.

I took a Business class in my first year wherein the teacher was very condescending of the answers that his students would give him. I never wanted to raise my hand in that class because I was afraid that I did not know enough information about the topics in the class for him to not criticize my answers.

Other responses indicated that students experiencing feelings of impostorism also worried about letting others down or not being able to contribute to a group: “I felt like I was lying to my parents and my peers about how ‘smart’ I really was, since I didn't think so” said one person.

Negative feelings and cognitions differed significantly across several groups including sex [$\chi^2(1, N = 867) = 23.23, p < .001; \phi = .164$], ethnicity [$\chi^2(7, N = 830) = 23.13, p = .002; \phi = .167$], and level of study [$\chi^2(2, N = 875) = 10.61, p = .005; \phi = .110$]. This theme was present in 162/261 (62.1%) of responses from male participants but 472/606 (77.9%) of responses from female participants. In terms of ethnicity, negative feelings and cognitions were present in 10/19 (52.6%) responses from North American Aboriginal participants, 43/57 (75.4%) who identified as other North American, 306/382 (80.1%) European origins, 5/7 (71.4%) Caribbean, 13/18 (72.2%) Latin, 22/23 (95.6%) African, 153/236 (64.8%) Asian, and 61/79 (77.2%) of multiethnic participants. Finally, negative thoughts and feelings as a theme was present in 466/610 (76.4%) responses from undergraduate students, 146/221 (66.1%) responses from Master’s students, and 29/44 (65.9%) responses from PhD students.

Management

Participants reported a variety of approaches to managing their impostor feelings, and three major themes were identified in their responses: negative approaches, positive strategies, and neutral tactics. (Note that in this context, the appraisal of a strategy as positive or negative depended on how the respondent framed and evaluated their own response, rather than beliefs of the authors.)

Negative Management

When asked how they managed feelings of impostorism, students wrote about a variety of strategies that they framed in a negative light or were unlikely to be functional in the long-term. These fell into four subthemes: avoidance behaviours, altering self-presentation, overworking behaviours, and external attributions of failures.

Avoidance Behaviours. Students indicated that they would avoid many different types of situations as a result of impostor feelings, including participating in discussions, asking for help, and sharing opinions and emotions. One student stated, “There’s been times I really do have a question and I avoid raising my hand because I don’t want people to make fun of me.” Respondents also mentioned not sharing work until it was perfect, procrastinating, or avoiding course work and classes altogether. “I started skipping every class to avoid the embarrassment, which had a bad effect on my grades,” explained one person. The repercussions of this behaviour could be significant to the respondent, as this student explained: “I don’t tend to speak in class and avoid classes with group assignments or presentations. Limiting my courses means I often miss out on classes that interest me.”

Altering Self-presentation. Responses in this subtheme related to efforts or attempts that students made to appear favourably to those around them. Students shared that they tried to manage impostor feelings by faking competence or pretending they knew what they were doing. However, these attempts added an additional layer of difficulty to an already-stressful situation, worsened self-esteem or self-confidence and/or increased IP experiences in the long run. “I didn’t like science and I wasn’t that good at it but I pretended to be. By doing this, it made me feel smart and included but I didn’t know what was actually going on,” explained one person. Other respondents wrote about hiding failures or lying about grades. Finally, some students wrote about downplaying the amount of work they put into a task so that others were not aware of their struggles.

I have done this often about telling people I have not studied much when I have studied hard so they don’t look at me as a try hard or judge me for the lack of information I have gained. I will also do this so if I get a poor mark I can use the excuse I didn’t study hard. I don’t feel good lying about it

Overworking Behaviours. Students who experienced feelings of impostorism often described feeling internal pressure to overwork to compensate for these feelings. They wrote about overpreparing, overstudying, starting earlier on tasks, working harder to catch up (to the point that it impacted their physical and/or mental health), and neglecting other studies to focus on one area of study. A student described stress related to a type of evaluation: “I often overprepare for these scenarios, which results in me neglecting another aspect of my studies to focus on one unimportant thing. This often leaves me not well-rounded in my entire studies.”

These behaviours were motivated by negative feelings and internalized pressure, and were done at the expense of balance, physical and mental health, and happiness. Another student said:

I’m trying to manage it by working harder [...] I think it mostly has an impact on my mental health. When I feel like I have to work harder I sacrifice social aspects of my life and then I feel like I’m missing out.

External Attributions of Failures. Some students attempted to manage their feelings of impostorism by placing the blame for their lack of success elsewhere; although this strategy is usually associated with managing impostor feelings, in this case, participants themselves framed it as unhelpful and indicated that the net result was a deepening of their impostor feelings. Responses in this subtheme included mentions of poor instruction, lack of resources and/or accommodations, and lack of support and/or guidance from family, peers, and professors. One respondent cited an un-accommodating professor:

In one of my first year courses the professor didn't allow electronics and therefore all notes had to be handwritten and he spoke very fast. This led me to miss a lot of notes and when the first midterm came around I was close to failing. This made me feel as though I wasn't smart enough and that I wasn't made for this academic setting.

Another person described a difficult situation and concluded, "But there is nobody there to help. I have gone to the profs and registrars and nobody is there to help. It is just one big joke where money is the only thing that allows us entrance." Participants reporting the use of this strategy conveyed a sense of bitterness and helplessness in their responses.

Positive Management

Students also described a variety of positive management strategies when asked about a time they felt like an impostor. These strategies could be categorized into three subthemes: emotion-focused coping, positive cognitions, and positive actions and problem-solving.

Emotion-focused Coping. Many students reported coping with IP experiences by using strategies focused on managing their negative feelings. They described asking for help and reaching out to others, including family, friends, professors, and therapists. Reaching out to other students could be particularly helpful. One person explained:

Getting into my third year of social work brought along a sense of imposter syndrome. How was I one of the few who got in, and why me over the dozens (if not hundreds) of other options? I still feel that way sometimes, but it helped out to reach other students and see how they're feeling the same way. It brought a sense of camaraderie—we all felt like imposters together!

Religious and spiritual practices such as praying, meditation, and yoga were mentioned. Other emotion-focused coping mechanisms included practicing gratitude, positive affirmations, and making light of negative situations, as well as breathing exercises and physical exercise. A student who was forced to take a year off for medical reasons reported feeling out of place: "I managed the situation through exercise, and my close friends and family. They really helped keep me confident in getting back on track and not giving up in myself, despite having some set backs."

Positive Cognitions. Many students wrote about deliberately trying to shift their mindset, focusing on self-growth, correcting previous irrational thoughts, and learning a life lesson after experiencing feelings of impostorism. A student who reached out to a tutor after struggling with a class reported a change in their thinking: "It taught me that it's okay to ask for help and that just because you don't understand something now doesn't mean you can't in the future." These responses also mentioned increased self-awareness, self-confidence, and motivation. Students described pushing through difficulties, comparing themselves to others less, being less worried about the judgement of others, and seeing competition as motivation. A student who had returned to their studies after many years wrote: "I knew that I would try and told myself that it would be okay if I felt distressed and it would be okay if I needed to cry and it would be okay if it was hard, but I was not going to stop myself from trying."

Positive Actions and Problem-solving. This subtheme includes strategies to manage impostor feelings that resulted in specific plans and actions to make positive changes based on students' personal values. Examples include devising goals and strategies to meet their goals, making use of available resources (e.g., finding a tutor), developing new friendships, and retaking

courses. One student described what they did after getting a bad mark: “I contacted my professor, who advised me to meet with the Graduate Assistant. The GA discussed the test and helped me learn to better prepare for tests, and got an A- on my next test in the same class.” Students also wrote about increasing their preparation and practice, as well as working harder while maintaining balance. “I manage by writing everything out on paper so I can get a visual of what needs to be done and steps to complete,” shared one student. Finally, some students wrote about taking actions such as switching programs to something better suited to their interests or leaving a negative environment, where doing so did not involve compromising more deeply-held beliefs. One student was initially devastated by a failed midterm in their intended minor: “I decided it would be best to drop it as a minor altogether and be realistic as to what I want for myself and my future. I am currently in a minor that I love and truly believe that it will have a positive impact on my future.”

The presence of the positive management theme showed significant group differences related to ethnicity [$\chi^2(7, N = 830) = 16.99, p = .017; \phi = .143$] and level of study [$\chi^2(2, N = 876) = 6.33, p = .042; \phi = .085$]. This theme appeared in 4/19 (21.0%) responses from students who identified as North American Aboriginal origins, 26/57 (45.6%) other North American origins, 128/382 (33.5%) European origins, 4/7 (57.1%) Caribbean origins, 6/18 (33.3%) Latin origins, 12/23 (52.2%) African origins, 112/236 (47.4%) Asian origins, and 29/79 (36.7%) multiethnic origins. Positive management was present in 219/610 (35.9%) responses from undergraduate students, 93/222 (41.9%) from Master’s students, and 23/44 (52.3%) from PhD students.

Neutral Management

Some students described management strategies that were not appraised by the respondents themselves as either positive or negative: they were simply reported with no connection to a positive or negative outcome and no clear association with positive or negative thoughts. For example, students would use the phrases such as “I winged it”, “I powered/pushed through”, or “I moved on” to describe how they handled the situation; however, there was no clear judgement of that decision or its consequences to the respondent. Some students indicated no sense of overcoming the situation, no lessons learned, and no indication of whether their management strategies helped or hindered in the long run. Finally, many students managed imposter feelings by putting in minimal effort and accepting a lower standard or average results, seemingly without any sense of disappointment or loss: “Putting in minimum effort would leave me at average standing, which is good enough to get through my undergrad,” was the strategy shared by one participant.

Never IP

Although the survey question specifically asked participants to share “a time when you felt like an impostor in an academic setting”, several respondents reported that they had never experienced impostor feelings. The vast majority provided no details beyond “I have never felt this way” or “I didn’t have any situations like this” but a few provided longer explanations. One student wrote:

This never happened to me. I was never afraid of other people’s judgement because even they aren’t perfect. So they are no one to judge me. I have always done my best in whatever I did. And I am proud of it

Although this would not be classified as a "theme" (because the focus of the research was on understanding impostor experiences), responses were nevertheless subjected to chi square testing, which showed significant differences for the presence of this response based on sex [χ^2 (1, $N = 867$) = 19.24, $p < .001$; $\phi = -.149$], ethnicity [χ^2 (7, $N = 830$) = 35.39, $p < .001$; $\phi = .206$], and level of study [χ^2 (2, $N = 876$) = 14.68, $p = .001$; $\phi = .129$]. This idea characterized 28/261 (10.7%) responses from male participants but 20/606 (3.3%) of female participants. For ethnicity, a response of "never" showed up in the answers of 3/19 (15.8%) participants of North American Aboriginal origins, 2/57 (3.5%) other North American origins, 6/382 (1.6%) European origins, 0/7 (0%) Caribbean origins, 0/18 (0%) Latin origins, 2/23 (8.7%) African origins, 27/236 (11.4%) Asian origins, and 3/79 (3.8%) multiethnic origins. Finally, this idea was present in 22/610 (3.6%) responses from undergraduate students, 23/221 (10.4%) from Master's students, and 2/44 (4.5%) PhD students.

Discussion

The goal of this study was to identify the similarities across IP experiences reported by graduate and undergraduate students. Within the broader category of causes, participants identified novel experiences (e.g., a new job, a new stage of education) as possible triggers for impostor feelings, similar to Craddock and colleagues (2011), whose participants cited first semester coursework. Both academic and non-academic challenges were another potential cause of impostor experiences, as were everyday academic interactions; neither of these causes have been identified in previous studies on the IP but this suggests that both unexpected (e.g., surprise failures) and expected situations (e.g., presentations, final exams) can be associated with impostor feelings. In particular, issues identified as non-academic challenges raise concern as many of these relate to experiences of marginalization on the basis of group (e.g., ethnicity, religion, ability status). Students stated that high expectations, either their own or those imposed by others contributed to impostor feelings; this theme was supported by findings from earlier studies (e.g., Cisco, 2020a; Craddock et al., 2011; McElwee & Yurak, 2010). Participants within the current study also reported comparing themselves to others, thereby adding and worsening their expectations for themselves, which corroborated previous literature (Cisco, 2020a; Craddock et al., 2011).

Common feelings reported by participants during their impostor experiences were negative psychophysiological symptoms, as well as negative feelings and cognitions, which was further subdivided into self-perceptions and concerns about thoughts and feelings held by others towards them. To our knowledge, the physiological response associated with feeling like an impostor has not been documented in previous investigations; however, participants' word choices suggest powerful and aversive reactions. In terms of thoughts and feelings, participants in the current study reported feeling like failures and would assume any present and previous success was due to luck or pity, similar to findings of earlier investigations (Brauer & Proyer, 2022; Chakraverty, 2019; Craddock et al., 2011). The connections between participants' descriptions of negative self- and other-perceptions mirror previous findings related to the connections between perfectionism, anxiety, and depression in post-secondary populations (Pirbaglou et al., 2013), supporting the need to take impostor feelings seriously.

Within the category of management, students identified the use of coping strategies including avoidance, altering self-presentation, and overworking, all of which they framed in a negative light. Previous studies within this field have confirmed participants' use of avoidance behaviours

(Cisco, 2020a), but no other investigations have identified the connection between impostor feelings and other ineffective coping strategies described within the current study. The finding that participants who externalized failure (e.g., to poor teaching practices) still reported impostor feelings is novel and stands in contrast to previous findings that such a strategy would reduce impostorism (e.g., Brauer & Wolf, 2016). Perhaps this result is due to the discrepancy between “knowing with the head” versus “knowing with the heart” (Samoilov & Goldfried, 2000): participants may believe intellectually that their failures are due to factors beyond their control but still experience a sense of doubt and shame that they could not overcome these issues.

Participants also identified management skills that they appraised as positive, including emotion-focused coping strategies and taking action/problem-solving. Participants in previous studies also identified various emotion-focused coping mechanisms, including faith and prayer, and asking for help when needed (Craddock et al., 2011; Stone et al., 2018). The identification of a “neutral” management category was unexpected and has not been reported in previous investigations. Perhaps this finding relates to the idea that some students may simply expect that impostor feelings are an inextricable part of post-secondary studies; whether this sense of inevitability might be associated with further difficulties should be investigated longitudinally.

Previous studies where a principal components analysis has been conducted using the Clance IP scale have found evidence for three stable factors that make up this construct: fake, discount, and luck (Brauer et Wolf, 2016; Chrisman et al., 1995). Both discounting success and attributing achievements to luck were well-represented in participants’ responses. However, participants in this investigation rarely used the word “fake”; in fact, the word itself or variants thereof appeared only four times in over 800 responses (in one case, by someone who reported never experiencing IP). This is curious as feeling like a fake was one of the original criteria postulated by Clance in her description of the phenomenon (Clance & Imes, 1978). This finding may be unique to this sample but is certainly worthy of a targeted follow-up investigation. Perhaps a qualitative discourse analysis could be employed to capture nuances in language use.

Group Differences in IP Descriptions

No differences emerged in theme frequency based on sexual orientation. This could be interpreted as an encouraging finding: LGBT+ students are no more likely than the general population to struggle with specific aspects of post-secondary studies as they relate to the IP.

Female students were more likely to highlight the role of everyday academic interactions in provoking impostor feelings and the impact of negative thoughts and feelings during these experiences. Female students were also less likely to report never having experienced the IP. These results suggest that impostor experiences may be both more commonly-experienced and painful for female students, which supports many previous studies showing higher scores on IP measures among female participants (e.g., Badawy et al., 2018; Bernard & Neblett, 2018; Brauer & Proyer, 2017, 2019; Cohen & McConnell, 2019).

Differences among ethnic groups were found related to negative thoughts and feelings and positive management strategies; there were also differences in those who reported never having experienced impostor feelings. Negative thoughts and feelings were highest among participants who identified African (95.6%) origins and lowest among those who identified North American Aboriginal background (52.6%). Positive management strategies were most-commonly reported by students of Caribbean (57.1%) or African (52.2%) background but least-commonly reported by students of North American Aboriginal origins (21.0%). Students who reported never having

experienced impostor feelings were most likely to be of North American Aboriginal origins (15.8%) and least likely to be of Caribbean (0%) or Latin (0%) origins. It is difficult to interpret these findings or compare them findings to those of previous investigations for several reasons: 1) different approaches to categorizing participant race/ethnicity between Canada, where these data were collected, and the United States, where most previous studies have been done, 2) small sample sizes within specific groups, and 3) lack of additional context (e.g., whether students are first-generation or continuing-generation).

Differences were identified across levels of study based on the triggering role of challenges and high expectations, which were most-commonly reported by undergraduates (53.4% and 34.4% respectively) and least-frequently reported by PhD students (38.6% and 25.0%). Undergraduate students were also more likely to identify the negative thoughts and feelings associated with IP experiences (76.4%) compared to Master’s (66.1%) or PhD (65.9%) students, and less likely to report positive management strategies (35.9%) compared to Master’s (41.9%) or PhD students (52.3%). These findings suggest the possibility of survivorship bias: students with intense impostor feelings that are easily-triggered, painful, and difficult to manage may be less likely to pursue further studies. It may also be the case that graduate students often have mentors in the form of their research supervisors; mentorship has been identified as an antidote to impostor feelings in previous literature (Cohen & McConnell, 2019).

Implications

This study adds to the body of evidence showing that impostor feelings are a significant problem within academic student populations. They can be triggered by a variety of experiences, including those that are expected and normal in academic settings (e.g., interacting with professors, formal evaluations) as well as those that are unexpected and problematic (e.g., being a member of a marginalized group). They may also be very distressing, and students may not be equipped to manage them appropriately. Incoming students should be educated during orientation to their faculties/departments about the IP and provided with relevant campus resources. This may include academic supports (e.g., for managing formal evaluations), supports specific to marginalized groups, or counselling. Normalizing these feelings in written materials and encouraging students to communicate with one another may be helpful as many students in this investigation appeared to suffer in isolation, fearing the judgement of others. Finally, undergraduate peer mentorship might play a significant role in addressing impostor feelings, whether this is based on a “buddy system” or memberships to clubs or societies.

Faculty and staff must also be made aware of this issue and could be encouraged to address this directly with students, either in syllabi or verbally in class. For example, although many professors wish more students would attend office hours, students may be intimidated by their impostor feelings; normalizing this might increase attendance with long-term improvements in both students’ marks and impostor feelings. Previous research also suggests that staff and faculty may be struggling with their own impostor feelings (Brems et al., 1994; Ménard et al., under review) and may find it difficult to support students overcoming a problem that for them is unresolved. This issue may be especially salient if professors struggle to provide adequate mentorship to graduate students and postdoctoral fellows due to impostor feelings; their lack of support may set up mentees for a vicious cycle if they feel unprepared to take on academic roles. Some preliminary findings support the use of collegiate writing networks for graduate students and junior academics (Wilson & Cutri, 2019). Upper administration would be advised to promote

greater awareness and communication about this issue across campus, whether in the form of workshops, webpages with resources, emails, and/or access to formal support for faculty and staff.

Strengths, Limitations, and Future Directions

Open-ended survey questions were used in this study, meaning that participants' responses varied in depth and complexity; although the research question contained three prompts, some participants did not address all aspects of the question. Answers may also have been subject to recall bias and other issues inherent to self-report data (e.g., social desirability). There is potential for the participants to be individuals who are more likely to experience impostor situations or who had a vested interest in the topic. In addition, participants were not asked how often they experienced the IP (e.g., rarely, sometimes, often); this limits the comparability of their responses. Those with more severe cases of IP may have provided more thorough and detailed accounts compared to those who experienced the feelings only infrequently. In terms of strengths, this investigation provided a unique perspective, as it assessed the causes, feelings, and management strategies related to impostor feelings, a multidimensional perspective that has not been adopted in previous studies on the topic. This study also included a larger and more varied sample compared to previous investigations, enhancing the generalizability of findings. Finally, differences in IP accounts were compared across groups, which added nuance to the accounts and help identify specific solutions.

Future research in this field might involve conducting interviews, to allow for more probing questions and gain greater detail and context on participants' impostor experiences. Future research is also needed to determine the effects of IP on marginalized groups and to create supports specific to their needs.

Conclusion

The goal of this study was to better understand students' experiences of the IP through a content analysis of written accounts, which were obtained from 879 participants, and analysis of theme frequency across demographic groups. Causes of impostor feelings included novel experiences, academic and non-academic challenges, everyday academic interactions, and high expectations, from both themselves and others. Participants described negative psychophysiological symptoms and negative thoughts and feelings related to these experiences. Individuals also outlined various strategies used to help cope with their impostor experiences, including an array of positive methods; however, many negative strategies were also used. Group differences emerged based on sex, ethnicity, and level of study, which shed additional light on nuances of this experience and suggested the need for specific group-level interventions. Professors, staff, and administrators would be encouraged to increase their awareness of this issue and facilitate the development of appropriate campus supports.

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Note

1. The impostor phenomenon is sometimes called the “impostor syndrome” but the originator of the term, Dr. Pauline Clance, has expressed a preference for phenomenon as that terminology (e.g., syndrome) refers to an official medical diagnosis, of which the IP is not (personal communication, May 1, 2020)

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