Identifying the Prevalence of the Impostor Phenomenon Among Computer Science Students

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ABSTRACT

The Impostor Phenomenon (IP) is often discussed as a problem in the field of computer science, but there has yet to be an empirical study to establish its prevalence among CS students. One survey by the Blind app found that a high number of software engineers at some of the largest technology companies self-reported feelings of Impostor Syndrome; however, self-reporting of Impostor Syndrome is not the standard diagnostic for identifying whether an individual exhibits feelings of the Impostor Phenomenon. In this work, the established Clance IP Scale is used to identify the prevalence of IP among graduate and undergraduate computer science students at a large research-intensive North American institution. Among this population of over 200 students, 57% were found to exhibit frequent feelings of the Impostor Phenomenon with a larger fraction of women (71%) experiencing frequent feelings of the Imposter Phenomenon than men (52%). Additionally, IP was found to have greater prevalence among computer science students than among students of other populations from comparable studies. Due to the negative impacts associated with feelings of the Impostor Phenomenon, computer science education should work to improve student awareness and help student cope with these feelings.

CCS CONCEPTS

• **Social and professional topics → Computing Education**.

KEYWORDS

Impostor Phenomenon, Imposter Syndrome, Computing Education

1 INTRODUCTION

The Impostor Phenomenon (IP) [1], as originally defined, is the experience of intellectual phoniness as perceived by high achieving individuals. These individuals have a great fear that others might discover that they are not as competent as they appear, attributing their successes to luck, knowing the right people, being in the right place at the right time, or even their personal charm [7].

Although there is a strong belief that the Impostor Phenomenon is more prevalent in computer science than in other fields, there has not yet been a carefully controlled study using a validated instrument to confirm this belief. In Blind's survey [18], 58% of the 10,000+ software engineers self-reported feelings of Impostor Syndrome. However, self-reporting is not considered a validated means for measuring IP.

Historically, the Impostor Phenomenon is understood to be prevalent among underrepresented populations in a particular field; however, there is evidence that both underrepresented and represented groups are affected. The fact that more than half of the software engineers at large companies like Salesforce, Amazon, and LinkedIn reported feelings of IP suggests it extends beyond underrepresented groups in computer science.

It is widely acknowledged throughout computer science that the Imposter Phenomenon is prevalent among students [11]. Grace Hopper Celebration, an annual conference celebrating women in computing, has had panels and events which discuss the Impostor Phenomenon; however, most of them are purely anecdotal and do not address on a larger scale the roots in why the Imposter Phenomenon appears to be so prevalent within CS [9]. In sum, although it seems to be common knowledge that the Impostor Phenomenon exists among computer scientists, it has yet to be rigorously researched in computer science.

In this study, we use a validated metric of measuring the prevalence of IP, the Clance IP Scale. We used this scale in a survey of 203 computer science students at a large, public, research-intensive university to address the following questions: a) How prevalent is IP among CS students? b) What differences are there between sub-populations within CS? and c) How does the prevalence of IP in CS compare to other populations?

Both undergraduate and graduate students are surveyed, and their responses are analyzed. We find that more than half of the respondents meet the diagnostic criteria as frequently (or often) experiencing IP. We find that there is a significantly greater feeling of IP among CS students than published findings for college students in other fields and for health professional students. We find

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[1]The terms *Imposter Syndrome* and *Impostor Phenomenon* are commonly used as synonyms, however we will use the term Imposter Phenomenon as this was the term first used in the seminal paper on the topic [6].

no significant differences in the fraction of students who experience IP between undergraduate and graduate students or between racially underrepresented students and racially represented students. However, we find that a larger fraction of female students frequently experience feelings of IP than male students. We discuss implications of these findings and end with suggestions for future research on this topic.

2 RELEVANT BACKGROUND WORK

Given the lack of studies on the Impostor Phenomenon within the field of computer science, we provide a broader context of the history of, and studies pertaining to, IP. See also Sakulku for a more in depth review of the characteristics, suspected causes, and consequences of IP [25].

2.1 A Brief History of the Impostor Phenomenon

In 1978, Clance and Imes defined the term Impostor Phenomenon to designate an internal experience of intellectual phoniness in a select sample of high achieving women where, despite numerous achievements, the women did not experience an internal sense of success. These women persisted in believing that they were not really bright and had merely fooled anyone who thought otherwise [6].

Over the course of five years, the authors interacted with over 150 women who either earned doctoral degrees in various specialties, were respected professionals in their fields, or were students who had been recognized for their academic excellence. They found that despite quantifiable proof such as their earned degrees, scholastic honors, high achievement on standardized tests, praise and professional recognition from colleagues and respected authorities, these women did not experience an internal sense of success. They continued to believe that they were not intelligent and had fooled anyone who thought otherwise [6].

In a later study, Clance and O'Toole describe the features that accompany Impostor Phenomenon beliefs such as a dread of evaluation, fear of failure, guilt about success, and the interestingly reinforcing cycle of belief that the person must suffer in order to succeed and that self-doubt can be crucial to ensuring success [7].

Despite being initially studied as a women-centric experience with its causes and perpetuating circumstances being grounded firmly in the societal sex-role stereotypes [6], in the decade following the seminal work, research was conducted that found men experienced IP with just as much frequency as women. Topping's study found that among university faculty, male faculty members exhibited higher feelings of IP than their female counterparts [7, 27].

2.2 Summary of IP Studies

Table 1 provides a list of relevant studies of Imposter Phenomenon and the demographic of participants studied. For each reference, a checkmark denotes whether the study proposed a metric for diagnosing IP, a validation of such a metric, whether the study examined symptoms of IP, explored correlations of IP with other factors, and offered preventative measures. We expand on these topics in the following sections.

2.3 Impostor Phenomenon Research and its Demographic Context

Parkman summarizes the area in which the Impostor Phenomenon has been studied:

> IP has been documented across the professions in a variety of industries including K-12 education, health care, accountancy, finance, law, marketing, and higher education. [23]

As the majority of the research into IP has been done in the clinical or university settings, most studies find their participants amongst individuals participating in clinical therapy or university students [2, 5, 6, 8, 10, 12–16, 26, 28, 29].

Additional extensive research has been done in the fields of Gender Psychology [2, 5–7, 10, 12–16, 26–28], Health Professions and Medicine [14, 28], and Academia [2, 12, 13, 19, 22, 23, 29]. There has yet to be a quantitative study done that focuses on CS students.

2.4 Effects of the Impostor Phenomenon

There are a number of symptoms associated with IP; please see "Symptoms" column of Table 1 for associated studies. It is commonly accepted that feelings of IP contribute negatively to an individual's life, and several studies have shown that IP corresponds to increased levels in depression and anxiety [5, 8, 16, 23, 27].

Cokley et al. began exploring the relationship between perceived discrimination and mental health [17]. In a follow-up article, Cokley et al. continued their work by studying 322 educational psychology college students from a university in the Southwestern United States who self-identified as being part of minority groups. They questioned these students to understand their feelings of discrimination, levels of depression/anxiety, and impostor feelings [8].

Both of these papers had consistent findings and gained a better understanding of how the Impostor Phenomenon impacts students. The authors found that while African American students feel the highest levels of discrimination, Asian American students feel higher levels of the Impostor Phenomenon when compared to African Americans and Latino/a Americans. The predictive relationships were explored and it was surprisingly found that *impostor feelings were a stronger factor in mental health than perceived discrimination and minority status stress for African Americans*. Additionally, for Asian Americans, impostor feelings predicted increased levels of depression and anxiety [8].

This unfortunate result is not unique to minority students. Additional negative effects have been observed within other communities. For example, in the conclusions of their pilot study on impostor feelings amongst medical students, Villwock et al. stated:

> Almost a quarter of male medical students and nearly half of female students experience [Impostor Phenomenon] and [Impostor Phenomenon] was found to be significantly associated with burnout indices. Given the high psychological morbidity of these conditions, this association cannot be ignored. [28]

This motivates further studies to understand how to properly prevent burnout among students and working professionals.

Table 1: Summary of Related Work

Source	Year	Demographic	Metric for Diagnosis		Symptoms	External Correlations	Preventative Measures
			Metric Introduction	Metric Validation			
[6]	1978	High-achieving Women			✓		✓
[27]	1983	University Faculty		✓	✓		
[7]	1987	Women	✓		✓	✓	✓
[10]	1987	Postgraduates & Advanced Degree Holders		✓			
[16]	1991	Undergraduates in Intro. Psychology	✓		✓		
[15]	1993	Undergraduate Students & Clinical Clients		✓			
[5]	1995	Psychology Students & High-achieving Undergraduates		✓			
[14]	1998	Health Professional Students				✓	
[22]	2001	Middle School Students				✓	
[12]	2005	Undergraduate Education Students			✓	✓	
[30]	2010	Doctoral Students					✓
[13]	2011	First Generation Doctoral Students				✓	
[23]	2016	Students, Faculty, and Staff			✓	✓	✓
[28]	2016	American Medical Students				✓	✓
[8]	2017	Minority Ed. Psych. Students			✓	✓	
[19]	2017	Professionals in Leadership Positions			✓		
[24]	2017	[N/A]					✓
[2]	2018	Undergraduate Business & Communication Students				✓	
[4]	2018	Nursing Students			✓		
[26]	2018	STEM Doctoral Students		✓			
[29]	2019	Undergrad Mgmt., Econ., Bus. Informatics, Law, & Program Eng. Students				✓	

2.5 Preventative & Counteractive Measures

There have been a number of studies on the ways to respond to and aid individuals with significant impostor feelings (see the last column of Table 1). In the initial study on IP [6], several psychotherapy responses are recommended for responses within therapy. At this point, the Impostor Phenomenon was thought to be a women-centric disorder, common among high-achieving women. Thus, a recommended therapy practice was to increase interaction with other high-achieving women through group therapy sessions. Here, the subject could speak with others—who might be struggling with a similar impostor belief—to gain a perspective on her thinking [6]. Alternatively, subjects could be aided in individual therapy sessions, although it often took several sessions for the subjects to exhibit signs of impostorism [6, 7].

Other work justifies that peer support groups provide help to graduate students who suffer from IP. The camaraderie of informal peer networks helps doctoral students to feel like they are not alone, and that there are others who have similar feelings of self-doubt. These peer support groups were not introduced as formal meetings, rather it was the group dynamic of peers who were able to support each other with emails [30]. In Ramsey and Brown, several examples are given as to what academic libraries can do in order to help students "renegotiate their academic identities and overcome [the] Impostor [Phenomenon]". The theme of peer support groups

is expanded upon by suggesting that campus entities should create workshops for students. A diverse campus staff is suggested to allow students to see themselves among those who they seek help and guidance from [24]. Although this work by Ramsey and Brown [24] focused on using libraries as the support network for students, both libraries and other campus entities could fulfill that role today.

The conclusions of Cokley et al. address several implications for university counseling centers and how they can incorporate this knowledge with the services that they provide [8]. They suggest that within initial assessment meetings, counseling centers should ask students about feelings of perceived fraudulence. It is possible to extend these suggestions and apply them to actions that could be taken by an educator as well.

With research evidence showing that the Impostor Phenomenon is so closely related to student mental health, college campuses have begun to take action to help ensure the well-being of students. The California Institute of Technology and the Massachusetts Institute of Technology include programs which help students identify impostor tendencies. Additionally, several other colleges have incorporated workshops regarding IP within their orientations [17]. By helping students define success, chronicle their achievements, and work to identify reasonable expectations, university departments have included students address this issue. Means for helping

Table 2: Participant Characteristics

Category	Subset	Count (% of total)
Degree Level	Undergraduate	132 (65%)
	Graduate	66 (32.5%)
Gender	Male	149 (73.4%)
	Female	53 (26.1%)
Represented Status	Non-Underrepresented Minority	173 (85%)
	Underrepresented* Minority	25 (12%)
Total Participants[†]		203

* Refers to reported race/ethnicity that was not Asian or White.
[†] Some of the subset counts do not sum to the total number of valid responses due to the optional reporting of demographic information.

faculty and staff handle IP have also been incorporated. By identifying impostor tendencies during orientation and encouraging peer discussion groups, faculty and staff may better identify how to reduce these feelings. Ultimately these measures lead to a better environment for students, faculty, and staff [23].

3 METHOD

A survey containing the Clance IP Scale was administered to undergraduate and graduate students at a large public research-intensive North American institution. Three separate classes were selected for administration of the survey. These courses were chosen as they were popular upper-division or graduate courses with large enrollments to gather a larger sampling of advanced students. The undergraduate classes were an upper division Data Structures course which is typically comprised of 2nd and 3rd year students, and an upper division Natural Language Processing course which is comprised of mostly 3rd and 4th year students. These were classes with large enrollments of undergraduate students who were computer science majors. Across the two classes, there were a total of 498 students enrolled. The graduate class selected was a graduate level class in Natural Language Processing. This popular course had among the largest enrollments in the graduate program with 190 students.

In accordance with our approved Human Subjects Board protocol, at each administration of the survey, a member of the research team entered the classroom, gave a brief introduction about the survey, then provided a web address for students to access the online survey through their personal devices. Students were not required to complete the survey and were not compensated for their participation. Also, students were not told about the nature of study at the time of recruitment; hence neither the terms "Imposter Phenomenon" nor "Imposter Syndrome" were used.

The survey consisted of two sections. The first section was the 20-question Clance IP Scale[2] (CIPS) that was originally printed in Pauline Rose Clance's *The Imposter Phenomenon: Overcoming the Fear that Haunts your Success* (1985). The scale is a 20-item self

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[2]The Clance IP scale is protected under copyright, and permission was obtained to use it in our study.

report scale where each item is rated on a Likert scale of 1 to 5. A rating of 1 corresponds to "Not at all true" or total disagreement with the aforementioned statement and a rating of 5 corresponds to "Very true" or complete agreement. The items also measured the individuals dread of evaluation, fear of failure, guilt of success, and perception of others versus themselves [6]. CIPS has been reported to have strong internal consistency (Cronbach's $\alpha = 0.92$–0.96) and strong validity [5, 15].

The second section of the survey consisted of requests for demographic information including gender, age, race/ethnicity, current degree program, and general questions about prior programming experience. Student responses were grouped by their corresponding demographic responses, and an ANOVA (Analysis of Variance) test was run to test for significance between different demographic groups. We define statistical significance as $p < 0.05$.

A total of 203 valid responses were obtained from the 688 potential enrolled students (providing a 29.5% response rate). As seen in Table 2, of the total responses, 65% of the responses were from undergraduate students, 32.5% of the responses were from graduate students, and 2.5% declined to respond. Ages of participants were also collected on the following intervals: 17-21 (52.2%), 22-25 (40.4%), 26-29 (5.9%), 30-40 (<1%), 50-60 (<1%). 73.4% of the responses were from men and 26.1% of the responses were from women (1 participant did not respond). The races/ethnicities that were self-reported were Asian (76.3%), White (8.9%), Hispanic/Latino (7.1%), Native Hawaiian/Other Pacific Islander (1.4%), Middle Eastern (<1%), and 2.5% declined to respond. Of the responses, 91.1% were from students majoring in CS.

4 RESULTS

Table 3 conveys CIPS results for the various demographics. Used here, ANOVA determines if there is a statistically significant difference between two or more means. This generalization of a t-test was used to compare demographic information. ANOVA provides no evidence to conclude that there is a statistically significant different in the means when comparing undergraduate and graduate students ($p = 0.50$), comparing age groups ($p = 0.49$), and when comparing racially represented (White/Asian) and racially underrepresented (not White/Asian) groups ($p = 0.86$). ANOVA found a statistically significant difference between male and female responses ($p = 0.0046$). The effect size between male and female responses, as measured by Cohen's d, is 0.47. This is a small to medium effect size, where a small effect size is $d = 0.2$ and a medium effect size is $d = 0.5$.

5 DISCUSSION

5.1 Interpreting Results

Although Blind's study was based on a yes/no question rather than a validated diagnostic instrument, the findings of this paper support their finding that more than half of the individuals in computer science exhibit IP. Additionally, the data validates that the female students had significantly higher levels of impostor feelings than the male students. This may be attributed to the lack of representation of women in computer science, a topic that is commonly discussed at Grace Hopper Conferences. Furthermore, there was a lack of significant differences of IP between students

Table 3: Survey Responses

Population	Count	CIPS Mean (SD)	% meeting diagnostic criteria*
All Valid Responses	203	64.18 *(12.62)*	57.40%
Undergraduate Students	132	64.86 *(12.31)*	59.20%
Graduate Students	66	63.47 *(13.17)*	55.40%
Male Students	149	62.65 *(12.81)*	52.00%‡
Female Students	53	68.34 *(11.27)*	71.20%‡
Racially Represented Student Groups	173	64.01 (12.69)	60.50%
Racially Underrepresented† Student Groups	25	64.48 (13.18)	56.90%

* "Met diagnostic criteria" refers to a CIPS score ≥ 62
† Refers to reported race/ethnicity that was not Asian or White
‡ Cohen's $d = 0.47$ and $p < 0.005$

Table 4: CIPS Results From Other Studies

Study	N	Demographic	CIPS Mean (SD)	Estimated % meeting diagnostic criteria*
[14]	477	Health Professional students	55.12 *(14.18)*‡	31.38%
[12]	124	Education undergraduates	54.24 *(13.27)*‡	27.93%
[8]	322	Minority Ed. Psych. students	61.15 *(14.66)*†	47.69%
[29]	169	Undergrad Mgmt., Econ., Bus. Informatics, Law, & Program Eng. students	58.50 *(12.16)*‡	38.67%

* Estimated CIPS score ≥ 62, assuming scores are normally distributed
† $p < 0.05$ when compared to CS students
‡ $p < 0.0001$ when compared to CS students

who identified as White/Asian and those who identified as members of under-represent groups. However, this could be due to our low sample sizes of underrepresented students in the dataset (including few Hispanic/Latino or African-American students).

We compared these results to findings for students using the same instrument in other fields. These prior findings are summarized in Table 4. Based on the CIPS score, we found that the results from this study reflect a statistically significant greater prevalence of IP among the sample of CS students than among 477 Health Professional Students [14], 124 Education college students in the Midwestern US [12], 322 Educational Psychology students from the Southwestern US who self-identified as minority students [8], and 169 undergraduate students majoring in Management, Economics, Business Informatics, Law, and Program Engineering from Russia [29] (using t-tests).

Although the CIPS mean was provided in these studies, the percentage meeting the diagnostic criteria was not. For this discussion, we also provide an estimate of the percentage who met the diagnostic criteria assuming the data was normally distributed (reconstructed using the reported mean and standard deviation) in Table 4. We assumed normality based on our data (using a Kolmogorov-Smirnov test, we found no evidence that our data was not normally distributed.) Overall, we were surprised by this finding that IP is

more prevalent among CS students than students in other domains. This provides further motivation to understand what might cause IP to be more prevalent among CS students.

5.2 Why IP is Prevalent in CS

We have several hypotheses as to why more than half of students in computer science might experience frequent impostor feelings. One possible explanation may be the imbalance in access to K-12 computer science courses. Perhaps the absence of formal computer science education in many K-12 education settings and that those schools with formal CS classes tend to be in higher income neighborhoods [21] leads to an uneven playing field in university-level CS courses. Given the presence of those with and without prior experience, it may seem to those without prior experience that those with prior experience have some kind of inherent knack (or geek gene [1] per-se) for computer science. Those without prior experience may believe that they do not have this perceived inherent ability and hence might feel like they do not possess the skill set for computer science.

Another possible explanation may be the message conveyed to students by their faculty. Lewis found that a prevalence (77%) of computer science faculty believe that not everyone can succeed in CS [20]. If this belief is conveyed to students, it may cause anxiety in those students as to whether or not they have that inherent knack for computing.

Some students might also cause other students to doubt in their abilities, sometimes unintentionally or intentionally, by attempting to show off their knowledge in class. Barker et al. described this kind of behavior occurring in CS classes as distressing to other students by creating a defensive climate [3]. It is possible that defensive climates also lead to insecurities about student abilities. As that Barker et al. study also discussed that the defensive climate is particularly problematic for female students, that may also explain why women were more likely to suffer from imposter syndrome.

Yet another possible explanation is the nature of computer science content. When first learning computer science, learners are often presented with the idea of a *black-box*; there are parts that work, yet it is unnecessary to fully understand how. This could normalize not having a full understanding of the inner workings of a computer or programming language and that uncertainty might perpetuate a lack of confidence in students.

Lastly, individuals might have preconceived notions as to what type of person constitutes as a cultural fit within CS. This might lead to members of underrepresented groups feeling as if they do not belong regardless of their technical competence and academic abilities.

Each of these hypotheses require further study to understand the underlying reasons why a majority of students in CS suffer from IP and why there is a strong gender imbalance in this feeling of IP. Given the psychological strain IP places on students, it also behooves us to explore possible solutions (e.g., improve the inclusivity of the field so underrepresented groups feel more welcome).

5.3 Threats to Validity

By reviewing the context of this study we can acknowledge its potential limitations. The questions of the Clance IP scale ask about

how much an individual relates to certain feelings. As a result, answers might vary slightly depending on when the survey was taken. Since our study was conducted during week 9 of a 10-week term, increased stress levels could have influenced feelings of IP.

In addition, while there were 688 students enrolled in the courses, there were only a total of 203 valid responses that were acceptable for use in the analysis. This response rate of 29.5% might have been improved with compensation offerings in order to have increased participation. Additionally it seems possible that female students over-participated in the study, as 35% of study participants were female, yet roughly 18% of computer science majors at our institution are female.

All data collected was from students within a single department at a large public research-intensive university. It is possible that these results might not replicate when studied at other institutions.

An external threat to validity is that few comparable studies have been done within the previous 5 years regarding IP. Though this study reports that a majority of computer science students have frequent impostor feelings, it compares it to demographics from other fields based on prior literature that may no longer reflect present day numbers within those fields. For example, it is possible that the increased levels of impostor feelings are due to the generation of current students as opposed to being unique to the computing discipline.

5.4 Personal Relevance

While personal experiences were external motivators for the authors of this study, we were further encouraged regarding this study's relevance after a conversation with a research subject. Following one of the classes where a member of the research team administered the survey, a student approached the team member and inquired about the nature of the study. The undergraduate female student asked the member of the research team about the topic of the study, saying she strongly related to the content of the questions. Since the student had already completed the study and was curious about the research, we chose to disclose the study's topic. Once she heard about the Impostor Phenomenon, the student lit up; she expressed that she did not know that the feelings she had experienced as a student were commonly felt by others in the field. She was excited to hear that research was being done to understand how prevalent IP is within computer science, and thanked the authors for the work being done.

As with any quantitative research project, it is possible to lose sight of the individual students suffering detrimental effects from these feelings who need, and deserve, our encouragement and support. As a community, further research into IP could be highly beneficial for our students.

5.5 Next Steps

With the results from this paper, there are two potential paths for future research. The first is to further validate the claims of this paper by running the same study across multiple institutions around the world. As sample size increases and more diverse institutions are engaged, claims can be made with greater levels of confidence. An alternative route is to accept the conclusions of this paper and begin to explore why the Impostor Phenomenon is widespread

throughout computer science. A possible next step would be a qualitative study interviewing computer science students to gain insight into what factors directly contribute to impostor feelings. Perhaps this would lead to preventative measures that we would be able to adopt for the benefit of our students. It also would be interesting to expand this study beyond students and work to identify IP levels among faculty members and professional software engineers.

Increased impostor feelings within computer science perhaps shed a light onto reasons for an unbalanced field with respect to diversity. Since impostor feelings are known to relate to increased levels in depression and anxiety [5, 8, 16, 23, 27], these feelings might be serving as a deterrent to students, thus preventing them from exploring computer science. Additionally, although there were no African-American students in this study's population, it is understood that their impostor feelings contribute more towards anxiety and depression than perceived racial discrimination [8]. Thus, it is imperative to work towards understanding how to mitigate these feelings.

As suggested by Henning et. al,

> [I]t may ... be helpful to administer and discuss the ... CIPS measures to increase awareness of the dangers of ... IP. Furthermore evaluators of student performance should attend to any signs of these maladaptive traits and encourage more realistic perceptions through modelling, normalization of students' concerns and provision of specific feedback on faculty expectations of students. Finally, [associated] counselling centers ... may want to address ... IP through workshops, group treatments or brief individual therapy. [14]

As outlined in Section 2.5, several steps can be taken to mitigate impostor feelings. One such example is to provide group therapy sessions where high-achieving individuals have the opportunity to share their experiences as well as observe each others impostor feelings [6]. Alternatively, informal peer support groups allow for individuals to feel like they are not alone and that there are others who also feel self doubt [30]. Aside from professional counseling services, university departments can help spread awareness by including information about IP during orientation or through additional workshops. Conceivably, by increasing awareness and transparency surrounding IP, students will feel more comfortable and encouraged to either join computer science, or remain within the discipline.

6 CONCLUSION

After surveying over 200 computer science students at a large research-intensive North American institution, we found that 57.4% of them met the diagnostic criteria for the clinical range of the Impostor Phenomenon. Compared to prior findings in other disciplines, IP was found to be statically more prevalent in CS. In addition, this study found that there was a statistically significant difference between the populations of male students (52%) and female students (71.2%) in CS who reported feelings of IP. These results motivate the continued research of potential causes as to why this statistic is higher among computer science students than students in other disciplines and research on how to reduce feelings of IP among computer science students.

7 ACKNOWLEDGEMENTS

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