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A Mixed Methods Study Of Impostor Phenomenon In A Hispanic Serving Institution

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A MIXED METHODS STUDY OF IMPOSTOR PHENOMENON
IN A HISPANIC SERVING INSTITUTION

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DEDICATION

Dedicated to my beautiful daughters Chavah Inez Schwartz and Chanah Nasi Schwartz.

To Maria Luisa Caudillo and to Cesar Caudillo and the Caudillo sisters.

To all those who encouraged me and reminded me that this was possible.

A MIXED METHODS STUDY OF IMPOSTOR PHENOMENON
IN A HISPANIC SERVING INSTITUTION

by

OLYMPIA CAUDILLO

DISSERTATION

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ABSTRACT

Impostor phenomenon is a psychological experience where a highly talented individual doubts innate skills and accomplishments. Instead, success is attributed to factors other than intellectual ability, so the individual fears exposure as a fraud. Experiences of impostor phenomenon among students enrolled in Hispanic Serving Institutions (HSI) remains under-researched. This mixed-methods study aims to explore impostor phenomenon between doctoral students enrolled in a Hispanic Serving Institution based on existing research on impostor phenomenon, conducted in predominantly White institutions. The first phase of the study focuses on exploring impostor phenomenon in relation to doctoral students' gender, type of program and generational status; the second phase explores how those same students describe their experiences with impostor phenomenon. The results serve to construct a theory of how impostor phenomenon manifests among doctoral students enrolled in a Hispanic Serving Institution.

Eligible participants included doctoral students enrolled in the HSI. Purposeful sampling, based on demographic characteristics and Clance Impostor Scale (CIPS) scores, served to identify participants for the qualitative phase of the study. An online survey, consisting of a demographic questionnaire and the CIPS, was used to collect quantitative data. The CIPS is the most common psychometric instrument used in research to detect experiences of impostor phenomenon. Open-ended interviews served as the means to collect qualitative data.

Quantitative data was analyzed using a three-factor analysis of covariance (ANCOVA), and qualitative data was analyzed using constructivist grounded theory. The quantitative results showed that impostor phenomenon was statistically insignificant at the HSI in relation to doctoral students' gender, program of study and generational status, however impostor phenomenon was detected in participants' responses. Numerous examples of statements containing elements of fake, discount, and luck were found in participants' responses

corroborating the existence of impostor phenomenon among participants. The results indicated that impostor phenomenon was not statistically significant, suggesting that at the HSI doctoral students share similar external experiences. Qualitative responses reveal varied experiences suggesting an internal conflict that may find expression as impostor phenomenon.

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CHAPTER 1 PROBLEM

The doctoral journey to successful completion is challenging. Only 50% of doctoral students who begin the journey actually complete it (Cassuto, 2013). Lovitts (2001) describes the doctoral journey as a cycle consisting of three stages: entry and adjustment, development of competence, and finally completion of the dissertation. Various factors influence completion including a doctoral student's gender, ethnicity, generational status, socio-economic background and academic discipline (Council of Graduate Schools, 2008; Flores & Park, 2015; Gardner, 2008; Gardner, 2009; Golde, 1998; Lovitts, 2001; Sowell, Zhang, & Redd, 2008; Sowell, Allum & Okahana, 2015). Another factor that may also influence completion, and is missing from the current literature on doctoral student retention, is impostor phenomenon (IP).

Impostor phenomenon is an internal psychological experience of intellectual phoniness experienced by highly intelligent and successful individuals like doctoral students (Clance & Imes, 1978). Doctoral students with impostor phenomenon may attribute their presence in a doctoral program to factors other than innate intelligence and ability. They may question their worthiness and downplay academic achievements. Little is known about how doctoral students experience impostor phenomenon and the meaning doctoral students place on that experience.

Individuals experiencing impostor phenomenon are unable to acknowledge success on a personal level, even though to onlookers they are extremely accomplished. These individuals attribute success to external factors such as luck, timing, attractiveness, personal charm or a mistake. Consequently, impostors experience short-term contentment because of the inability to internally acknowledge their competence (Clance & Imes, 1978; Clance, Dingman, Reviere & Stober, 1995; Cope Watson & Smith Betts, 2010; Holmes, Kertay, Adamson, Holland & Clance, 1993; Kets de Vries, 2005; Kumar & Jagacinski, 2006; Parkman, 2016; Sakulku & Alexander,

2011). Fujie (2010) provides the following description of impostor phenomenon:

the experience of people who attribute their success to luck, with the consequent anxiety that others may discover that they are incompetent in the field where they have objectively outstanding accomplishments (p. 2).

Impostors believe that they have conned others into believing that they are successful and accomplished (Clance, 1985; Kets de Vries, 2005; Parkman, 2016; Sakulku & Alexander, 2015). As a result, impostors are certain their intellectual abilities are overestimated, as “they actually view themselves as swindlers who cheat their way into success without in any way having earned it” (Spinath, 2011, p. 1). Impostors downplay their achievements and reject any type of praise as unearned, undeserved and unworthy (Clance, 1985; Kets de Vries, 2005; Parkman, 2016; Sakulku & Alexander, 2015). To the impostor, success is only a fleeting, temporal state in which a successful repeat performance is never guaranteed. Subsequently, the impostor lives in constant dread fearing exposure as a fraud. This vulnerability remains hidden so the impostor suffers in silence; suffering that manifests as extreme anxiety, stress and depression.

Statement of the Problem

It is conceivable that a number of doctoral students experience episodes of impostor phenomenon throughout their academic career. Impostor phenomenon impedes or hinders completion but does not necessarily result in the termination of the academic career (Clance & O’Toole, 1987; Sakulku & Alexander, 2011). Institutionally, the effects of impostor phenomenon may contribute to extended time to degree. Doctoral students experiencing impostor phenomenon may bypass opportunities stemming from the fear that success is elusive and instead may opt for an easier path that guarantees success. Unknowingly, institutions of higher learning may be awarding doctoral degrees to students emotionally and professionally

restrained by impostor phenomenon. As institutions of higher learning deal with issues affecting doctoral degree completion, such as impostor phenomenon, increased retention of doctoral students has to be of utmost concern, especially for institutions that primarily serve the educational needs of underrepresented students.

Setting

This study took place in a Hispanic Serving Institution. The HSI is a public state university, located in the southwest region of the United States along the U.S./Mexico border. It is composed of eight colleges or schools: Colleges of Business Administration, Education, Engineering, Health Sciences, Liberal Arts, and Science, and the Schools of Nursing and Pharmacy. The HSI primarily serves the educational needs of historically underrepresented students from varying social, cultural and economic backgrounds. Fall 2020 enrollment numbers at the HSI showed that Hispanic students accounted for 83% of the total enrollment, and that approximately 49% of enrolled students identified as first generation. During that same time period, females accounted for 56% of the total enrollment. As of fall 2019, 1043 students were enrolled in doctoral degree granting programs.

Hispanic Serving Institutions offer a unique environment in which to explore impostor phenomenon (Brown, Santiago & Lopez, 2003; Flores & Park, 2015). Existing research on impostor phenomenon primarily focuses on the traditional undergraduate student enrolled in predominantly White institutions (PWI). Studies on impostor phenomenon involving non-traditional students are lacking, as are studies conducted in institutions of higher learning with a predominantly non-White student population. Notably lacking is research on impostor phenomenon and doctoral students enrolled in an HSI. As a result, the effects of impostor phenomenon on doctoral students enrolled in an HSI remain undetermined. The purpose of this

current study on impostor phenomenon is to supplement the current research by conducting a study of impostor phenomenon among doctoral students enrolled in an HSI, an institution with a predominantly non-White student population.

Significance of the Study

Studies on doctoral retention and persistence focus on why students leave. Few studies focus on why doctoral students stay (Gardner & Holley, 2011). In spite of strategies and best practices based on research, only half of all doctoral students reach conclusion, so it is important to understand how impostor phenomenon affects doctoral students (Cassuto, 2013). In HSIs impostor phenomenon may not manifest the same as it does among students enrolled in predominantly White institutions, or in Historically Black Colleges and Universities, but because this research is lacking, impostor phenomenon among students enrolled in HSIs has been overlooked.

Purpose of the Study

The purpose of this mixed-method study is twofold. Based on existing research conducted on impostor phenomenon in institutions of higher learning, the first objective is to reproduce research findings to examine group differences between impostor phenomenon and doctoral students' gender, generational status and type of program in an HSI. The second objective is to explore doctoral students' experiences of impostor phenomenon in order to develop a theoretical understanding of impostor phenomenon in an HSI.

Research Questions

This mixed-methods study was guided by the following hypotheses and questions. Hypotheses 1 through 7 are addressed by the quantitative phase of this study. The first three hypotheses tested whether any differences existed between or among the demographic groups by

observing participants' self-perceptions of impostor phenomenon as part of their doctoral experience. Hypotheses 4 through 7 explored more complex ways of observing, by observing the interactions that occurred if a particular level of a group differed from the level of another group. Research questions 1 and 2 are addressed in the qualitative phase of this study. The qualitative inquiry aimed to produce real world knowledge about impostor phenomenon by exploring the experiences of doctoral students enrolled in the HSI. The mixed methods question was addressed by merging the quantitative and qualitative approaches and findings.

Quantitative Hypotheses

H₁: Female doctoral students will report higher levels of impostor phenomenon.

H₂: First generation doctoral students will report higher levels of impostor phenomenon.

H₃: Doctoral students in soft science programs will report higher levels of impostor phenomenon.

H₄: There is a first-order interaction between gender and generational status in relation to impostor phenomenon.

H₅: There is a first-order interaction between gender and type of program in relation to impostor phenomenon.

H₆: There is a first-order interaction between generational status and type of program in relation to impostor phenomenon.

H₇: There is a second-order interaction among gender, generational status and type of program in relation to impostor phenomenon

Qualitative Questions

1. How is impostor phenomenon revealed in doctoral students?
2. How do doctoral students describe and explain impostor phenomenon?

Mixed Methods Question

1. How do the observed group level differences help to explain qualitative responses in regard to impostor phenomenon among doctoral students?

Assumptions

My assumptions stem from personal challenges with persistence as a doctoral student. Those challenges have not manifested as impostor phenomenon per se, but I have had to try and understand the struggle to complete the doctoral degree as someone who is female, first generation of Mexican-American ancestry. I did not have a role model or a ready-made road map at my disposal. I had to figure this out on my own. At times that struggle and lack of understanding was overwhelming, and the idea that I could just walk away was liberating. Instead, I chose to stay the course. This study focused on the experiences of impostor phenomenon among doctoral students enrolled in an HSI with the underlying assumption that these same students choose to stay, conclude the journey, and earn their doctoral degree.

Impostor phenomenon has been reported among underrepresented non-traditional students enrolled in predominantly White institutions. Accordingly, there is an expectation that impostor phenomenon will be detected among underrepresented, non-traditional doctoral students enrolled in HSIs. Because of its construct validity, it is expected that the Clance Imposter Scale (CIPS) will successfully assess self-perceptions of imposter phenomenon. Finally, based on the premise that participant responses are anonymous and confidential, and that participants are volunteers who may withdraw at any time, the underlying assumption is that responses are accurate and truthful.

Delimitations

Numerous delimitations were identified in this study. Those included the sample and the

study setting - currently enrolled Ph.D. and Ed.D. students in a Hispanic Serving Institution. Students pursuing professional doctoral degrees like the Doctor of Physical Therapy (DPT) or the Doctor of Nursing Practice (DNP) were excluded. The decision to limit the selection of interview participants to those experiencing few impostor feelings (>40) or intense impostor feelings (<80) based on total CIPS scores, was also a delimitation. Participants experiencing moderate impostor feelings, 41-60 total CIPS scores, and frequent impostor feelings, 61-80 total CIPS scores, were not considered in this study.

The stratification rationale used to categorize a program as hard science or soft science was a delimitation. Identification of a program as hard or soft science was loosely based on the Council of Graduate School's definition of SEM (Science, Engineering and Mathematics) fields and SSH (Social Sciences and Humanities) fields as quoted in *Ph.D. completion and attrition: Analysis of baseline demographic data for the Ph.D. completion project* (2008). The demographic survey focused on gender, program of study and generational status even though other variables such as ethnicity, socio-economic status and grade point average could have been considered. Finally, this study utilized the CIPS to capture impostor phenomenon, even though other instruments are available so results obtained in this study are specific to the Clance Impostor Scale. It is possible that responses would differ using other impostor phenomenon instruments.

Limitations

Because the selection of participants for the qualitative phase of this study cannot be considered random, generalization of results is limited. The sample was selected from doctoral students enrolled in an HSI geographically located on the U.S./Mexico border, so the findings may not generalize to other populations. The race ethnicity of participants is also a limitation as

the majority of people surveyed would be members of one race ethnicity group given the setting of the study. Since there was no control on the type of elicited response, or on the response rate of participants, the demographic survey as a self-reported measure was a limitation. The lack of time to collect qualitative data was severely limited due to the COVID 19 outbreak. Greater in-depth interviews could have resulted in more nuanced responses and interpretations. In its present condition, the data from this study were rich and complex to analyze from a single theoretical framework.

Definition of terms

Doctoral Students: Ph.D. and Ed.D. students are the only type of doctoral students examined in this study. Thus, the term doctoral student will be used throughout the dissertation.

CIPS: The Clance Impostor Scale or the CIPS was used in this study to capture experiences of impostor phenomenon. The term CIPS will be use throughout this dissertation.

Cognitive Maps: In this study, these are mental models that help an individual make sense of the world and provide a framework for informed decision making (Lovitts, 2001).

First Generation Student: In this study, if neither parent has earned a master's or doctoral degree, the student is considered a first generation college student.

Hard Science Programs: The definition of a hard science program is based on the Council of Graduate School's definition of SEM (Science, Engineering and Mathematics) fields so for this study, programs in the science, engineering and mathematics fields are identified as hard science programs.

Impostor Phenomenon: This study utilized Clance's definition of impostor phenomenon. In keeping with that definition, impostor is spelled with an "o" instead of an "e". Additionally Clance discourages the use of the term imposter syndrome so the term impostor phenomenon is

strictly used in this study (A. Gailis personal communication, September 26, 2019).

International Student: For this study, international student refers to a doctoral student who is not a citizen or permanent resident of the United States, and who is an F1 or J1 visa holder.

Second-Generation Student: In this study if either parent or both parents have earned a graduate degree, the student is considered a second-generation student.

Self-efficacy: In this study, self-efficacy refers to an individual's belief in hers or his ability to succeed in a particular situation (Bandura, 1994).

Soft Science Programs: The definition of a soft science program is based on the Council of Graduate School's definition of SSH (Social Sciences and Humanities) fields, so for this study programs in the social sciences and humanities fields are identified as soft science programs.

Summary

Various factors, including impostor phenomenon, affect the degree completion of doctoral students. Highly successful individuals experience impostor phenomenon, so it is probable that doctoral students experience impostor phenomenon. To form a more robust picture of doctoral students, it is necessary to investigate impostor phenomenon in educational settings other than predominantly White institutions. There is a need for scholarly research that explores impostor phenomenon among doctoral students enrolled in Hispanic Serving Institutions.

CHAPTER 2 LITERATURE REVIEW

The literature on impostor phenomenon suggests that there is a relationship between demographic factors and impostor phenomenon. Studies focus on identifying variables that influence the emergence or presence of impostor phenomenon, and on exploring those relationships. The most commonly researched demographic characteristics include gender, generational status, ethnicity and grade point average. My research aims to further the findings of researchers by investigating relationships between impostor phenomenon and the gender, generational status and program of study of doctoral students enrolled in a Hispanic Serving Institution.

Most studies on impostor phenomenon occur within predominantly White institutions of higher learning, with predominantly White, undergraduate, student participants. Described as a psychological construct, a substantial number of published research studies on impostor phenomenon originate from within the discipline of psychology (Sanford, Ross, Blake, & Cambiano, 2015). Studies utilized convenience sampling in classroom settings with student participants enrolled in psychology courses who received some form of academic credit. In most studies, female participants outnumbered male participants two to one and, in some cases, three to one. In quantitative studies surveys served as the primary method of collecting data, and the CIPS (Clance, 1985) was the most commonly used instrument to detect and measure occurrences of impostor phenomenon. Most qualitative studies utilized interviews, focus groups and observation, although one study utilized a mixed methodology (Sanford et al., 2015).

In regard to race ethnicity, gender or generational status there was not much diversity among the samples utilized in the following studies, so the results in the various studies are very similar. The studies share a common finding: impostor phenomenon was detected among populations of underrepresented student populations, however this may be a result of the

sampling procedure and the study setting. Finally, the majority of studies are quantitative studies, so although the data indicates the presence of impostor phenomenon, information on the individual experience is missing. There is little indication that qualitative findings would align with quantitative findings. The following review summarizes research on impostor phenomenon with an emphasis on the variables utilized in this study. It is important to mention that different results of the studies may be due to the instrument used to measure impostor phenomenon, the variables employed and even the researchers' approach to impostor phenomenon as a trait or as a state.

Impostor Phenomenon

Clance and Imes (1978) first used the term impostor phenomenon to describe feelings of fraudulence experienced by a group of primarily White, highly successful, upper and middle class women. These women viewed themselves as intellectual frauds and attributed their success to factors other than innate ability or talent (Clance & Imes, 1978; Clance et al., 1995; Clance & O'Toole, 1988). The women secretly believed that they were frauds because of the inability to acknowledge that they were, in fact, intelligent and therefore personally responsible for their success (Clance & Imes, 1978; Clance et al., 1995; Clance & O'Toole, 1988).

Impostors go to great lengths to keep up a facade of competence. Survival is contingent on maintaining the appearance of success and by impressing others with this success. When faced with a task, impostors over-prepare or procrastinate until the very last moment (Clance et al., 1995; Ferrari & Thompson, 2006; Thompson, Davis & Davidson, 1998). Consequently, the impostor is convinced that a successful outcome is due to an immense and desperate effort, not a reflection of true ability (Gibson-Beverly & Schwartz, 2008). As new tasks or challenges arise, the impostor replicates this compulsive behavior by launching into a frenzy of over-preparation

or procrastination through completion. Clance (as cited by Sanford et al., 2015, p. 32) portrays the impostor cycle in the following manner:

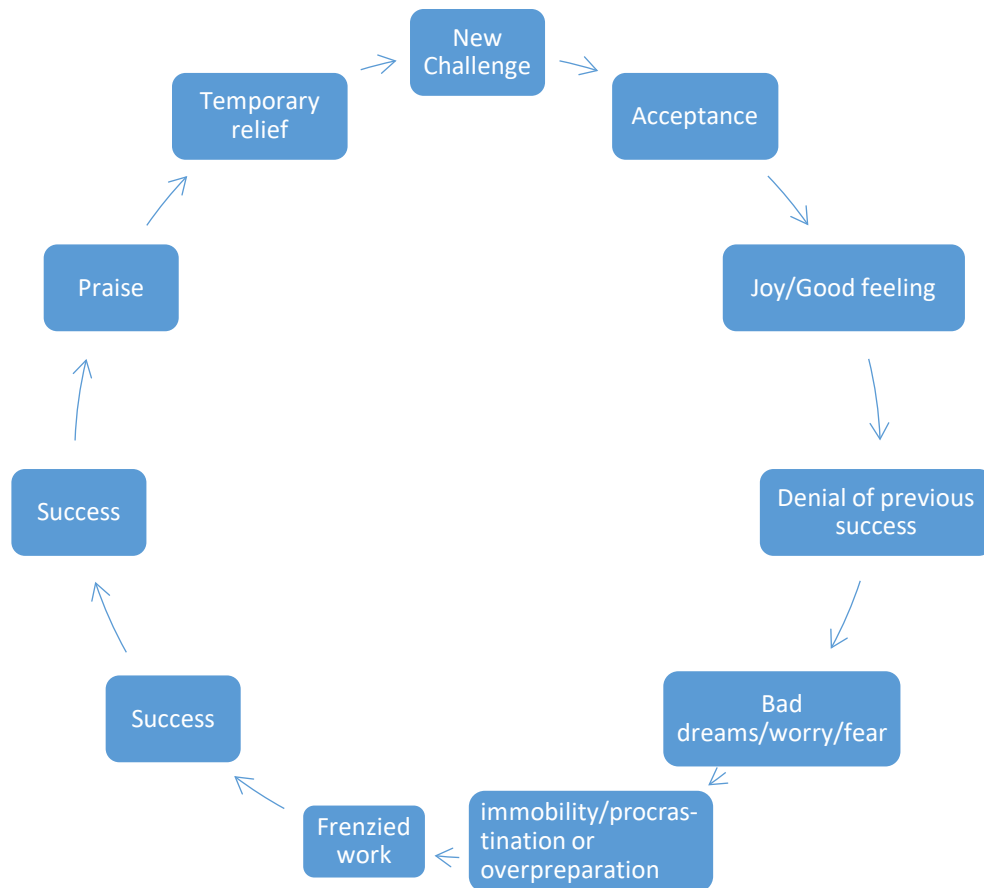


Figure 1 Impostor cycle
(Sanford et al., 2015, p. 32)

Needless to say, the impostor cycle is very exhausting (Clance & Imes, 1978; Clance et al., 1995; Clance & O’Toole, 1988; Langford & Clance, 1993; Sakulku & Alexander, 2011; Thompson et al., 1998; Thompson, Foreman & Martin, 2000).

Other researchers have studied feelings of fraudulence such as those described by Clance and Imes (1978). According to Harvey and Katz, as cited by Hellman and Caselman, (2004), and Sakulku & Alexander (2011), impostor feelings manifest when an individual is confronted with achievement tasks causing the individual to live with a constant fear of failure (Sanford et

al., 2015). Kolligian and Sternberg (1991) refer to impostor feelings as perceived fraudulence to distinguish between individuals who genuinely experience impostor feelings and true imposters who purposely practice to deceive (Sakulku & Alexander, 2011). Kets de Vries (2005) refers to impostor feelings as neurotic imposture or as the “flip side of giftedness” to describe the experiences of individuals who are incapable of recognizing their abilities (Kets de Vries, 2005, p. 2). Regardless of the terminology, all refer to internal feelings of intellectual inauthenticity and the emotional responses caused by fear of discovery (Clance & Imes, 1978; Hellman & Caselman, 2004; Kets de Vries, 2005; Kolligian & Sternberg, 1991; Salkulku & Alexander, 2011).

Initial conclusions positioned impostor phenomenon as an experience specific to women in higher education settings (Clance & Imes, 1978). Further examination indicated that experiences of impostor phenomenon occur in diverse settings, across different cultures, occupations and populations (Hoang, 2013; Kets de Vries, 2005; Sakulku & Alexander, 2011). Ket de Vries (2005) introduced the term neurotic imposture as a broad concept that includes impostor phenomenon and contends that all individuals conceal weaknesses, so everyone to some degree is an impostor (Kets de Vries, 2005; Parkman, 2016; Sakulku & Alexander, 2011). Problems arise when an individual takes that concealment to an extreme. In one scenario is the true imposter whose intention and motivation is to deceive despite possible social retribution should exposure of the deception occur. In another scenario is the impostor who also intends to deceive but whose motivation to deceive is explicitly to avoid exposure and retribution so the individual is incapable of breaking away from this type of behavior. This individual fears exposure as a fraud so obsessively conceals her or his true self.

Academia

Impostor phenomenon is prevalent in academia where intelligence is crucial to success. Cope Watson & Smith Betts (2010) describe the experience as the “inability to internalize academic success” (p. 1). Consequently, a majority of studies on impostor phenomenon occur in higher education settings with convenience samples of college students (Clance & Imes, 1978; Cokley, McClain, Enciso & Martinez, 2013; Cope Watson & Smith Betts, 2010; French, Ullrich-French & Follman, 2008; King & Cooley, 1995; Kolligian & Sternberg, 1991; Kumar & Jagacinski, 2005; Sanford et al., 2015; Spinath, 2011; Studdard, 2002). Impostor phenomenon exists among students, faculty, librarians, administrators and staff, all populations who inhabit higher education settings (Academic Leader, 2005; Brems, Baldwin, Davis & Namyniuk, 1994; Clark, Verdeman & Barba, 2014; Gibson-Beverly & Schwartz, 2008; Parkman, 2016). This study on impostor phenomenon also takes place within an institution of higher learning.

Conceivably, successful individuals like doctoral students experience impostor phenomenon. Utilizing the CIPS, researchers identified positive correlations between impostor phenomenon and academic success, evaluation anxiety and achievement orientation (King & Cooley, 1995; Kumar & Jagacinski, 2006; Thompson et al., 1998). Zorn (as quoted in Academic Leader, 2005), believes cultural factors contribute to the prevalence of impostor phenomenon in higher education. Aggressive competitiveness, disciplinary separatism, scholarly isolation, emphasis on product over process and lack of mentoring are factors Zorn identified as contributing to the emergence of impostor phenomenon among students and faculty (Academic Leader, 2005). Other researchers also believe that the culture in higher education promotes the emergence of impostor feelings (Jarrett, 2010). New and first-time situations such as attending college, working in a new environment, being first-generation or being the first or one of a few

in a field, all contribute to the emergence of impostor phenomenon (Cope Watson & Smith Betts, 2010; Parkman, 2016; Jarrett, 2010).

When examined in a situational context, impostor feelings may be a normal part of the student experience so it is important to understand how doctoral students experience impostor phenomenon (Craddock, Birnbaum, Rodriguez, Cobb & Zeeh, 2011; Fujie, 2010, Lovitts, 2001). For instance, doctoral students reported that experiences of impostor phenomenon decreased as time in the doctoral program increased (Craddock et al., 2011). In this context, impostor phenomenon in first time doctoral students might be a natural response to a “stressful and unknown environment” (Craddock et al., 2011, p. 439).

Using a constructivist case study design, Craddock et al., (2011), recruited six doctoral students majoring in higher education enrolled at a research-intensive university in the western United States in an effort to construct individual definitions and meanings of impostor phenomenon. Purposeful criterion sampling led to the participation of three female and three male doctoral students, ranging in ages from late 20s to mid-40s, with two to six years of participation in the doctoral program. Of these six, two identified as students of color. This study did not employ the use of a standardized instrument to measure feelings of impostor phenomenon, instead impostor phenomenon was identified and defined as “the feelings students experience when they compare themselves to peers and believe they have significantly less preparation or intellectual ability” (Craddock et al, 2011, p. 430).

Participants reported intensified impostor feelings during the first semester of doctoral study (Craddock et al., 2011). Additionally, participants reported that racial identity issues contributed to the existence of impostor feelings along with a sense of “not belonging in the doctoral program” (Craddock et al., 2011, p. 436). The apparent lack of racial diversity, and the

inability to identify racially with other students or with people in the surrounding community, led to intense feelings of isolation so impostor feelings emerged (Craddock et al., 2011). During group discussions, participants revealed they originated from families where high academic achievement was expected and where failure was not an option. Meeting the high standards imposed by their families, and the fear of failure, also contributed to impostor feelings. Findings indicated that in this particular university, first semester coursework, the participant's racial identity and family expectations all contributed to the emergence of impostor phenomenon (Craddock et al., 2011). This study defined impostor phenomenon as a situational response to new experiences.

In a similar auto-ethnographic study, two female doctoral student researcher/participants enrolled in Canadian universities noted that “feelings of otherness, of being outside the dominant group that populates the academy” contributed to the intensification of impostor feelings (Cope Watson & Smith Betts, 2010, p. 1). These researcher/participants identified as mothers, wives and daughters. Email conversations between the two student researcher/participants was the basis of data collection to explore commonalities in lived experiences of impostor phenomenon. The study did not utilize a standardized instrument to measure impostor phenomenon, relying instead on defining impostor phenomenon as the inability to internalize academic success. The researchers relied on a thematic analysis of the data to compare with existing theoretical frameworks that explain the presence of impostor phenomenon. Typical of impostor phenomenon, the doctoral student researcher/participants expressed doubts about their intellectual abilities. They reported feelings of not belonging in academia because of the belief that they did not deserve to be in a doctoral program.

Cope Watson and Smith Betts (2010) claim that impostor phenomenon is “embedded in

the institutional or systemic discourses that circulate in academic environments (p. 1), and point out that the climate in higher education is highly conducive to impostor phenomenon because of its historical origins. Women, as relatively new to higher education, are not highly visible in positions of leadership. This lack of female mentorship enables the emergence of impostor feelings among female students in higher education (Hoang, 2013). The researchers contend that students from underrepresented populations incorrectly attribute their perceived deficiencies to a lack of academic ability, but that the real cause of those feelings is the environment in higher education described as “covert institutional systemic networks that cultivate impostor phenomenon” (Cope Watson & Smith Betts, 2010, p. 1). Since only half of all doctoral students who begin the academic journey actually reach completion, understanding how experiences of impostor phenomenon influence doctoral students is critical to doctoral student success (Golde, 2005; Lovitts, 2001).

Gender

Impostor phenomenon is not gender neutral nor does it only manifest in certain populations (Austin, Clark, Ross & Taylor, 2009; Cokely, McClain, Encisco & Martinez, 2013; Gravois, 2007; Kets de Vries, 2005; Parkman, 2016). Due to culturally ingrained gender role stereotypes women are more susceptible, exhibit more pronounced affects and may even be more limited in their achievement efforts (Bahn, 2014; Gibson-Beverly & Schwartz, 2008; Kumar & Jagacinski, 2006; Sanford et al., 2015). Historically and culturally, definitions of femininity relegated women as silent observers, “women, like children should be seen and not heard” (Belenky, McVicker Clinchy, Goldberger & Tarule, 1968, p. 5). Environments that reinforce gender roles, and that emphasize achievement and success as male qualities, may be more conducive to the emergence of impostor phenomenon among women (Gibson-Beverly, 2015;

Hoang, 2013). Women from underrepresented groups may be even more susceptible because they deal with family and gender role expectations, augmented by the stress associated with being members of historically oppressed classes (Clance et al., 1995).

Sanford et al., (2015) investigated how 29 successful women leaders experience impostor phenomenon and how they resist the feelings of fraudulence associated with impostor phenomenon. Using the CIPS, the researchers discovered that most of the participants did not experience impostor phenomenon as frequently as cited in other studies (Sanford et al., 2015). Only five of the total participants claimed dealing with impostor feelings on a daily basis (Sanford et al., 2015). The researchers noted that the participants mentioned that instances of impostor phenomenon surfaced when they encountered new situations (Sanford et al., 2015). Again, in this study, impostor phenomenon appears as a situational response.

Generational Status

According to Gardner and Holley (2011), first generation doctoral students tend to be females from underrepresented groups. In a study on first-generation doctoral students, Gardner and Holley (2011) refer to impostor phenomenon as a response evoked by feelings of belonging or, more precisely, of not belonging. In a later writing, Gardner (2013) refers to those feelings as “feelings of otherness” (Gardner, 2013, p. 53). Although more non-traditional students are enrolling and pursuing advanced degrees, the experiences of first generation students who “persist to graduate school” and who experience impostor phenomenon have not been extensively researched (Gardner & Holley, 2011, p. 79).

Peteet, Montgomery and Weekes (2015) noted that first-generation students experience impostor phenomenon more often and more intensely than traditional students. First-generation students deal with minority stress, low socio-economic status, lower self-esteem, lower self-

efficacy and higher fears of academic failure, and so may be more “predisposed to higher levels of impostor phenomenon” (Peteet et al., 2015, p. 177). Impostor phenomenon, according to Gardner (2013), is widespread among women and students of color due to feelings of otherness or of not belonging. Accompanying those feelings of otherness is the dreaded fear of discovery, that others will validate the impostors’ secret fear that, in fact, they do not belong (Gardner, 2013).

Ethnicity

Race ethnicity was not a factor in this study due to the expectation that the dominant population would identify as Hispanic therefore limiting the variability of the population. In 2013 Cokely et al., investigated impostor phenomenon and Minority Status Stress as predictors of mental health among a convenience sample of 240 Latino/as, Asian American and African American undergraduate educational psychology students enrolled in a large university in the southwest. Of that group, 148 were female, 90 were male and two did not identify gender. Participants ranged from 17 to 39 years of age. Minority status stress refers to the psychological stress that members of underrepresented groups experience because of racism and discrimination (Cokely et al., 2013).

Findings indicated that African Americans experienced the highest levels of minority status stress and that Asian Americans experienced the highest levels of impostor phenomenon. Impostor phenomenon was the strongest predictor of mental health. The study opened up the possibility that minority stress and race-related stress are associated with poor mental health, partly due to impostor phenomenon. No significant gender differences in minority status stress and impostor phenomenon existed. The researchers concluded that enrollment in predominantly White institutions is a stressful experience for underrepresented minority students, and that

cultural stereotypes based on race ethnicity contributed to the emergence of impostor phenomenon (Cokely et al., 2013).

In a similar study, Peteet et al., (2015), investigated first-generation status, psychological well-being and ethnicity as predictors of impostor phenomenon among a sample of 161 high achieving Black and Hispanic undergraduate students enrolled in predominantly White institutions in the Midwest. One hundred and seventeen of the participants were female, 73% African American/Black; 27% Hispanic and 54% of the sample identified as first-generation.

Results of the study indicated a relationship between generational status and impostor phenomenon but not a predictive one. Components of identity, high affirmation and belonging were predictive of impostor phenomenon, as were psychological well-being and low ethnic identity (Peteet et al., 2015). Environmental mastery, defined as “the ability to control and manipulate complex environments” as a component of psychological well-being was a significant predictor of impostor phenomenon (Peteet et al., 2015, p. 179). Environmental mastery is critical for student success so that students who learn to navigate a new environment are less likely to experience impostor phenomenon. Again, in this study, impostor phenomenon appears as a situational response.

Personality Characteristics

Gibson-Beverly and Schwartz (2008) conducted a study around a group of 170 female master’s and doctoral students enrolled in psychology courses at a midsize southern university. The participants identified as Caucasian (53.8%), African American (39.6%), Hispanic/Latino (3.6%), Asian American (1.2%), Native American (.6%) and “other” (1.2%) (Gibson-Beverly & Schwartz, 2008). The researchers found a positive correlation between entitlement and attachment, and the presence of impostor phenomenon among the participants (Gibson-Beverly

& Schwartz, 2008).

Attachment refers to the relationships that are formed early in life between an individual and a caregiver (usually the parent) that serve as a framework for future relationships with others (Gibson-Beverly & Schwartz, 2008). Individuals who develop secure attachments form healthy relationships with other individuals, whereas those who develop insecure attachments avoid intimacy and form anxious attachments (Gibson-Beverly and Schwartz, 2008). Entitlement refers to what an individual believes she/he can expect from others as an individual and as a member of society, based on how she/he views her/his position in society.

Gibson-Beverly and Schwartz (2008) noticed that behaviors related to unhealthy attachments and unhealthy entitlement are reminiscent of those displayed by individuals plagued with impostor phenomenon, in that both are unable to accept praise. Attachment and entitlement were found to influence the development of impostor phenomenon and therefore predictive of impostor phenomenon among the participants (Gibson-Beverly & Schwartz, 2008). Participants with anxious attachments and high entitlement “may be compensating for an underlying lack of self-worth and therefore unable to internalize positive feedback” whereas healthy levels of attachment and entitlement may serve as protections against impostor phenomenon (Gibson-Beverly & Schwartz, 2008, p. 128).

Other research revealed a significant positive correlation between perfectionism and impostor phenomenon (Dadău, 2014; Thompson et al., 1998; Thompson et al., 2000). Impostors and perfectionists share very similar behavior patterns. Impostors, like perfectionists, tend to hold extremely high unrealistic standards for self-evaluation and an immense fear of failure (Dadău, 2014; Sakulku & Alexander, 2011; Thompson et al., 2000; Thompson et al., 1998). Impostors and perfectionists also tend to overgeneralize failure, and connect the failure to self-

esteem (Dadău, 2014; Sakulku & Alexander, 2011; Thompson et al., 2000; Thompson et al., 1998). Additionally, impostors and perfectionists hide their flaws, are highly self-conscious and go to great lengths to maintain an image of perfection (Sakulku & Alexander, 2011). This type of behavior led Ket de Vries (2005) to conclude that “perfectionism is the trigger of neurotic imposture” (p. 3):

They are absolute perfectionists who set excessively high, unrealistic goals and then experience self-defeating thoughts and behaviors when they can't reach those goals. They are driven by the belief that they are currently not good enough, but that they could do better if only they worked harder (p. 3).

Similar to perfectionism, is self-presentation. Self-presentation refers to impression management (Ferrari and Thompson, 2006; Kolligian & Sternberg, 1991; McElwee & Yurak, 2007). Impression management consists of the maneuvers or manipulations that an individual executes to create or control the impression others form of her or him (Goffman, 1959). Goffman (1959) likens self-presentation to an actor on a stage who uses all available props to create a specific illusion, “all the activity of a given participant on a given occasion which serves to influence in any way any of the other participants” (p. 8). Impostors are highly conscientious of their image and constantly strive to externally impress others with their accomplishments.

Researchers Kolligian and Sternberg (1991), Ferrari and Thompson (2006) and McElwee and Yurak, (2007) questioned the existence of impostor phenomenon. Instead, the researchers proposed that impostor phenomenon is really a self-presentational strategy generated from a need to protect one's ego. Kolligian and Sternberg's (1991) study on perceived fraudulence followed the same line of reasoning proposed by Ferrari and Thompson (2006) and McElwee and Yurak (2007). In their attempt to study perceived fraudulence, Kolligian and Sternberg (1991)

conducted a two-part study composed of fifty students and one hundred students respectively, enrolled in an introductory psychology course at Yale University. Approximately fifty percent of the participants in each study were female. The researchers found that students with self-perceptions of fraudulence were highly critical of themselves and closely monitored the impression they made on others to avoid discovery (Kolligian & Sternberg, 1991). Individuals experiencing impostor phenomenon are obsessed with maintaining an image of intellectual ability because of the deeply ingrained fear that others will discover that they are inadequate and not really smart at all. To onlookers, there is no visible difference between an impostor and a non-impostor, because the impostor goes to great lengths to present an image of confidence in order to hide secret fears of incompetence.

Ferrari and Thompson (2006) claimed that individuals present fake feelings of fraudulence because they seek praise and social approval after a successful performance. According to the researchers, self-handicapping is also part of the self-presentation strategy. Self-handicapping refers to the practice of “claiming debilitating factors” to excuse a poor performance when an outcome is uncertain (Ferrari & Thompson, 2006, p. 343). In a two-part study utilizing 165 undergraduate students (113 female and 52 male) attending a private university in the United States, and 72 female undergraduate psychology students enrolled in a public university in Australia, Ferrari and Thompson (2006) investigated the link between impostor fears, perfectionist self-presentation and self-handicapping. Participants in the two-part study identified as predominantly Caucasian with an average age of 21 years (Ferrari & Thompson, 2006). There was no statistical significant difference between impostor scores and gender (Ferrari & Thompson, 2006).

The results from the first study revealed a relationship between impostor phenomenon,

perfectionism and self-handicapping, indicating that impostors are concerned with presenting a positive impression and of displaying a public image of perfection (Ferrari & Thompson, 2006). Results from the second part of the study demonstrated that after poor performance impostors claimed a handicap to save face, but when saving face was not an issue impostors were not prone to claim handicaps (Ferrari & Thompson, 2006).

McElwee and Yurak (2007) questioned whether impostor phenomenon is a personality attribute like self-esteem or whether it is really a self-presentational behavior or style. Behaviors associated with self-presentation can serve to improve one's self-esteem but they can also serve as a means to self-diminish as a form of self-handicapping. As previously mentioned, self-presentation can be an intentional manipulative strategy, but it can also be an automatic unintentional response. If not deliberate impression management, was impostor phenomenon an automatic self-presentational response generated to protect the self from the negative emotions triggered by failure (McElwee & Yurak, 2007)? The focus of this study did not address this particular question but, as has been noted in the studies included in this review, impostor phenomenon may be a response to a particular situation.

Further exploring impostor phenomenon as a self-presentation style, McElwee and Yurak (2007) conducted a study to explore the differences in affect and impression management style between strategic impostors and true impostors (McElwee & Yurak, 2007, p. 205). Two convenience samples of students enrolled in psychology courses participated in this study. The first sample consisted of 82 undergraduate and 42 graduate students, where 104 identified as female and 20 as male. The second sample consisted of 125 undergraduate students, 81 female and 45 male. The median age of the participants was 20 years.

As part of their study, McElwee and Yurak (2007) explored the construct validity of

existing impostor phenomenon scales. They acknowledged that impostor scales measure something, but perhaps not necessarily impostor phenomenon. McElwee and Yurak (2007) believed that impostor scales actually measure varying degrees of self-presentation and feelings of inadequacy. The researchers viewed impostor phenomenon more as a state than as a personality trait. To quote the researchers, “how ironic that “impostors” may be merely pretending to be impostors” (McElwee & Yurak, 2007, p. 218). Similar to Fujie (2010), McElwee and Yurak (2007) proposed that impostor phenomenon is not a stable individual difference but instead an affective situational response.

Impostor Phenomenon Scales

The availability of psychometric instruments that measure impostor phenomena may explain the greater number of quantitative studies on impostor phenomenon. Investigating the validity of those scales has been a focus of research. Researchers questioned whether the scales actually measure or detect the presence of impostor phenomenon. Among the most commonly referenced standardized instruments are the Clance Impostor Scale (CIPS), the Harvey Impostor Scale (HIPS) and the Perceived Fraudulence Scale (PFS). Both the CIPS and the HIPS measure fear of failure, attribution, a desire to stand out, feelings of presenting a fraudulent front and the inability to acknowledge praise (Langford & Clance, 1993). Additionally, the CIPS measures fear of evaluation, fear of failure to repeat success and fear that one is less capable than others (Langford & Clance, 1993). The State Impostor Scale, although only referenced in one study, investigates experiences of impostor phenomenon as a situational response to a particular situation (Fujie, 2010).

Harvey Impostor Scale

The HIPS was the first instrument constructed to standardize the measurement of

impostor feelings (Holmes et al., 1993). This scale measures the presence of thoughts and emotions associated with the construct of impostor feelings (Fujie, 2010). The HIPS is a 14-item instrument that uses a 7-point Likert-type response to differentiate between individuals with high and low feelings of fraudulence (Hellman & Caselman, 2004; Holmes et al., 1993; Kolligian & Sternberg, 1991). Research reveals that the HIPS has low levels of internal consistency (.34, .64, .76, .85 & .91) and fails to adequately differentiate between impostors and non-impostors (French et al., 2008; Fujie, 2010; Holmes et al., 1993; Langford & Clance, 1993).

The Clance Impostor Scale

The CIPS is a 20-item 5-point Likert Scale and is the most commonly used instrument because of its high measure of validity (between .92 and .96) and because it successfully distinguishes between impostors and non-impostors (Chrisman et al., 1995; Clance, 1985; Fujie, 2010; Langford & Clance, 1993). The CIPS is used to determine if an individual is experiencing impostor feelings and the degree of those feelings, based on summed scores measured as few, moderate, frequent and intense as demonstrated in table 1 (Austin et al., 2009; Chrisman et al., 1995, Clance, 1985; French et al., 2008; Fujie, 2010; Langford & Clance, 1993). A score of 40 or less indicates few impostor phenomenon experiences. A score between 41 and 60 indicates moderate feelings of imposter phenomenon. A score between 61 and 80 indicates frequent impostor phenomenon experiences, and a score above 80 indicates intense imposter feelings and the likelihood that those feelings are a hindrance or an interference (Clance, 1985).

Table 1 CIPS Scoring Table

Score	Impostor Phenomenon
40 or less	Few feelings of imposter phenomenon

41 – 60	Moderate feelings of imposter phenomenon
61 – 80	Frequent feelings of imposter phenomenon
81 or higher	Intense feelings of imposter phenomenon

(Clance, 1985)

The CIPS scale consists of three subscales; fake, discount and luck (Chrisman et al., 1995; Langford & Clance, 1993; French et al., 2008; Fujie, 2010; Holmes et al. 1993). The fake factor is associated with self-doubts and concerns about intelligence and ability; the luck factor is associated with thoughts of accomplishments by chance or error rather than ability, and the discount factor relates to the inability to acknowledge praise and positive performance (Chrisman et al., 1995; French et al., 2008). In addition, the CIPS captures fear of evaluation, fear of not being able to repeat success, and fear of being less capable than others (Chrisman et al., 1995).

The CIPS also identifies three thinking patterns or aspects of the impostor phenomenon: (1) feeling like a phony/fake; (2) negating praise and achievement/discount; and (3) attributing success to external factors/luck (French et al., 2008; Holmes et al., 1993; Langford & Clance, 1993; Spinath, 2011). In comparison, the CIPS measures dimensions that are associated with impostor phenomenon that the HIPS does not capture (Fujie, 2010; Holmes et al., 1993). In cited studies, the primary purpose of the CIPS is to differentiate between impostors and non-impostors using a score of 60 as a cutoff point (Clance & O’Toole, 1987). Most of the research identifies individuals scoring 60 or less as non-impostors and those scoring 61 or higher as impostors.

Sanford et al., (2015) conducted a study on impostor phenomenon using the CIPS and reported findings on the varying levels of impostor phenomenon. The study consisted of 29 women who volunteered to mentor female college students at a midwestern regional university. Twenty-three respondents identified as White (79%), four identified as White/American Indian

and two as American Indian. The age of the participants ranged from 26 to 70 years. Of the 28 respondents, 19 experienced moderate levels of imposter phenomenon, 7 experienced frequent and 2 experienced intense feelings of imposter phenomenon. Only one respondent experienced few feelings of imposter phenomenon. No correlation was found to exist between CIPS scores and the age of participants (Sanford et al., 2015).

The Perceived Fraudulence Scale

The Perceived Fraudulence Scale investigates self-perceptions of fraudulence and the relation to different personality traits that, combined, contribute to thoughts of fraudulence (Kolligian & Sternberg, 1991). The researchers maintain a need to distinguish between real imposters who purposefully deceive and those with self-perceptions of fraudulence, and so refer to imposter experiences as perceived fraudulence (Kolligian & Sternberg, 1991). In 1991, the researchers conducted two studies at Yale with a convenience sample of undergraduate students enrolled in an introductory psychology course to explore self-perceptions of fraudulence. The students received partial course credit for participating in the study.

The first study consisted of 50 females and 50 males ranging in age from 16 to 26 years. The second study also consisted of 50 females and 50 males ranging from 16 to 26 years of age. The researchers corroborated a relationship exists between a private experience of fraudulence and personality characteristics such as depression, anxiety, self-criticism and achievement pressure (Kolligian and Sternberg, 1991). The researchers note the possibility that self-perceptions of fraudulence may be linked to feelings of perfectionism, and consequently to self-monitoring behaviors. Self-monitoring protects the individual from exposure but continues to perpetuate feelings of fraudulence, because it forces the individual to continue performing at an extremely exaggerated level that affects the emotional well-being of the individual.

Kolligian and Sternberg's 1991 study did not explore the situational aspect of impostor phenomenon or the emergence of impostor feelings in relation to different situations, although the researchers mention the importance of investigating the "power of situations to evoke fraudulent ideation" (Kolligian & Sternberg, 1991, p. 324). The HIPS and CIPS measure traits associated with feelings of fraudulence and measure impostor phenomenon as a trait, but not in relation to specific situations.

State Impostor Scale

In 2010, Fujie developed the State Imposter Scale (SIPS) to measure impostor phenomenon as a state (Fujie, 2010). The study consisted of 344 Japanese undergraduate and graduate students enrolled in national universities known for their academic prestige and excellence. Of these, 153 identified as female, 188 as male and 3 did not identify gender. The average age of participants was 21.5 years. Wording modifications on the CIPS to reflect present tense resulted in the SIPS, a modified version of the Japanese CIPS. The SIPS measures impostor feelings as an emergent reaction or as a state in three different situations: new experience, receiving evaluation and unexpected experience (Fujie, 2010).

Internal consistency and reliability of SIPS scores ranged between .79 and .86, demonstrating sufficient reliability. Factor analysis of the three different situations (new experience, receiving evaluation and unexpected experience) resulted in two subscales: feelings of fraudulence toward others with reported scores ranging from .83 to .87 and subjective incompetence with scores ranging from .71 to .80 (Fujie, 2010). Internal consistency and reliability scores validated the construct of the State Imposter Scale.

The SIPS measures "state varying with situation" concluding that feelings of fraudulence emerge and disappear situationally (Fujie, 2010, p. 9). Referring to the CIPS subscales, fake,

discount and luck, the author briefly mentioned the possibility that cultural aspects may also factor into the emergence of impostor phenomenon. For instance, the author pointed out that it is common in Western cultures to depend on luck whereas in Eastern cultures, depending on luck is perceived as incompetence (Fujie, 2010).

Although found in only one study, it is important to mention the State Imposter Scale (Fujie, 2010). A theme that emerged from the literature is the suggestion that impostor phenomenon is a situationally constructed response (Academic Leader, 2005; Cope Watson & Smith Betts, 2010; Jarrett, 2010). In addition, all three instruments previously mentioned, the HIPS, the CIPS and the PFS measure impostor phenomenon as a trait and not as a state (Fujie, 2010).

Unfortunately the literature does not clarify if impostor phenomenon is a permanent characteristic that resides in the psyche of an individual or a uniquely individually occurring emergent reactive response to a certain situation. Even researchers who approach impostor phenomenon as a trait note in their studies that impostor phenomenon was detected in reaction to certain stimuli. From a personal perspective, as a student researching impostor phenomenon, it is difficult to conceive that episodes of impostor phenomenon emerge from nothingness and vanish into nothingness. A psychological precedent such as the personality dispositions described in the literature review must exist that when triggered by certain situational stimuli results in a reaction that manifests as impostor phenomenon. As a researcher, this stance serves to reconcile the divide that exists between researchers who view impostor phenomenon as a trait and those who view impostor phenomenon as a state.

Studies on impostor phenomenon indicate that impostor feelings develop in new and unfamiliar settings. Sanford et al., (2015) reported that participants who experienced impostor

phenomenon “lacked experience or age” and those who did not experience impostor phenomenon claimed that “experience helped them gain confidence” (p. 39). Based on this premise, it is probable that impostor feelings are present among new and first generation doctoral students, female doctoral students, doctoral students from underrepresented groups and among doctoral students majoring in academic disciplines traditionally occupied by particular populations.

Theoretical Framework

A single theory to explain why impostor phenomenon develops in individuals does not exist. Impostor phenomenon is not even a medically recognized condition (Jarrett, 2010). Research documents the presence of impostor phenomenon in relation to academic culture, gender roles, fear of success, fear of failure, implicit theories of intelligence, minority status stress, situational response, socialization issues, first-generation status, family dynamics, physical age, and numerous personality traits including parentification, perceived inadequacy, perfectionism, self-presentation, self-esteem, attachment and entitlement, achievement oriented behaviors, and perceived fraudulence (Chiu, Dweck, Tong & Fu, 1997; Clance & Imes, 1978; Clance, 1985; Clance et al., 1995; Clance & O’Toole, 1988; Cokely et al., 2013; Cope Watson & Smith Betts, 2010; Craddock et al., 2011; Dadău, 2014; Elliott & Dweck, 1988; Ferrari & Thompson, 2005; Fujie, 2010; Gardner, 2013; Gardner & Holley, 2011; Gibson-Beverly & Schwartz, 2008; Hoang, 2013; Horner, 1973; Jarrett, 2010; King & Cooley, 1995; Kumar & Jagacinski, 2005; Langford & Clance, 1993; Lovitts, 2001; McElwee & Yurak, 2007; Peteet et al., 2015; Sanford et al., 2015; Thompson et al., 2000; Thompson et al., 1998).

The studies cited above claim predictive relationships between impostor phenomenon and various variables. This study aimed to reproduce similar results by exploring impostor

phenomenon in relation to the gender, generational status and program of study of doctoral students enrolled in an HSI. Based on studies, it is expected that impostor phenomenon will be present in female students, first generation students and students from soft science programs. Fear of success served as a frameworks to analyze findings.

Fear of Success

Fear of Success (FOS) studied by Horner in 1968 explored why women failed to achieve high-level goals by studying differences in achievement motivation between women and men (Caballero, Giles & Shaver, 1975; Cherry & Deaux, 1978; Fried-Buchalter, 1997; Hargrave Bremer & Andrisin Wittig, 1980; Lentz, 1982; Levine & Crumrine, 1975; Pfof & Fiore, 1990; Piedmont, 1988). Presented as a feminist perspective, fear of success influenced Clance and Imes (1978) to construct the term impostor phenomenon after noting that despite apparent academic and professional success, a group of women in a clinical setting believed that they were not really intelligent or capable and that they had somehow misled others to believe that they were successful (Clance & Imes, 1978; Jarrett, 2010; Sandford, Ross, Blake & Cambiano, 2015).

Horner concluded that fear of success originates from culturally ingrained gender stereotypes (Caballero et al., 1975; Cherry & Deaux, 1978; Fried-Buchalter, 1997; Hargrove Bremer & Andrisin Wittig, 1980; Horner, 1973; Lentz, 1982; Levine & Crumrine, 1975; Pfof & Fiore, 1990; Piedmont, 1988). In a gendered world, women are conditioned to believe that individual achievement and leadership are incompatible, antagonistic, and male attributes. Consequently, the successful woman, or the woman anticipating success, reacts by displaying success avoidant behavior that impedes achievement behavior (Caballero et al., 1975; Cherry & Deaux, 1978; Fried-Buchalter, 1997; Clance & Imes, 1978; Hargrove Bremer & Andrisin Wittig, 1980; Jarrett, 2010; Lentz, 1982; Levine & Crumrine, 1975; Pfof & Fiore, 1990; Piedmont,

1988; Salle, 2011). Accordingly, fear of success emerged from an internalized motive rather than from the perception of an external incentive from a particular situation (Hargrove Bremer & Andrisin Wittig, 1980, p. 28).

As a situational response, fear of success emerged when a member of a gender achieved success in a field or discipline traditionally perceived exclusive to the other gender (Caballero et al., 1975; Cherry & Deaux, 1978; Fried-Buchalter, 1997; Hargrove Bremer & Andrisin Wittig, 1980; Horner, 1973; Lentz, 1982; Levine & Crumrine, 1975; Pfof & Fiore, 1990; Piedmont, 1988). Popular gender stereotypes defined disciplines that are more suited for a gender, so individuals crossing those social boundaries experienced “difficulty reconciling their own identity within the accepted norms of the field” (Salle, 2011, p. 193). The social stigma resulting from trespassing traditionally perceived gender occupational fields manifested as fear of success.

Women who participated in occupational fields traditionally perceived as male domains, such as higher education, experienced anxiety because they equated academic success with a loss of femininity or with possible social rejection (Caballero et al., 1975; Cherry & Deaux, 1978; Fried-Buchalter, 1997; Hargrove Bremer & Andrisin Wittig, 1980; Lentz, 1982; Levine & Crumrine, 1975; Pfof & Fiore, 1990; Piedmont, 1988). A woman, socialized to view competition, ambition and achievement as unfeminine qualities, experienced conflict regarding her own success. She may have sabotaged her performance or psychologically distanced herself from her success (Piedmont, 1988). Clance et al., (1995) described this conflict:

Society expects certain behaviors from its members. Women as part of the society, share these expectations. They internalize them and make them their own on an unconscious level. Thus, they often do not expect themselves to be successful. They may think impostor phenomenon feelings are normal and not seek help or they may even deny that

they are successful enough to suffer from the impostor phenomenon (p. 86).

It is conceivable that doctoral students, especially from historically underrepresented groups, who participate and excel in fields traditionally perceived as White male domains like higher education, experience anxiety and fear that manifests as impostor phenomenon. Overt detection of impostor phenomenon in an HSI may be difficult to discern because of the composition of the population that primarily consists of underrepresented students. In studies where impostor phenomenon was detected among underrepresented students, underrepresented students were the minority population. In the HSI, impostor phenomenon may be more easily recognized as fear of success. The quantitative and qualitative phases of this study explored these premises.

Summary

This chapter presented a review of the literature on imposter phenomenon relevant to this particular study. The review consisted of studies that explore relationships between impostor phenomenon and various demographic and personality factors. Researchers employ various scales to measure the presence of impostor phenomenon although the CIPS is the most commonly used psychometric instrument. Different terminology exists to describe impostor phenomenon leaving some researchers to question the existence of impostor phenomenon as a psychological construct. Instead, feelings of fraudulence may be a reactionary response to a particular stimulus. Fear of success serves as the theoretical frameworks to analyze data findings.

CHAPTER 3 METHODOLOGY

This chapter provides the framework used to approach the quantitative hypotheses and the qualitative research questions in this study. The chapter begins by providing a description of the research design followed by a presentation of the hypotheses and research questions. The sampling procedure used to identify the participants is followed by a description of the instrument used to collect data, along with a description of data collection procedures. Finally, the techniques used to analyze data are presented.

Research Design

Mixed methods is a relatively new research approach. It emerged from a need to “move beyond simply using quantitative and qualitative methods as distinct, separate strands in a study” (Creswell & Plano Clark, 2018, p. 22). Mixed methods offers a means to reconcile the debate between “quantitative versus qualitative” or “a world of a singular reality opposed to a world where there is no such thing as a single objective reality” (Feilzer, 2010, p. 6). Numbers provide important information, but numbers do not divulge any information about the phenomenon that generates the numbers.

This study utilized an explanatory sequential mixed methods design in which the quantitative and qualitative phases are procedurally predetermined so a priority exists where the quantitative portion of the study precedes the qualitative portion (Creswell, 2012; Creswell & Plano Clark, 2018; Plano Clark & Creswell, 2008). Data collection and analysis, based on two separate research questions, occurred during different stages of the research. The research design determined the sample, data collection, data analysis and the interpretation of results (Creswell, 2012). Below is a figure of the explanatory sequential mixed methods design.

Step 1	Step 2	Step 3
QUANT Data collection & analysis	Qual Data collection & analysis	Interpret & Integrate QUANT & qual results

Figure 2. Explanatory sequential mixed methods research design

The rationale for using a mixed methods design was to expand on current scholarly knowledge on impostor phenomenon. Studies demonstrate that impostor phenomenon is found among non-traditional students enrolled in predominantly White institutions but current research does not inform if the same holds true in Hispanic Serving Institutions. Research on impostor phenomenon in Hispanic Serving Institutions remains relatively underresearched. This study specifically sought to examine impostor phenomenon in a Hispanic Serving Institution with a predominantly first-generation female Hispanic student population, and to facilitate the development of a theory about impostor phenomenon in an HSI.

Most of the current research on impostor phenomenon is quantitative in nature as demonstrated in the literature review included in this study. Research reveals the frequency and intensity of impostor phenomenon among a particular student demographic in a particular academic setting. Research even reveals that certain characteristics found in students will predict the presence of impostor phenomenon. What is lacking in research are the qualitative descriptions of impostor phenomenon experiences. The voices of the students experiencing impostor phenomenon are mostly absent from the research. The research does not reveal if the descriptive experiences of those students align with their reported impostor scores. As a result it is difficult to determine if qualitative data supports quantitative findings.

An explanatory mixed methods study is the ideal research design to explore a connection between quantitative and qualitative research findings on impostor phenomenon. This study aims

to address and possibly bridge the gap that exists between quantitative and qualitative research on impostor phenomenon. The study will determine if impostor phenomenon exists among doctoral students enrolled in the HSI, and explore a connection between quantitative and qualitative findings.

The quantitative phase of this research was modeled after studies conducted by Cokely et al., (2013) and Peteet et al., (2015) that explored relationships between impostor phenomenon and student traits including gender, generational status and ethnicity. The quantitative section aimed to reproduce generalized knowledge on impostor phenomenon in a Hispanic Serving Institution, as presented in the literature review, by making use of doctoral students' gender, generational status and type of program.

Below are the quantitative hypotheses and qualitative questions along with the mixed-methods question that guided this study. The first three hypotheses tested whether any differences existed between or among the demographic groups by observing participants' self-perceptions of impostor phenomenon as part of their doctoral experience. Hypotheses 4 through 7 explored more complex ways of observing by the interactions if a particular level of a group differed from another level of another group. The qualitative inquiry aimed to produce real world knowledge about impostor phenomenon by exploring the experiences of doctoral students enrolled in a Hispanic Serving Institution.

Quantitative Hypotheses

*H*₁: Female doctoral students will report higher levels of impostor phenomenon.

*H*₂: First generation doctoral students will report higher levels of impostor phenomenon.

*H*₃: Doctoral students in soft science programs will report higher levels of impostor phenomenon.

H₄: There is a first-order interaction between gender and generational status in relation to imposter phenomenon.

H₅: There is a first-order interaction between gender and type of program in relation to imposter phenomenon.

H₆: There is a first-order interaction between generational status and type of program in relation to impostor phenomenon.

H₇: There is a second-order interaction among gender, generational status and type of program in relation to imposter phenomenon

Qualitative Questions

1. How is impostor phenomenon revealed in doctoral students?
2. How do doctoral students describe and explain impostor phenomenon?

Mixed Methods Question

1. How do the observed group level differences help to explain qualitative responses in regard to impostor phenomenon among doctoral students?

Sampling Procedure

Mixed methods designs require a specific sampling strategy for the quantitative and qualitative phases of the study (Plano Clark & Creswell, 2008). The most important consideration when selecting a specific sampling strategy is the “overall purpose of sampling” which is to “generate a sample that will address the research questions” (Plano Clark & Creswell, 2008, p. 210). Creswell and Plano Clark (2018) recommend utilizing the same participants for both the quantitative and the qualitative phases of the explanatory mixed methods study.

Stratified random sampling was used for this study because this sampling strategy ensures complete representation of all groups or subgroups that comprise the total population

(Lemm, 2012; Plano Clark & Creswell, 2008). In stratified random sampling, the sample is divided or stratified into groups based on a certain characteristics or traits (Lemm, 2012). Within each stratified group, random sampling occurs so that in the final sample selected for data collection an equal number of participants or a proportionate stratified sample is represented (Creswell, 2012; Creswell & Plano Clark, 2018; Lemm, 2012; Plano Clark & Creswell, 2008.)

The stratification for this study was based on type of program, hard sciences and soft sciences. Hard sciences included programs in disciplines such as science, engineering and mathematics, while soft sciences included programs in disciplines such as social sciences or humanities (Council of Graduate Schools, 2008; Gardner, 2008, Gardner 2009; Golde, 2005; Lovitts, 2001; Sowell, Zhang & Redd, 2008; Sowell & Okahana, 2015). The stratified sampling strategy yielded 93 surveys from soft sciences programs and 90 surveys from hard sciences programs.

After stratifying the sample by type of program, purposeful sampling was used to further identify participants for qualitative data collection. Participants' gender, type of program, generational status and CIPS scores were also examined as part of the purposeful sampling strategy. Participants scoring 40 or less or 81 or higher, the two extremes of the CIPS, were specifically targeted as they were “expected to hold different perspectives on the central phenomenon” (Creswell & Plano, 2018, p. 176).

Participants

The rationale to limit this study to Ph.D. and Ed.D. students enrolled in an HSI is because information on impostor phenomenon on this population and in this setting is under-researched. General conclusions can be drawn about impostor phenomenon and students enrolled in predominantly White institutions, but current research does not extend those generalizations to

students enrolled in HSIs. This study explored if findings on impostor phenomenon, as presented in the literature review, hold true among Ph.D. and Ed.D. students enrolled in an HSI. Because the selection of this study was narrowed to Ph.D. and Ed.D. students enrolled in an HSI, the selection cannot be considered random so even generalization of the findings in this study are limited.

Eligible participants were currently enrolled students in Ph.D. and Ed.D. degree seeking programs at the HSI during the span of the study. An Open Records Data Request to the Texas Public Information Act, submitted on November 20, 2019, served to identify eligible participants. An administrative fee accompanied the data request. The data request included email address and program of study. Names and other personal identifying information were omitted from the data request. The data request yielded 872 email addresses. After filtering for duplicates, invalid email addresses or missing email addresses, the final list consisted of 861 email addresses of students enrolled in one of the 19 programs listed in table 2.

Table 2 Type of Program

Hard Science Program	Soft Science Program
Biosciences, Ph.D.	Ed. Leadership & Administration, Ed.D.
Biomedical Engineering, Ph.D.	Business Administration, Ph.D.
Civil Engineering, Ph.D.	Borderlands History, Ph.D.
Chemistry, Ph.D.	Rhetoric & Composition, Ph.D.
Computational Science, Ph.D.	Psychology, Ph.D.
Computer Science, Ph.D.	Interdisciplinary Health Sciences, Ph.D.
Ecology & Evolutionary Biology, Ph.D.	Teaching, Learning & Culture, Ph.D.
Electrical & Computer Engineering, Ph.D.	
Environmental Science & Engineering, Ph.D.	
Geological Sciences, Ph.D.	
Materials Science & Engineering, Ph.D.	
Mechanical Engineering, Ph.D.	

The email invitation was distributed three times, twice in December 2019, and once in January 2020. The first distribution yielded 83 responses. The second distribution yielded 56 responses and the final distribution yielded 43 responses. Partial responses were not considered for analysis and after inspection of responses and data screening, the final sample consisted of 181 responses.

Purposeful sampling further served to identify eligible participants for the semi-structured interviews. Participants with few impostor phenomenon experiences scored 40 or less total CIPS scores and those with intense impostor phenomenon experiences scored 81 or higher, were “expected to hold different perspectives on the central phenomenon” (Creswell & Plano, 2018, p.

176), so were specifically targeted for the qualitative interviews. Additional criteria including, gender, type of program and generational status further identified potential interview participants. Eligible participants were grouped by CIPS scores then by gender, type of program and finally generational status.

As shown in table 3, a total of 36 females and 26 males met the criteria that identified them as potential interview participants. Of the females who were first generation with few impostor phenomenon experiences, two were from a hard science program and five from a soft science program. Of those females who were second generation, one was from a hard science program and four from a soft science program. Of females who were first generation, eight were from a hard science program and 11 from a soft science program. Second generation females with intense impostor phenomenon included four from a hard science program and one from a soft science program.

Males who were first generation with few impostor phenomenon experiences included six from a hard science program and seven from a soft science program. Second generation males with few impostor phenomenon experiences included two from a hard science program. No males from a soft science program fit this profile. Males who were first generation with intense impostor phenomenon experiences included four from a hard science program and four from a soft science program. Second generation males included two from a hard science program and one from a soft science program.

Quantitative Data Collection

This study utilized two instruments to collect quantitative data: a demographic questionnaire composed by the researcher and the CIPS. QuestionPro Survey Software was used to create the questionnaire to collect demographic data. The Clance Imposter Scale was embedded along with the demographic questionnaire, resulting in a 26 item survey consisting of six demographic questions and the 20-item CIPS. An email that described the purpose and rationale of the study, as well as information on IRB approval, was used to invite Ph.D. and Ed.D. students to participate in the study. The email contained an anonymous link that included an informed consent document and the 26 item QuestionPro survey. Upon completion of the 26 item QuestionPro survey, an additional anonymous link was embedded that served to recruit participants who were interested in potentially participating in the qualitative interviews. It was estimated that the survey could be completed in 15 – 20 minutes.

Demographic Questionnaire

Demographic information collected from participants for statistical analysis included type of program, gender, age and generational status. The rationale for selecting these demographic items was to reproduce general knowledge on impostor phenomenon in an HSI based on existing research as presented in the literature review.

The Clance Imposter Scale

The CIPS is a 20-item Likert scale that measures impostor feelings and the degree of those feelings. The items were answered on 5-point Likert scale: 1 – not at all true, 2 – rarely, 3 – sometimes, 4 – often and 5 – very true. Participants were asked to select the response that best indicated how true the statement was to each participant. Based on summed scores a respondent who scored 40 or less was experiencing few impostor feelings. A score between 41 and 60

indicated moderate experiences of impostor feelings. Scores between 61 and 80 indicated frequent experiences of imposter feelings and scores higher than 80 indicated intense imposter feelings and the likelihood that those feelings were a hindrance or an interference (Austin et al., 2009; Chrisman et al., 1985; French et al., 2008; Fujie, 2010; Langford & Clance, 1993). A copy of the Clance Impostor Scale is included in Appendix B on page 89.

Based on its high internal validity measuring between .92 and .96 and the length of the instrument (20 items) that makes it easier to administer, the CIPS is the most commonly used instrument in research on impostor phenomenon (Chrisman et al., 1995; Clance, 1985; French et al., 2008; Fujie, 2010; Holmes et al., 1993; Kumar & Jagacinski, 2005; Langford & Clance, 1993). Chrisman et al., (1995) investigated the construct validity of the CIPS in a study with 269 undergraduate students of whom 69% were female and 31% were male. Evidence of the construct validity was demonstrated by the identification of three stable factors associated with impostor phenomenon, fake luck and discount in the CIPS (Chrisman et al., 1995). Based on those findings additional measures of reliability and validity were considered nonessential for this study. Approval and permission to reprint and distribute the Clance Impostor Scale was obtained with the following caveats:

Given the official title of the scale (CIPS: Clance Impostor Phenomenon Scale) includes the words "Impostor Phenomenon," (IP) Dr. Clance suggests that researchers use that specific terminology (e.g., Impostor Phenomenon) rather than using "Imposter Syndrome," as that terminology (e.g., syndrome) refers to an official medical diagnosis, of which the IP is not [Kaplan, K. (May 20, 2009). Unmasking the impostor, *Nature*, 459, p. 2]. The preferred spelling is "Impostor" - with an "o" at the end rather than an "e." Also, sometimes the word "syndrome" is seen in the social media rather than the word

"phenomenon" - and use of the word "phenomenon" is the correct term to use when referencing the CIPS (Clance Impostor Phenomenon Scale) or Dr. Clance's work (A. Gailis, personal communication, September 26, 2019).

Variables

The dependent variable for this study was impostor phenomenon. The independent variables analyzed in this study were preferred gender, type of program and generational status. Age was utilized as a covariate. Race ethnicity was not considered as a variable given that the majority of participants surveyed were expected to be of one race ethnicity.

This study utilized the existing CIPS rubric to identify impostor phenomenon among participants: few (≤ 40), moderate (41 – 60), frequent (61 – 80) and intense (≥ 81). Type of program was operationally defined as hard sciences that included disciplines in science, engineering and mathematics, and soft sciences that included disciplines in social sciences or humanities (Council of Graduate Schools, 2008; Gardner, 2008, Gardner 2009; Golde, 2005; Lovitts, 2001; Sowell, Zhang & Redd, 2008; Sowell & Okahana, 2015). Gender was operationalized as female or male. Generational status was operationally defined as neither parent has a master's or doctoral degree, yes or no.

Classification of participants was based on self-reported responses provided on the demographic questionnaire. Participants' responses placed them into one of the four independent variable categories: hard or soft science program, female or male, and first generation student or second generation student. For this study, a first generation student was defined as one whose parents did not have a graduate degree. A second generation student was defined as one whose parent or parents had a graduate degree.

Qualitative Data Collection

The qualitative phase of this study consisted of exploring the experiences of impostor phenomenon among Ph.D. and Ed.D. students. Subjective qualitative data was collected from participants by means of individual semi-structured interviews. (Creswell, 2012). A copy of the interview questions is included in Appendix C on page 92. Throughout the months of February 2020 and March 2020, thirteen interviews were scheduled. Due to unforeseen time conflicts, no-shows and finally the COVID-19 outbreak, the final number of completed interviews was six. Interview participants experiencing intense impostor feelings included one first generation student from a hard science program, two first generation students from a soft science and one second generation student from a soft science program. Interview participants experiencing few impostor feelings included two first generation students from a soft science program.

Participants were not required to identify or to provide any information regarding their identity during the interviews. The Library at the study setting served as the interview location. Interviews lasted approximately 30 minutes to one hour. A preexisting set of questions were presented but as each individual interview developed, additional questions emerged. The interviews were audio recorded and transcribed after which a thematic analysis was conducted. This included reviewing and coding the data and identifying major themes.

Quantitative Analysis

A three way factorial analysis of covariance (ANCOVA) was used in this study for the statistical analysis to explore if a three-way interaction effect exists between gender, type of program, generational status and impostor phenomenon using CIPS scores. Age was used as the control factor to adjust for the differences that exist between doctoral students and may influence CIPS scores. Statistical analyses were computed using IBM SPSS Statistics, version 26.

Qualitative Analysis

A constructivist grounded theory perspective served to analyze, explore and interpret meaning to the qualitative data. Constructivist grounded theory emphasizes use of flexible principles and practices, not a set of prescribed rules, so allows the researcher to “generate or discover a theory” that results in an explanation of a phenomenon shaped by the views of the participants (Charmaz, 2006; Creswell, 2007, p. 63). The purpose of the qualitative analysis was to connect back to the mixed methods research questions, resulting in the development of a theory that explains impostor phenomenon among doctoral student participants.

The semi-structured interviews were transcribed and thematic analysis conducted. Using Microsoft Word tables to conduct in-depth analysis, major groups emerged that formed relationships with themes linking back to the quantitative variables gender, type of program and generational status. Procedures for analyzing data included coding and the identification of six theoretical categories, and finally the construction of theory to explain impostor phenomenon in a Hispanic Serving Institution (Charmaz, 2006).

Summary

An explanatory mixed method design was used in this study to explore impostor phenomenon both quantitatively and qualitatively. Stratified sampling was used to identify participants for the quantitative part of the study, and purposeful sampling used for the qualitative part of the study. An online QuestionPro survey was used to collect quantitative data and to identify participants for the qualitative part of the study that consisted of semi-structured interviews. An ANCOVA was used to analyze quantitative data and grounded theory was utilized to analyze qualitative data.

CHAPTER 4 RESULTS

The results and analysis of this study are presented in this chapter. The quantitative analysis is presented, followed by the qualitative analysis. Quantitative results are presented in tables reporting descriptive statistics along with statistical assumptions associated with the ANCOVA. The chapter concludes with a presentation of major themes derived from the qualitative analysis.

Descriptive Statistics

The following tables show descriptive statistics. Table 4 displays doctoral student participation by race ethnicity. As expected at the HSI, Mexican/Hispanic/Latino/Chicano constituted the largest representation at 65% (N = 118) of the total sample. The second largest group consisted of 21% (N = 38) who identified as White. Of the remaining sample, 5% (N = 9) identified as Asian/Pacific Islander, 4% (N = 8) identified as international, 3% (N = 6) identified as biracial/multiracial, and 2% (N = 3) identified as Black/African American.

Table 4 Race Ethnicity

Race Ethnicity	N	%
1. Mexican/Hispanic/Latino/Chicano	118	65%
2. Black/African American	3	2%
3. Asian/Pacific Islander	9	5%
4. Native American	0	0.00%
5. White	38	21%
6. Biracial/Multiracial	6	3%
7. International	8	4%
Total	182	100%

Table 5 shows doctoral participation by type of program. The program with the largest participation was Educational Leadership and Administration with 14% (N = 26) followed by Teaching, Learning and Culture at 13% (N = 23). Both programs were classified as soft science programs. Civil Engineering and Computational Science, both hard science programs, had the smallest representation at only 2% (N = 3). Overall 49% (N = 90) of participants were from hard science programs and 51% (N = 93) from soft sciences programs.

Table 5 Participation by Type of Program

Program	N	%
Computational Science	5	3%
Computer Science	8	4%
Ecology & Evolutionary Biology	8	4%
Electrical & Computer Engineering	6	3%
Environmental Science & Engineering	9	5%
Geological Sciences	10	5%
Materials Science & Engineering	7	4%
Mechanical Engineering	11	6%
Hard Science Total	90	49%
Borderlands History	9	5%
Business Administration	6	3%
Educational Leadership & Administration	26	14%
Interdisciplinary Health Sciences	11	6%
Psychology	11	6%
Rhetoric & Composition	7	4%
Teaching, Learning & Culture	23	13%
Soft Science Total	93	51%
Total	183	100%

Table 6 below displays participation by gender and impostor phenomenon scores. Female participation was 57% (N = 103) compared to 43% (N = 79) male participation. In regard to female participation, 12% (N = 12) reported few impostor experiences, 25% (N = 26) reported moderate impostor experiences, 40% (N= 41) reported frequent impostor experiences and 23% (N = 24) reported intense impostor experiences. As far as male participation, 19% (N = 15) reported few impostor experiences, 37% (N = 29) reported moderate impostor experiences, 30% (N= 24) reported frequent impostor experiences and 14% (N = 11) reported intense impostor experiences

Table 6 Gender and IP Scores

		Few IP	%	Moderate IP	%	Frequent IP	%	Intense IP	%	Total	%
Gender	Female	12	12%	26	25%	41	40%	24	23%	103	57%
	Male	15	19%	29	37%	24	30%	11	14%	79	43%
Total		27	15%	55	30%	65	36%	35	19%	182	100%

IP – Impostor phenomenon

Table 7 shows participants by gender, generational status and type of program. In regard to female participation, 17% (N = 30) from hard science programs identified as first generation and 22% (N = 39) from soft science programs identified as first generation. Females who identified as second generation included 7% (N = 13) from hard science programs and 11% (N = 20) from soft science programs. Male participation included 17% (N = 31) from hard science programs that identified as first generation and 16% (N = 28) from soft science programs that identified as first generation. Males who identified as second generation included 8% (N = 14) from hard science programs and 3% (N = 5) from soft science programs. For generational status and program of study of total participants, 34% (N = 61) of the participants who identified as

first generation were from hard science programs while 37% (N = 67) were from soft science programs. Second generation students included 15% (N = 27) from hard science programs and 14% (N = 25) from soft science programs.

Table 7 Gender, Generational Status and Type of Program

		Generational Status:		
		1 st Generation		
Gender	2 nd Generation	Type of Program	N	%
		Hard Science	30	17%
		Soft Science	39	22%
	1 st Generation	Total	69	38%
		Hard Science	13	7%
		Soft Science	20	11%
	2 nd Generation	Total	33	18%
		Hard Science	43	24%
		Soft Science	59	33%
Female	Total	Total	102	57%
		Hard Science	31	17%
		Soft Science	28	16%
	1 st Generation	Total	59	33%
		Hard Science	14	8%
		Soft Science	5	3%
	2 nd Generation	Total	19	11%
		Hard Science	45	25%
		Soft Science	33	18%
Male	Total	Total	78	43%
		Hard Science	61	34%
		Soft Science	67	37%
	1 st Generation	Total	128	71%
		Hard Science	27	15%
		Soft Science	25	14%
	2 nd Generation	Total	52	29%
		Hard Science	88	49%
		Soft Science	92	51%
Total		Total	180	100%

Quantitative Analysis

Test of Statistical Assumptions

- 1. Level and measure of variables:** An ANCOVA assumes that the dependent variable is a continuous variable and that the independent variables are categorical variables. This assumption was met when designing the study. The independent variables: gender, program of study and generational status, were collected as categorical groups. Impostor phenomenon captured on the CIPS, was a self-reported response rated on a Likert-type scale measured at the interval level.
- 2. Independence of observations:** The ANCOVA assumes no observable relationship in each group or between the groups. This means different participants in each group and that no participant is in more than one group. Verification of independence was satisfied by the design of the demographic questionnaire. Self-reported responses placed participants into one of the four independent variable categories: female or male, hard or soft science program and first or second generation student.
- 3. Detection of outliers:** An ANCOVA assumes no significant outliers. Data was screened using 181 completed surveys where the mean score was 62.51 with only a small variation between students. No outliers were detected.
- 4. Normality:** Although, the Shapiro-Wilk's normality test indicated a significant result [S-W(182) = .974, $p < .01$], examination of frequency distribution for the total impostor phenomenon score yielded a slightly negative skewed (-.29) and slight negative kurtosis (-.66) shape. Thus, the impostor phenomenon dependent variable was assumed to be approximately normally distributed
- 5. Homogeneity of variance:** ANCOVA assumes that the variances of each comparison

group are equal across each combination of groups of the three independent variables.

This was verified using Levene's Test of Equality of Error Variances. The Levene's Test showed that variances of the groups were equal $F(7,172) = 0.930, p = .485$. The significant value was greater than .05 (.485) showing that the variances in the groups are not significantly different and the condition of homogeneity of variance was satisfied.

- 6. Homogeneity of regression slope:** ANCOVA assumes that there is no interaction between the independent variables and the covariate. Tests of between-subjects effects demonstrated that there was a non-statistical interaction as the significant result between the independent variables and the covariate was greater than .05 (.898) so the homogeneity of slopes was satisfied.

Table 8 Test of Skewness and Kurtosis

		Statistic	Std. Error
Total CIPS scores	Skewness	-.297	.180
	Kurtosis	-.655	.358

Table 9 Tests of Normality

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Total CIPS scores	.085	182	.003	.974	182	.002

a. Lilliefors Significance Correction

Quantitative Hypotheses

The hypotheses guiding the quantitative inquiry of this study are listed below. The first three hypotheses were explored to produce general knowledge about impostor phenomena. Hypotheses 4 through 7 served to examine interaction effects among doctoral students' gender, generational status and type of program to account for statistical differences in the students' reported levels of impostor phenomenon. Results of between subject effects are located on Appendix G, page 98.

H₁: Female doctoral students will report higher levels of impostor phenomenon.

H₂: First generation doctoral students will report higher levels of impostor phenomenon.

H₃: Doctoral students in soft science programs will report higher levels of impostor phenomenon.

H₄: There is a first-order interaction between gender and generational status in relation to impostor phenomenon.

H₅: There is a first-order interaction between gender and type of program in relation to impostor phenomenon.

H₆: There is a first-order interaction between generational status and type of program in relation to impostor phenomenon.

H₇: There is a second-order interaction among gender, generational status and type of program in relation to impostor phenomenon.

Hypothesis 1

The results supported hypothesis 1 that proposed that female doctoral students would report higher levels of impostor phenomenon. Data included in Table 6 shows that 23% (N = 24) of the participants who identified as female scored 81 or higher on the CIPS (Clance, 1985). Of

the male participants, only 14% (N = 11) scored 81 or higher. These results indicate that even at an HSI populated primarily by Hispanic doctoral students, impostor phenomenon is not gender specific and that more female participants reported higher levels of impostor phenomenon. This finding supports research that impostor phenomenon is not gender specific and that females experience higher levels of impostor phenomenon (Bahn, 2014; Clance et al., 1995; Gibson-Beverly, 2015; Gibson-Beverly & Schwartz, 2008; Hoang, 2013; Kumar & Jagacinski, 2006; Sanford et al., 2015).

Table 6 Gender and IP Scores

		Few IP	%	Moderate IP	%	Frequent IP	%	Intense IP	%	Total	%
Gender	Female	12	12%	26	25%	41	40%	24	23%	103	57%
	Male	15	19%	29	37%	24	30%	11	14%	79	43%
Total		27	15%	55	30%	65	36%	35	19%	182	100%

IP – Impostor phenomenon

Hypothesis 2

The data did not support hypothesis 2 that proposed that first-generation doctoral students would report higher levels of impostor phenomenon. As shown on Table 10, 71% (N = 128) of the total number of participants reported as first generation. Mean impostor phenomenon score for 1st generation students was 63 indicating frequent impostor experiences. Mean impostor phenomenon score for 2nd generation students was 62, also indicating frequent impostor experiences. Based on the literature, it was expected that 1st generation students would report much higher levels of impostor phenomenon in comparison to second generation students. The data show that 1st generation students did not experience higher levels of impostor phenomenon

as there was no significant difference in impostor phenomenon scores between 1st and 2nd generation students. This finding does not align with the literature that suggests that impostor phenomenon is a situational response experienced by new and first-time college students (Cokely et al., 2013; Cope Watson & Smith Betts, 2010; Craddock et al., 2011; Fujie, 2010; Gardner, 2008; Gardner, 2009; Golde, 1998; Jarrett, 2010; King, 2008; Lovitts, 2001; Parkman, 2016; Peteet et al., 2015). The data indicates that at the HSI, generational status has no effect on impostor phenomenon scores conveying that at an institution primarily populated by Hispanic students, 1st generation doctoral students do not feel any more isolated or othered in comparison to 2nd generation doctoral students.

Table 10 IP Scores, Gender, Generational Status and Type of Program

Gender	Generational Status	Type of Program	Mean	Std. Deviation	N	%
Female	1 st Generation	Hard Science	69.13	16.154	30	17%
		Soft Science	65.28	19.008	39	22%
		Total	66.96	17.802	69	38%
	2 nd Generation	Hard Science	67.54	19.856	13	7%
		Soft Science	60.15	14.162	20	11%
		Total	63.06	16.744	33	18%
	Total	Hard Science	68.65	17.128	43	24%
		Soft Science	63.54	17.562	59	33%
		Total	65.70	17.480	102	57%
Male	1 st Generation	Hard Science	56.94	20.298	31	17%
		Soft Science	58.18	17.768	28	16%
		Total	57.53	18.986	59	33%
	2 nd Generation	Hard Science	61.00	16.286	14	8%
		Soft Science	60.60	15.323	5	3%
		Total	60.89	15.613	19	11%
	Total	Hard Science	58.20	19.050	45	25%
		Soft Science	58.55	17.219	33	18%
		Total	58.35	18.183	78	43%
Total	1 st Generation	Hard Science	62.93	19.234	61	34%
		Soft Science	62.31	18.699	67	37%
		Total	62.61	18.883	128	71%
	2 nd Generation	Hard Science	64.15	18.046	27	15%
		Soft Science	60.24	14.069	25	14%
		Total	62.27	16.219	52	29%
	Total	Hard Science	63.31	18.782	88	49%
		Soft Science	61.75	17.511	92	51%
		Total	62.51	18.110	180	100%

IP - Impostor phenomenon

Hypothesis 3

As shown in Table 11, the data did not support the hypothesis that at the HSI, doctoral students in soft science programs would report higher levels of impostor phenomenon. From hard science programs, 20% (N = 18) of doctoral students reported intense impostor phenomenon experiences while 18% (N = 17) of doctoral students from soft science programs reported intense impostor phenomenon experiences. Based on mean impostor phenomenon scores as demonstrated in Table 10 on page 59, doctoral students in both hard and soft science programs experience frequent episodes of impostor phenomenon. Mean impostor phenomenon scores for doctoral students in hard science programs is 63, and 62 for doctoral students in soft science programs. The findings indicate that at the HSI, program of study did not contribute to the emergence of intense impostor experiences. This finding does not support the literature that suggests that students in less structured programs such as the humanities, deal with issues of persistence and conceivably impostor phenomenon, because of the individual nature of the research stage (Lovitts, 2001; Lovitts, 2008).

Table 11 Type of Program and IP scores

	Few IP	%	Moderate IP	%	Frequent IP	%	Intense IP	%	Total	%
Hard Science	11	12%	26	29%	34	38%	18	20%	89	49%
Soft Science	16	17%	29	31%	31	33%	17	18%	93	51%
Total	27	15%	55	30%	65	36%	35	19%	182	100%

IP- Impostor phenomenon

Hypothesis 4

A three-way (2x2x2) ANCOVA was conducted to compare the main effects of gender, generational status and type of program (IVs) as well as their interaction effects on impostor

phenomenon (DV). Results of between subject effects are located on Appendix G, page 98. Gender and generational status were not statistically significant at $p > 0.05$. The main effect of gender yielded an effect size of 0.017, indicating that 1.7% of the variance in impostor phenomenon was explained by gender $F(1, 171) = 2.982, p = 0.086$. The main effect of generational status yielded an effect size of .000 indicating that none of the variance in impostor phenomenon was explained by generational status $F(1, 171) = .010, p = .920$. As shown in figure 3, female doctoral students displayed consistently higher y-values, impostor phenomenon mean scores, for each specific value of x, generational status, than for male doctoral students. Although the lines intersected at approximately 62, the interaction effect was not significant $F(1, 171) = 1.309, p = .254$ indicating that there was no combined effect for gender and generational status on impostor phenomenon.

Even though there was no statistical significance in results, at the HSI first and second generation female doctoral students reported higher impostor phenomenon scores than first and second generation male doctoral students, as demonstrated in figure 3. First generation female doctoral students reported higher impostor phenomenon scores than second generation female doctoral students, while the reverse was observed for second generation male doctoral students who reported higher impostor phenomenon scores than first generation male doctoral students. Based on the literature, it was expected that both first generation female doctoral students and male doctoral students would report higher impostor phenomenon scores, but at the HSI the opposite was observed for male doctoral students.

Second generation male doctoral students at the HSI reported higher impostor phenomenon scores than first generation male doctoral students. In their research, Craddock, et. al., (2011) reported that impostor phenomenon was detected among participants whose families imposed and expected high academic achievement. Unlike first generation students who are

setting the standard of what constitutes academic success, second generation students enter higher education with a preexisting concept of academic success. Second generation students are expected to meet if not surpass an academic standard established by a prior generation. The stress of meeting this standard or of complying with family expectations may manifest as impostor phenomenon for male doctoral students enrolled at the HSI.



Figure 3 Gender and generational status: Main and interaction effects

Hypothesis 5

Gender and type of program were not statistically significant at $p > 0.05$. The main effect of gender yielded an effect size of 0.017, indicating that only 1.7% of the variance in impostor phenomenon was explained by gender $F(1, 171) = 2.982, p = .086$. The main effect of type of program yielded an effect size of 0.001, indicating that .1% of the variance in impostor phenomenon was explained by type of program $F(1, 171) = .105, p = .746$. Figure 4 shows that

female doctoral students displayed consistently higher y-values, impostor phenomenon mean scores, for each specific value of x, type of program, than for male participants. The interaction effect was not significant $F(1,171) = 1.053, p = .306$ indicating that there was no combined effect for gender and type of program on impostor phenomenon as shown in figure 4.

Although there was no statistical significance, female doctoral students in hard and soft science programs reported higher impostor phenomenon scores than male doctoral students in hard and soft science programs. Impostor phenomenon scores for female doctoral students in hard science programs were higher than for female doctoral students in soft science programs. Male doctoral students in soft science programs reported higher impostor phenomenon scores than male doctoral students in hard science programs. These findings recall fear of success as a consequence of crossing traditionally defined gender occupational fields. Hard science programs have traditionally been viewed as male domains while soft science programs have been viewed as female domains. This may explain why female doctoral students in hard science programs and male doctoral students in soft science programs both reported higher impostor phenomenon scores than female doctoral students in soft science programs and male doctoral students in hard science programs.

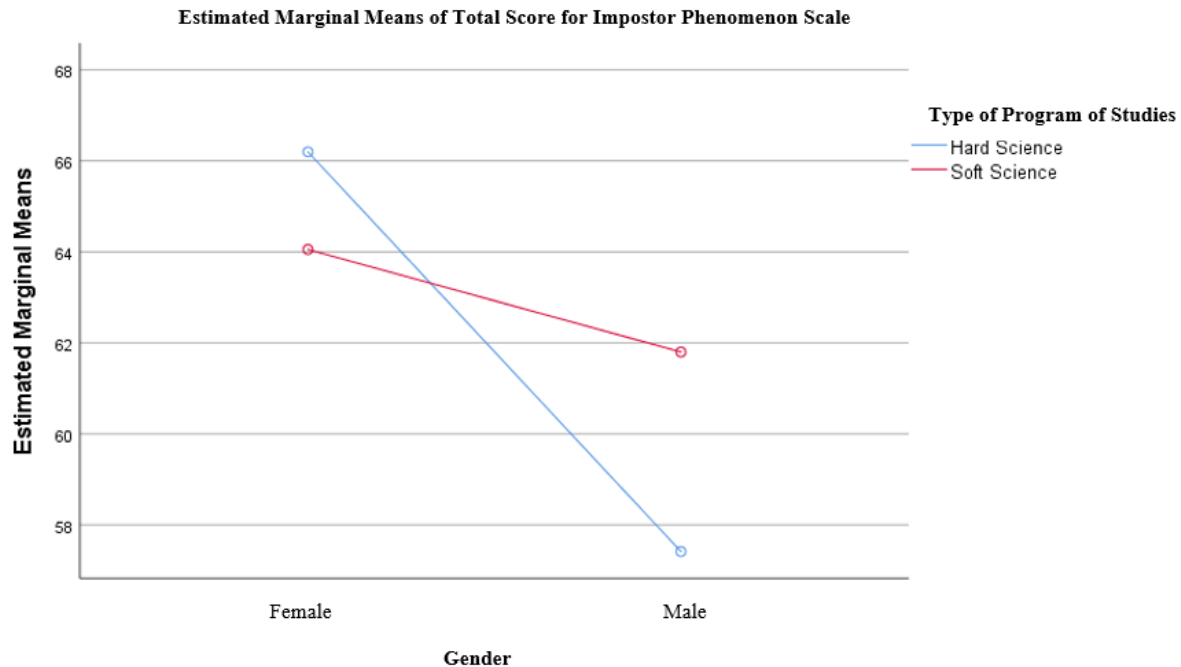


Figure 4 Gender and type of program: Main and interaction effects

Hypothesis 6

Generational status and type of program were not statistically significant at $p > 0.05$. The main effect of generational status yielded an effect size of .000 indicating that none of the variance in impostor phenomenon was explained by generational status $F(1, 171) = .010, p = .920$. The main effect of type of program yielded an effect size of 0.001 indicating that .1% of the variance in impostor phenomenon was explained by type of program $F(1, 171) = .105, p = .746$. Figure 5 shows that doctoral student who identified as 1st generation, displayed consistently higher y-values, impostor phenomenon mean scores, for each specific value of x, type of program, than for doctoral students who identified as 2nd generation. Furthermore, the interaction effect was not significant $F(1,171) = .001, p = .971$ indicating that there was no combined effect for generational status and type of program on impostor phenomenon as shown in figure 5.

Although not statistically significant, as shown on figure 5, first generation doctoral

students in hard and soft science programs reported higher mean impostor phenomenon scores than second generation doctoral students in the same programs. This finding aligns with the literature that indicates that first generation students are more likely to experience impostor phenomenon. At the HSI, although not statistically significant, first generation students reported higher impostor phenomenon scores than second generation students regardless of the type of program.

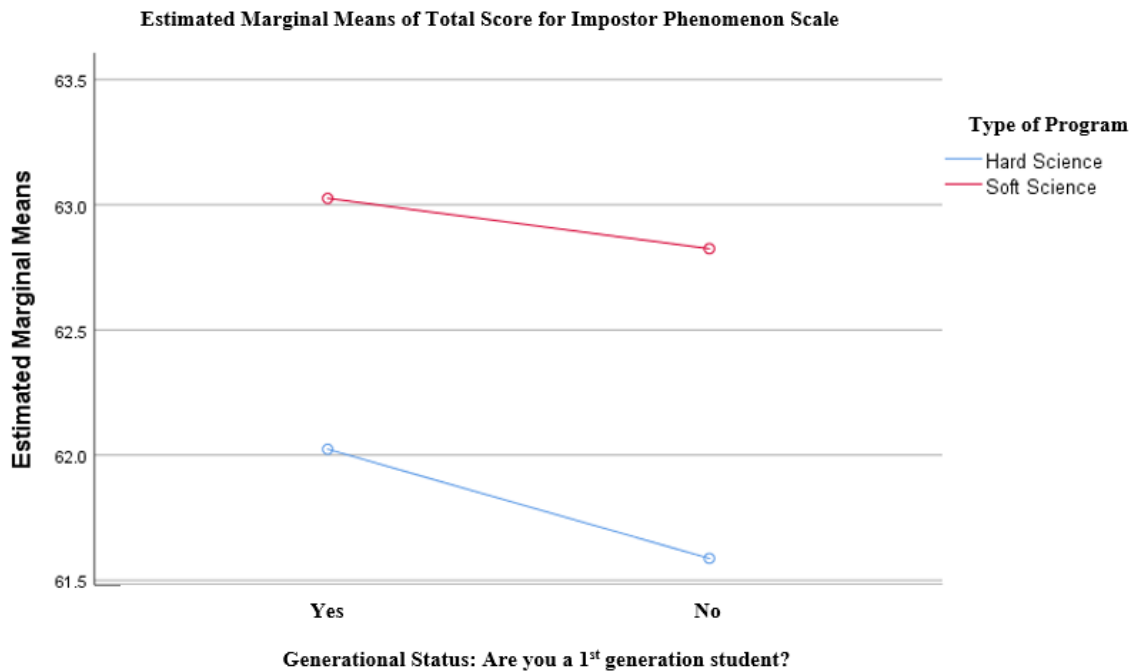


Figure 5 Generational status and type of program

Hypothesis 7

The second order interaction between gender, generational status and type of program (hard and soft sciences) was not statistically significant at $p > 0.05$. Figure 6 shows that for hard science programs, female doctoral students displayed consistently higher Y-values, impostor

phenomenon mean scores, for each specific value of x , generational status, than for male doctoral students. Figure 7 shows that for soft science programs female doctoral students who identified as 1st generation, displayed consistently higher y -values than female doctoral students who identified as 2nd generation.

For male doctoral students in soft science programs, figure 7 shows that male doctoral students who identified as 2nd generation displayed consistently higher y -values than male doctoral students who identified as 1st generation. The second order interaction effect between gender, generational status and type of program was not significant $F(1,171) = .017, p = .898$ indicating that there was no combined effect for gender, generational status and type of program on impostor phenomenon as shown in figures 6 and 7.

Although not statistically significant, figure 6 shows that at the HSI, first and second generation female doctoral students in hard science programs reported higher impostor phenomenon scores than first and second generation male doctoral students in the same type of program. For female doctoral students, this finding aligns with impostor phenomenon research that females experience higher levels of impostor phenomenon in comparison to males. Type of program may also explain higher impostor phenomenon scores for female doctoral students. Hard science programs have traditionally been male domains so females pursuing degrees in those fields may be more susceptible to impostor phenomenon.

A reversal occurred for male doctoral students in hard science programs as shown in figure 6. Second generation male doctoral students reported higher impostor phenomenon scores than first generation male doctoral students. At the HSI, second generation male doctoral students may feel more pressured to succeed academically due to family imposed standards or standards imposed by the students themselves. This pressure may find expression as impostor phenomenon.

Figure 7 shows a reversal of findings as demonstrated in figure 6. First generation female doctoral students in soft science programs reported higher impostor phenomenon scores than second generation female doctoral students and second generation male doctoral students reported higher levels of impostor phenomenon than first generation male doctoral students. Again higher impostor phenomenon scores for first generation female doctoral students aligns with impostor phenomenon research. Higher impostor phenomenon scores for second generation male doctoral students may be the result of a combination of the pressure to succeed and the stress of pursuing a degree in a discipline that has traditionally been viewed as female gender specific. Based on impostor phenomenon scores, type of program was not an issue for first generation male doctoral students.

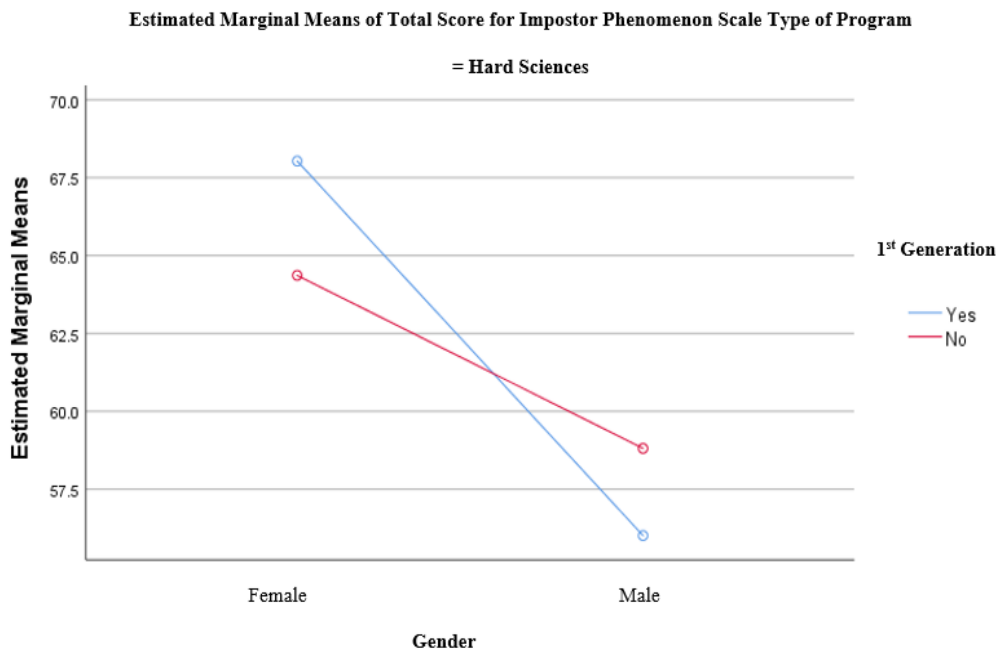


Figure 6 Hard Science: Gender and generational status

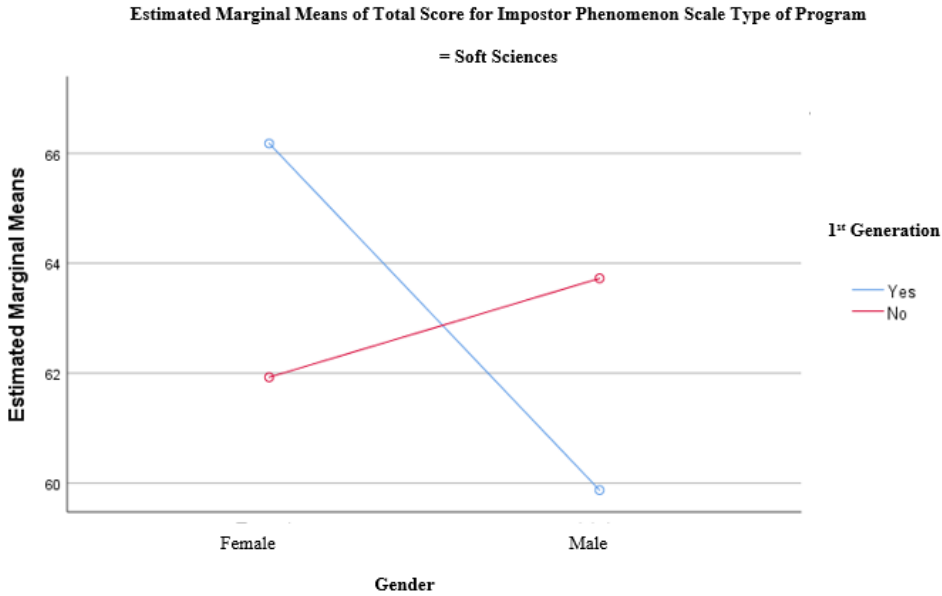


Figure 7 Soft Science: Gender and generational status

Qualitative Analysis

The second part of the study, the qualitative phase consisted of collecting subjective qualitative data from participants to explore the experiences of impostor phenomenon among Ph.D. and Ed.D. students utilizing individual interviews (Creswell, 2012). Procedures for analyzing qualitative data included coding and the creation of theoretical categories to organize data and to describe how students describe and experience impostor phenomenon (Charmaz, 2006). As mentioned in Chapter 3, participants for this phase of the study were purposefully selected based on particular demographic characteristics and CIPS scores as identified in the quantitative phase of the study.

Qualitative Questions

1. How is impostor phenomenon revealed in doctoral students?
2. How do doctoral students describe and explain impostor phenomenon?

Using Microsoft Word tables to conduct in-depth analysis, major groups emerged that formed relationships with themes linking back to the quantitative study, gender, type of program

and generational status. Themes associated with the three subscales of the CIPS also emerged: fake, discount and luck (Chrisman et al., 1995; Langford & Clance, 1993; French et al., 2008; Fujie, 2010; Holmes et al., 1993). Fake is associated with self-doubts and concerns about intelligence and ability; discount relates to the inability to acknowledge praise and positive performance and luck is associated with thoughts of accomplishments by chance or error rather than ability (Chrisman et al., 1995; French et al., 2008). Other themes that emerged, as mentioned in the literature review, included feelings of otherness/isolation, self-handicapping, self-presentation, mentorship, family support and fear of evaluation.

Impostor Phenomenon Revealed

Although there was no statistical significance between gender, generational status, program of study and impostor phenomenon, qualitative data revealed the presence of impostor phenomenon among doctoral students. Quantitative results indicate that impostor phenomenon is not representative of the Hispanic doctoral student population that predominantly enrolls in the HSI. Instead qualitative findings suggest that at the HSI, impostor phenomenon is a very individual and personal experience and that gender, generational status and program of study may influence the emergence of impostor phenomenon among doctoral students.

Impostor phenomenon was detected in the participants' responses, responses that contained elements of fake, discount and luck. After careful examination, it was observed that fake, discount and luck were consequentially intertwined. For example, a response that contained an element of fake, discount or luck also contained in various combinations, elements of fake, discount and luck.

Statements containing elements of fake were easily discernable. Participants did not feel that they were very intelligent and questioned their status as admitted students in a doctoral program. This inability to feel that they merited admission to a doctoral program resulted in

feelings of isolation. Comparison to peers was routinely practiced by all participants. In these comparisons, peers were viewed as intellectually superior. In these instances, the participant downplayed their abilities which served to further feelings of isolation.

Discounting success is a typical reaction from individuals who experience impostor phenomenon. Instead of acknowledging praise, participants reacted by questioning the motivation behind the praise. All participants regarded faculty support and faculty validation as key ingredients to a successful outcome yet not all felt supported by faculty. Some participants felt that faculty lowered their standards or expectations so were disingenuous in their praise or evaluation, “maybe either a. they don't care about us, or b. we're really not doing as well as we should be doing and they just don't want to tell us” (Participant 200303-0203). The inability to accept praise materialized as doubt and insecurity that emerged as mistrust of faculty.

Fake, discount and luck are consequentially dependent on each other. Individuals feel fake because they discount their abilities and so attribute success to luck. Numerous examples of fake, discount and luck abound in the interviews, although not explicitly stated. In addition, the statements included aspects of fear of evaluation, self-handicapping, self-presentation, comparison to others and validation. It is important to note that qualitative responses were more rich and complex, therefore open to more varied interpretations. Given that the topic of this dissertation is impostor phenomenon, the results were interpreted using impostor phenomenon as a framework.

Gender

Indirect comments regarding gender served to mask participants' insecurity regarding their standing in the doctoral program. The following excerpt describes one participant's mixed feelings about her place in her doctoral program with regard to gender and perhaps even race ethnicity. Referencing fear of success as an interpretive framework, Caballero, et al., (1975)

claim that fear of success is a “reaction by ambitious women to the threatening conditions they actually encounter or imagine encountering” (p. 325). The excerpt additionally contains elements of fake and discount:

You know, it felt good, but at the same time, I did see the double takes that they would make. Like, “What? Shouldn’t you be cleaning a bathroom or something?” You know (Participant 200225_0427)?

Another participant questioned if one’s gender was actually a deterrent to higher education or a mask to excuse an unsuccessful performance. The following comments revealed elements of self-handicapping and self-presentational issues.

And I do think that sometimes we can hide under those expectations without even realizing that it is just that we're struggling with a particular task (Participant 200225_008).

Generational Status

As a second generation student, Participant 190312-0130 held herself to a higher standard and expectation so found it difficult to reconcile the issues she experienced completing her degree “but I’m at a doctorate level, you know, I’m so—you know, I should know all of this by now” (Participant 190312-0130). At least in this instance, second generation status did not exclude this participant from experiencing impostor phenomenon. The same participant used her educational background to further distance herself from her program. The statement includes elements of discount and fake:

I’m competing with myself on my own. You know what I’m saying? On my own, I’m in a different career than everyone else and all that kind of thing. This is very much an individual journey. You know what I’m saying? (Participant 190312-0130).

Type of Program

The following statements regarding type of program contain elements of fake and discount.

Engineering is for smart people, it's not for me. I should go to another field or something you know (Participant 200225-0427).

I've been accepted in the program. Yeah, I probably will finish, okay? I don't know that that means that I really belong. I don't know if that means it really, you know, I'm looking at all the all the people in the program. And we got a bunch of smart kids and a bunch of smart people. And I'm not sure that I am of the caliber that belong with this kind of behavior (Participant 200226-0204).

Descriptions of Impostor Phenomenon

Comparisons to peers or colleagues were routinely practiced by all participants. These comparisons display elements of fake discount and luck, elements that comprise impostor phenomenon.

And so, I compare myself a lot to the other students who have gotten through their milestones quicker than I have (Participant 200225-0427).

They're so much smarter and they get it so much faster and they're so much better at whatever (Participant 200226-0204).

So, here I am getting by saying I'm doing this as a project as a PhD student and making everybody think that I'm being a scientist when I don't know what the heck I'm doing because this dude knows more than I do about my own project (Participant 200225-0427).

Individuals with impostor phenomenon attribute their success to factors other than natural ability as demonstrated in the excerpt below.

I expected to get in only because of the requirements being so low. I felt like had I applied to a different school that doesn't have a one hundred percent acceptance rate or had I applied to somebody who had some guidelines, some restrictions then I probably wouldn't have made it but I just happened to be in the right place, right time. You know the administrative staff was only requiring so much and I did it, I got it so I got in" (Participant 200225-0427).

Inability to accept praise is a characteristic of individuals experiencing impostor phenomenon.

Participants' inability to accept praise emerged as mistrust of faculty. When praised by faculty, participants reacted by questioning the motivation behind the praise because they felt that faculty were disingenuous in their praise or evaluation. The following excerpts exemplify the mistrust of

faculty.

“maybe either a. they don't care about us, or b. we're really not doing as well as we should be doing and they just don't want to tell us” (Participant 200303-0203).

So far nobody's failed me. I think they have a minimum and a higher and yeah, they accommodate. What does that mean? I don't know, is he overestimating our ability or what? He's willing to accept whatever he has to work with.” (Participant 200226-0204).

so it's usually after we've met or something and somebody like praises me for some work, they're like, “okay, thanks for this, thanks for all the hard work XXX's done and this and this.” And I'm like well, all I did is basically updated a couple of spreadsheets and stuff. I mean— what I mean, I didn't do anything terribly interesting. Yeah. I mean, I just did this couple of minor pieces of work and it seems like they're praising me for it or they're giving me a lot of credit for what I feel is very low effort work. It might have just been tedious and they didn't want to do it but it's nothing, nothing that I saw as particularly useful. Useful or helpful to anything we were doing overall (Participant 1 200303-0203).

Academic success was another theme that emerged. Objectively participants are academically successful – they are progressing towards the completion of the degree. Outwardly participants accepted success and the accompanying accolades. Inwardly, participants did not accept success as a personal achievement so accolades were unmerited. As a result, success was only a temporal state:

But in other cases, I just don't know what a successful outcome looks like or it's just— I just don't really prepare for it at all. I just sort of prepare for the next problem just not the outcome (Participant 200303-0203).

Whatever concept participants had of success was only in relation to the success of others. Some participants described success by the number of papers published, grades earned or conferences attended. With the exception of one participant, none mentioned admission to a doctoral program or their current standing in their doctoral program as an outstanding academic achievement. Participants who did mention success did so in a discounting manner.

Summary

An explanatory mixed methods design is best suited to address the topic of this study. The mixed methods design consisted of two phases, a quantitative phase followed by a qualitative phase. The qualitative phase served to explain quantitative findings by exploring and understanding how impostor phenomenon reveals itself, and the meaning of those experiences. Ph.D. and Ed.D. doctoral students experience impostor phenomenon. An ANCOVA statistical analysis was used to analyze quantitative data, while grounded theory was used analyze qualitative data. Gender, generational status and type of program were not statistically significant in regard to impostor phenomenon among doctoral students. Qualitative responses, though, did indicate that impostor phenomenon was present and detected in doctoral students' responses concerning gender, generational status and type of program.

CHAPTER 5 DISCUSSION AND CONCLUSIONS

The purpose of this sequential explanatory mixed-method study was to explore impostor phenomenon among doctoral students enrolled in a Hispanic Serving Institution. The following is a discussion of the conclusions derived from the results as presented in chapter 4. The mixed methods question is addressed in the first part of the chapter. The chapter concludes with recommendations for practice, policy and future research.

Mixed Methods Response

Results suggest that at the HSI, doctoral students have a dual external/internal identity when it comes to experiences of impostor phenomenon. The external identity is based on quantitative results and the internal identity based on qualitative results. Quantitative results indicated that gender, generational status and type of program were not statistically significant in relation to impostor phenomenon. Mean impostor phenomenon scores for doctoral students at the HSI was 63 indicating frequent impostor phenomenon experiences for all doctoral students. The mean impostor phenomenon score suggests that at the HSI, quantitatively doctoral students share similar impostor phenomenon experiences. Doctoral students at the HSI share a similar external identity based on a shared external student experience that aligns with quantitative findings.

Qualitatively, responses suggest a greater variance in the experiences of doctoral students. The internal identity of doctoral students at the HSI is an individual, separate and distinct experience that aligns with qualitative findings. Qualitative findings suggest that there is a conflict in the internal identity of doctoral students, a conflict that manifests as impostor phenomenon. As suggested by qualitative responses, and based on the variables utilized in this study, the conflict may be based on gender, generational status and program of study. Differing conclusions may be derived given the richness and complexity of the responses, but because this study focused on gender, program of study and generational status, interpretation is limited to

these three variables.

Recommendations for University Administrators

Based on comments made by participants, there is a lack of awareness of impostor phenomenon at the HSI. The literature recommends that discussions of impostor phenomenon be incorporated throughout a student's academic career. To minimize the deleterious effects of impostor phenomenon, students need to know that impostor phenomenon is part of the doctoral experience and that most doctoral students will experience impostor phenomenon at some point in time.

It is important to remember that impostor phenomenon is an internal experience. Impostor phenomenon is not an external experience so individuals experiencing impostor phenomenon cannot be identified by outward appearance. That is the insidious nature of impostor phenomenon and why more attention should be given to impostor phenomenon. Unless a student cries out for help, it is impossible to fathom the internal conflict students with impostor phenomenon may experience.

The well-being of doctoral students has to be of utmost importance. At the HSI, the institution should implement annual or biannual well-being checks in a safe, judgement free setting with licensed professionals. In such a setting students can express their concerns, fears and insecurities. The literature does not suggest a cure exists for impostor phenomenon given that impostor phenomenon is not even a medically recognized ailment. The purpose of the well-being check is not to cure impostor phenomenon. The well-being check is to provide impostor phenomenon sufferers an opportunity to vent and allow licensed professionals to mediate in cases where students may require assistance beyond a space to vent. The biggest fear impostor phenomenon sufferers face is the fear of discovery so a safe environment is of utmost importance where, if only for a brief moment of time, the impostor can relax the exhausting impostor façade.

Recommendations for Future Study

A future study should be replicated that explores the effect and interaction between age and impostor phenomenon. This recommendation is based on results that indicated that age was statistically different at $p < 0.05$. The main effect of age yielded an effect size of 0.043 indicating that 4.3% of the variance in impostor phenomenon was explained by age $F(1, 171) = 7.649, p = .006$. The interaction and effect of age and impostor phenomenon was not a topic of this study as age served as a covariate. For at least three participants, age further negatively affected their self-perception as successful doctoral students. Age may be a factor that predicts impostor phenomenon among doctoral students enrolled in the HSI.

Based on both quantitative and qualitative data, impostor phenomenon among second generation male doctoral students should be further investigated. The literature on impostor phenomenon and generational status focuses on first generation students. I did not locate any literature that references second generation male doctoral students and impostor phenomenon. Further studies will determine if this is a common occurrence or an experience unique to male doctoral students enrolled in the HSI.

Although not a topic of research in this study, impostor phenomenon in relation to race ethnicity at the HSI should also be further investigated. Studies show that impostor phenomenon is present among underrepresented groups in predominantly White institutions. A study should investigate if the same findings are true among underrepresented students at the HSI where the majority of students are Hispanic.

Higher education at the HSI remains uncharted territory for many non-traditional students, “We opened the door and stepped in, but now what?” Non-traditional students continue to navigate those uncharted spaces “on a boat without a map” (Participant 200303-0203). As demonstrated by the responses provided by participants, the navigation is made more

difficult for the student experiencing impostor phenomenon not necessarily because of the absence of resources but because of the inability to personally recognize or identify with those resources.

Despite impostor experiences, this study demonstrated that doctoral students at the HSI are resilient and persistent. Of participants, only one considered stopping out, “There are times I’ve considered quitting but sometimes I just think about it and I like it so much or I don’t know, just pure being stubborn sometimes, just sticking with it” (Participant 200303-0203).

Doctoral students at the HSI who experience impostor phenomenon live in a paradox craving and repelling success. Always under the constant pressure of maintaining an image of success, they are unaware that they deny and perhaps even fear success. In spite of experiencing impostor phenomenon, doctoral students enrolled at the HSI continue to persevere in their academic careers. While their time in higher education is a complex roller coaster of emotions, and the role success plays only further complicates this personal journey, they are ultimately academically successful. Whether the attainment of that Ph.D. or Ed.D. degree constitutes or satisfies personal success remains undetermined.

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APPENDIX A DEMOGRAPHIC QUESTIONNAIRE

1. Please select your current program of study.

Biomedical Engineering
Biosciences
Borderlands History
Business Administration
Chemistry
Civil Engineering
Computational Science
Computer Science
Ecology & Evolutionary Biology
Educational Leadership & Administration

Electrical & Computer Engineering
Environmental Science & Engineering
Geological Sciences
Interdisciplinary Health Sciences
Materials Science & Engineering
Mechanical Engineering
Psychology
Rhetoric & Composition
Teaching, Learning & Culture

2. What is your age?

3. What is your race/ethnicity?

Mexican/Hispanic/Latino/Chicano
Black/African American
Asian/Pacific Islander
Native American
White
Biracial/Multiracial
International

Country of origin

4. Which gender do you identify most with?

Woman
Man

5. Are you a first-generation graduate student? (Neither parent has earned a master's or doctoral degree.)

Yes
No

6. How many years have you spent in the doctoral program?

One year or less
Two years or less
Three years or less
Four years or less
Five or more years

APPENDIX B CLANCE IMPOSTOR SCALE

For each question, please circle the number that best indicates how true the statement is of you. It is best to give the first response that enters your mind rather than dwelling on each statement and thinking about it over and over.

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.

1	2	3	4	5
(not at all true)	(rarely)	(sometimes)	(often)	(very true)

2. I can give the impression that I'm more competent than I really am.

1	2	3	4	5
(not at all true)	(rarely)	(sometimes)	(often)	(very true)

3. I avoid evaluations if possible and have a dread of others evaluating me.

1	2	3	4	5
(not at all true)	(rarely)	(sometimes)	(often)	(very true)

4. When people praise me for something I've accomplished, I'm afraid I won't be able to live up to their expectations of me in the future.

1	2	3	4	5
(not at all true)	(rarely)	(sometimes)	(often)	(very true)

5. 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.

1	2	3	4	5
(not at all true)	(rarely)	(sometimes)	(often)	(very true)

6. I'm afraid people important to me may find out that I'm not as capable as they think I am.

1	2	3	4	5
(not at all true)	(rarely)	(sometimes)	(often)	(very true)

7. I tend to remember the incidents in which I have not done my best more than those times I have done my best.

1	2	3	4	5
(not at all true)	(rarely)	(sometimes)	(often)	(very true)

8. I rarely do a project or task as well as I'd like to do it.

1	2	3	4	5
(not at all true)	(rarely)	(sometimes)	(often)	(very true)

9. Sometimes I feel or believe that my success in my life or in my job has been the result of some kind of error.

1 (not at all true) 2 (rarely) 3 (sometimes) 4 (often) 5 (very true)

10. It's hard for me to accept compliments or praise about my intelligence or accomplishments.

1 (not at all true) 2 (rarely) 3 (sometimes) 4 (often) 5 (very true)

11. At times, I feel my success has been due to some kind of luck.

1 (not at all true) 2 (rarely) 3 (sometimes) 4 (often) 5 (very true)

12. I'm disappointed at times in my present accomplishments and think I should have accomplished much more.

1 (not at all true) 2 (rarely) 3 (sometimes) 4 (often) 5 (very true)

13. Sometimes I'm afraid others will discover how much knowledge or ability I really lack.

1 (not at all true) 2 (rarely) 3 (sometimes) 4 (often) 5 (very true)

14. I'm often afraid that I may fail at a new assignment or undertaking even though I generally do well at what I attempt.

1 (not at all true) 2 (rarely) 3 (sometimes) 4 (often) 5 (very true)

15. When I've succeeded at something and received recognition for my accomplishments, I have doubts that I can keep repeating that success.

1 (not at all true) 2 (rarely) 3 (sometimes) 4 (often) 5 (very true)

16. If I receive a great deal of praise and recognition for something I've accomplished, I tend to discount the importance of what I've done.

1 (not at all true) 2 (rarely) 3 (sometimes) 4 (often) 5 (very true)

17. I often compare my ability to those around me and think they may be more intelligent than I am.

1 (not at all true) 2 (rarely) 3 (sometimes) 4 (often) 5 (very true)

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.

1 2 3 4 5
(not at all true) (rarely) (sometimes) (often) (very true)

19. If I'm going to receive a promotion or gain recognition of some kind, I hesitate to tell others until it is an accomplished fact.

1 2 3 4 5
(not at all true) (rarely) (sometimes) (often) (very true)

20. I feel bad and discouraged if I'm not "the best" or at least "very special" in situations that involve achievement.

1 2 3 4 5
(not at all true) (rarely) (sometimes) (often) (very true)

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Scoring the Impostor Test

The Impostor Test was developed to help individuals determine whether or not they have IP characteristics and, if so, to what extent they are suffering. After taking the Impostor Test, add together the numbers of the responses to each statement. If the total score is 40 or less, the respondent has few Impostor characteristics; if the score is between 41 and 60, the respondent has moderate IP experiences; a score between 61 and 80 means the respondent frequently has Impostor feelings; and a score higher than 80 means the respondent often has intense IP experiences. The higher the score, the more frequently and seriously the Impostor Phenomenon interferes in a person's life.

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Permission To Use the Clance Impostor Phenomenon Scale (CIPS)

Please find attached the requested Clance IP Scale and scoring instructions. This correspondence constitutes permission to use the scale. I request that on each CIPS you use/distribute, that you have the copyright and permission information printed on each page:

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APPENDIX C INTERVIEW QUESTIONS

1. Do you consider yourself academically successful? What about outside academia?
2. What factor or factors do you attribute for your academic success (or lack of academic success)?
3. How do you prepare for a successful outcome?
4. What do you attribute to your continual presence in your doctoral program?
5. Do you compare yourself to your peers and if so in what ways? If you do not compare yourself to peers, why not?
6. Do you receive praise or compliments from faculty or from other students? How does that make you feel?
7. Do you ever think that faculty or peers overestimate your abilities? How does that make you feel?
8. If they do not overestimate or acknowledge your abilities, how does that make you feel?
9. What about you? Do you think you overestimate or underestimate your abilities?
10. Do you ever feel like a phony or a fraud? Describe a situation that makes you feel like a phony or a fraud.
11. What do you do when you are feeling like a phony or a fraud? How do you express those feelings?
12. Can you describe situations that you think may lead to emergence of feeling of phoniness or fraud?
13. In conclusion what advice would you share about dealing with impostor phenomenon?

APPENDIX D SURVEY COVER LETTER

Hi,

My name is Olympia Caudillo and I am a doctoral student in the Educational Leadership and Administration Ed.D. program here at HSI. I am writing to invite you to participate in my dissertation research project exploring experiences of impostor phenomenon (IP) among Ph.D. and Ed.D. students. You are eligible to participate in this study because you are currently enrolled and pursuing a Doctor of Philosophy (Ph.D.) degree or a Doctor of Education (Ed.D.) degree. I obtained your contact information from an open records data request submitted to the HSI Registration and Records Office.

The study consists of two sections: a 15-minute online survey and a potential one-hour interview. Participation is voluntary and your responses are anonymous. You may choose to complete the survey only or to complete the survey and potentially volunteer to participate in a one-hour interview or you may choose not to participate in this study.

If you have any questions, please do not hesitate to contact me at ocaudillo2@hsi.edu

Thank you for your time.
Olympia Caudillo
Doctoral Candidate, Ed.D. EDLA

APPENDIX E IRB EXEMPT APPROVAL

Institutional Review Board

Date: October 15, 2019

To: Olympia Caudillo, B.A., M.Ed.

From: IRB

Study Title: [1502784-1] A mixed methods study of imposter phenomenon among Ph.D. and Ed.D. students enrolled in a Hispanic Serving Institution

IRB Reference #:

Submission Type: New Project

Action: EXEMPT

Review Type: Exempt Review

Approval Date: October 15, 2019

Expiration Date: October 14, 2021

The application for the above referenced study has been reviewed. This study qualifies as exempt from review under the following federal guidelines: [45 CFR 46.104(d)(2)].

If institutional data (secondary or other) will be used for this research project please verify with the applicable department that such data may be used. Additional institutional clearances and approvals may be required. Accordingly, the project should not begin until all required approvals have been obtained.

Exempt protocols do not need to be renewed. Please note that it is the Principal Investigator's responsibility to resubmit the proposal for review if there are any modifications made to the originally submitted proposal. This review is required in order to determine if "Exemption" status remains.

This exemption does not relieve the investigators of any responsibilities relating to the research subjects. Research should be conducted in accordance with the ethical principles as outlined in the Belmont Report.

You should retain a copy of this letter and any associated approved study documents for your records.

We will put a copy of this correspondence on file in our office.

APPENDIX F TABLES FOR SKEWNESS, KURTOSIS & NORMALITY

Descriptives

		Statistic	Std. Error	
Total Score for Impostor	Mean	62.52	1.335	
Phenomenon Scale	95% Confidence Interval for	Lower Bound	59.88	
	Mean	Upper Bound	65.15	
	5% Trimmed Mean		62.88	
	Median		64.50	
	Variance		324.384	
	Std. Deviation		18.011	
	Minimum		10	
	Maximum		96	
	Range		86	
	Interquartile Range		30	
	Skewness		-.297	.180
	Kurtosis		-.655	.358

Tests of Normality

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Total Score for Impostor	.085	182	.003	.974	182	.002
Phenomenon Scale						

a. Lilliefors Significance Correction

APPENDIX G EFFECTS OF BETWEEN SUBJECTS EFFECTS

Dependent Variable: Total Score for Impostor Phenomenon Scale

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power ^b
Corrected Model	5954.294 ^a	8	744.287	2.413	.017	.101	19.302	.888
Intercept	63761.969	1	63761.969	206.695	.000	.547	206.695	1.000
V2 (age)	2359.639	1	2359.639	7.649	.006	.043	7.649	.785
V4 (gender)	919.969	1	919.969	2.982	.086	.017	2.982	.404
V5 (generation status)	3.085	1	3.085	.010	.920	.000	.010	.051
Type of Program	32.385	1	32.385	.105	.746	.001	.105	.062
V4 * V5	403.726	1	403.726	1.309	.254	.008	1.309	.206
V4 * Type of Program	324.791	1	324.791	1.053	.306	.006	1.053	.175
V5 * Type of Program	.410	1	.410	.001	.971	.000	.001	.050
V4 * V5 * Type of Program	5.093	1	5.093	.017	.898	.000	.017	.052
Error	52750.684	171	308.484					
Total	762080.000	180						
Corrected Total	58704.978	179						

a. R Squared = .101 (Adjusted R Squared = .059)

b. Computed using alpha = .05

VITA

Olympia Caudillo earned the Doctor of Education degree from in 2021.

She has worked in higher education for over twenty years.

Contact: olycau@gmail.com