

Intervening in the Doctor of Philosophy (PhD) Nursing Shortage: Self-Efficacy, Enrollment
Interventions, and Doctor of Nursing Practice (DNP)-to-PhD Experiences

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Dedication

I dedicate this dissertation to the individuals who have been a steadfast source of encouragement for me while I undertook my PhD: my husband James and our daughter Lucia, my parents Matt and Rene Brothers, friends Sara and Wes Kennedy, and many others, including my brother, in-laws, extended family, and friends from church as well as previous seasons of life. James, observing your ambition and drive has taught me to step outside of my comfort zone, have self-efficacy, and throw open the doors of possibility to see where they might lead. Thank you, truly, for never discouraging my dreams but remembering them and reminding me when I grow weary or forget. My life is better because of you. Lucia, my precious girl, most of your three and a half years have been spent watching Mommy tackle her PhD. I love having you by my side each day; we make a good team. You serve as both an inspiration for and a respite from my work. What a treasure you are! I hope and pray that my work will inspire you to chase after your own dreams one day. Mom and Dad, it's because of you that I was equipped for this journey. Between your example and being raised on a busy farm, I internalized three essential values for doctoral pursuit: perseverance, independence, and integrity. Thank you for setting me up for a successful life. Sara and Wes, you have been faithful friends through the ups and downs of my PhD. Thanks for your support in countless ways but especially our Friday night dinners, morning get-togethers, and text chains that make me laugh and feel loved. To all others who have encouraged me with words, hugs, smiles, and acts of kindness, I am incredibly grateful. I do not deserve the goodness each of you brings to my life. Last, but most important: My God, I thank you for planting dreams in my heart, nourishing them with your matchless love, giving me opportunities to fulfill them, walking with me through the sweet and bitter parts, and supplying me with those listed above to help me grow. May all that I do honor You.

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Abstract

This dissertation was conducted to understand the ongoing shortage of Doctor of Philosophy (PhD)-prepared nurses using a compilation of three studies. First, a concept analysis of graduate student self-efficacy was completed using Rodgers' Evolutionary Method. An analysis of 23 studies revealed that graduate student self-efficacy's antecedents are perceived positive experiences; its attributes are personal, malleable, goal-driven, a resource, knowledge, and trust; and its consequences are productive thoughts, feelings, and actions as well as successful outcomes. Second, an integrative literature review of PhD enrollment interventions was guided by Whittemore and Knafl's methodology and Garrard's Matrix Method. Evaluation of 18 studies showed that faculty mentoring, hands-on research, funding and compensation, undergraduate participation, summer timeframe, informational sessions, and social support were all common characteristics of successful strategies. Finally, a qualitative study was conducted with existential phenomenological methods to understand the meaning of choosing to pursue a PhD as a Doctor of Nursing Practice (DNP)-prepared nurse. Interviews from 10 DNP-to-PhD students were analyzed, uncovering the essence of the phenomenon (*On a Mission*), its ground (the *Nursing Hierarchy*), and five figural themes: (a) *Having Needs the DNP Can't Meet*: "I had to go back and do more," (b) *Considering Dreams and Circumstances*: "Now's the time," (c) *Developing Confidence*: "You can do this!" (d) "I've been very supported" / "I had no support," and (e) "It had to be an internal drive for me." Looking across the three studies, factors impacting PhD interest, enrollment, and retention became evident. Implications for increasing the PhD nursing workforce are discussed.

Table of Contents

Chapter 1: Introduction	1
Abstract	2
The Problem	3
Significance	4
Overall Aims and Research Overview	7
Conclusion	13
References	14
Chapter 2: Graduate Student Self-Efficacy: Implications of a Concept Analysis	20
Abstract	21
Methods	23
Discussion	37
Conclusion	43
References	45
Appendix	53
Chapter 3: Interventions to Boost Enrollment in Nursing Doctor of Philosophy (PhD) Programs	59
Abstract	60
Methods	63
Findings	66
Discussion	76
Conclusion	81
References	83
Appendix	95
Chapter 4: On a Mission: Experiences of Doctor of Nursing Practice (DNP)-Prepared Nurses Choosing to Pursue a Doctor of Philosophy (PhD)	109
Abstract	110
Methods	113
Findings	116
Discussion and Recommendations	127
Conclusions	133
References	135
Appendix	141
Chapter 5: Conclusion	144
Abstract	145
Overarching Themes of the Three Studies	146

The DNP-PhD Experience through the Lens of Social Cognitive Career Theory	150
Implications and Recommendations	154
Conclusion	162
References.....	164
Appendix.....	170
Vita.....	171

List of Tables

Table 2.1: Defining Terms for the Attributes of Graduate Student Self-Efficacy	53
Table 3.1: Quantitative Studies Reviewed (n = 12)	95
Table 3.2: Qualitative Studies Reviewed (n = 6)	102
Table 3.3: Common Components of PhD Enrollment Strategies	106
Table 4.1: Gender, Race/Ethnicity, and PhD Institution Location of Sample and PhD Student Population	141
Table 4.2: Demographics of DNP-PhD Students.....	142

List of Figures

Figure 2.1: Concept Diagram of Graduate Student Self-Efficacy	58
Figure 3.1: Building Blocks for Database Searching.....	107
Figure 3.2: Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) Flow Chart	108
Figure 4.1: The Experience of Choosing to Pursue a Doctor of Philosophy (PhD) as a Doctor of Nursing Practice (DNP)-Prepared Nurse	143
Figure 5.1: Linking Phenomenological Themes to Social Cognitive Career Theory Choice Model (Lent & Brown, 2019)	170

Chapter 1
Introduction

Abstract

Nurses prepared with a Doctor of Philosophy (PhD) degree are a small fraction of the overall nursing workforce, but their work is vital to the nursing profession and to the provision of healthcare in the United States. Out of concern for the dwindling numbers of PhD nurses, this dissertation seeks to inform PhD program recruitment and retention efforts through research on the concept of graduate student self-efficacy, strategies for boosting PhD enrollments, and experiences of nurses with a Doctor of Nursing Practice degree who are pursuing their PhD. Together, this body of work has important implications for educators, students, researchers, organizational leaders, and policy advocates.

Nurses with a Doctor of Philosophy degree or other research doctorate (hereafter, PhD) are only a few drops in the ocean of the largest healthcare profession in the United States, which totals over 5 million nurses (Smiley et al., 2021). However, despite their small numbers, PhD-prepared nurses are vital to the profession. They are scientists, generating new knowledge through independent research (American Association of Colleges of Nursing [AACN], 2020b), and they also function as knowledge brokers who bridge the gap between the scientific community and the public (Thompson & Schwartz Barcott). Some serve as policy advocates, helping lawmakers understand healthcare issues from the nursing perspective. Most are educators, overseeing future generations of nurses as they learn to provide patient care (Broome & Fairman, 2018). PhD-prepared nurses are leaders of the nursing profession, but they comprise only 0.7% of the total nursing population (Smiley et al., 2021).

The Problem

The nursing workforce has steadily grown over the last century (D'Antonio & Whelan, 2009), expanded significantly in the 2000s (Health Resources and Services Administration, 2013), and continues to increase (Smiley et al., 2021). However, growth of PhD-prepared nurses has been stagnant in recent years, and their ranks are expected to decline due to PhD nurse retirements and low PhD program enrollment and graduations. Most nurses with a PhD work in academic settings, and 66.1% of PhD faculty were 60 or older in 2015, leading Fang and Kesten (2017) to project that, among anticipated faculty retirements by 2025, 44% will be nurses with a PhD.

Graduation and enrollment data are even more discouraging. Despite 25 new PhD nursing programs being created from 2009 to 2021, PhD enrollment actually trended down for the last eight years, peaking in 2013 at 5122 enrollments and declining to 4476 in 2021, the lowest yearly enrollment since 2009 (AACN, 2019a; AACN, 2021b). In 2020, AACN leaders reported a meager 1% increase in PhD enrollment (Bakewell-Sachs & Trautman, 2021), a small gain that was quickly undermined by a 3.2% decrease in enrollment the following and most recent year (Bakewell-Sachs & Trautman, 2022). Annual

PhD graduations hovered between 601-802 each year from 2011 to 2021, remaining in the 700s since 2014 (AACN, 2021b). With enrollment trending down for the last eight years, graduations will follow.

Doctor of Nursing Practice (DNP) Workforce

Closely intertwined with the PhD nursing workforce is the workforce comprised of those with a Doctor of Nursing Practice (DNP) degree. The DNP serves as nursing's practice doctorate and is the newest educational pathway in nursing, endorsed by the AACN in 2004 (AACN, 2020). Since 2009 DNP programs have proliferated across the US and have enrolled students at an exponential rate (AACN, 2019a; Smiley et al., 2021). DNP enrollment increases are beginning to taper, with only a 3.2% increase in 2021 (Bakewell-Sachs & Trautman, 2022) compared to a 9.2% increase in 2020 (Bakewell-Sachs & Trautman, 2021). However, overall numbers continue to grow, as most recent data from AACN leadership shows that 395 DNP programs had 40,817 enrollments and 10,086 graduations (Bakewell-Sachs & Trautman, 2022). These numbers contrast sharply with PhD enrollments and graduations.

Significance

Enrollment trends, if they remain steady, show that nurses with a DNP will soon far outnumber those with a PhD (Yancey, 2020). Recognizing the risks of having too few PhD-prepared nurses, the AACN (2006, 2022b), National League for Nursing (2013), and the National Advisory Council on Nurse Education and Practice [NACNEP] (2020) have called for more nurses to matriculate into PhD programs, and the Institute of Medicine (now the National Academy of Medicine [NAM], 2011) issued a strong recommendation to double the number of doctorally-prepared nurses in their landmark *Future of Nursing* report. Some have argued that the rise in DNP graduations over the last 10 years has enabled the NAM's goals to be achieved (Ea et al., 2021). However, the NAM's five-year *Future of Nursing* progress report highlighted the concerning imbalance in doctoral nursing degrees and advocated for increased PhD enrollment (National Academies of Science, Engineering, and Medicine, 2016). While the growing

number of DNP-prepared nurses is encouraging, the lack of a reciprocal increase in PhD enrollments raises concern for multiple stakeholders.

Effects on Nurses and Nursing Higher Education

Nursing is a practice-based profession. As such, much of nursing education prepares nurses to employ skills they will need for patient care. However, nursing skills alone are inadequate to meet the needs of the individual patient and promote the health of society at large. Nurses must also be able to think critically, remain current in their practice, and demonstrate leadership in their workplace and community. DNP- and PhD-prepared nurses fill vital—yet somewhat different—roles in academia to equip nurses with these latter capabilities. Through their unique understanding of nursing theory and the conduct of research, PhD faculty provide the foundational knowledge nursing students need to begin their practice (Yancey, 2020). DNP faculty, on the other hand, have distinctive expertise in implementation science, ensuring that the foundational knowledge provided by PhD faculty remains rooted in practice (Yancey, 2020). Both PhD and DNP faculty educate students in leadership principles, but DNP leadership is often oriented toward the clinical environment (Sherrod & Goda, 2016), while PhD leadership tends to be directed toward academic, organizational, or research environments (Morris et al., 2021).

As the number of DNP faculty outpace PhD faculty in nursing academic settings, nursing students will no longer receive foundational education from those who are best equipped to teach theory and research courses (Yancey, 2020). Additionally, with fewer PhD faculty present in nursing schools relative to the number of DNP faculty, students will have fewer interactions with PhD faculty who could inspire them to pursue their own PhD, further decreasing the PhD-prepared nursing workforce. Another possible outcome of fewer PhD-prepared nursing faculty is diminished influence in the greater academic institutional environment. The PhD, as a degree that runs across disciplines and has an established place in academia and research, holds significant weight with professors and clinicians from disciplines outside of nursing (Meleis & Dracup, 2005; Zoucha, 2020). Scarce numbers of PhD-prepared nurses in schools of

nursing may unintentionally decrease nursing's clout at academic institutions, and fewer faculty with a sustained program of research will inevitably lead to decreased tenure-track positions (Zoucha, 2020).

Effects on Healthcare Organizations and Patients

Healthcare organizations and patients stand to gain from a larger cadre of DNP-prepared nurses. Though studies have shown that healthcare employers often fail to understand the value of a DNP over a master's-prepared nurse (McCauley et al., 2020), DNP-prepared nurses report having greater leadership capabilities and better ability to affect system-wide change with their degree (Bowie et al., 2019). DNP programs require 1000 practice hours (Commission on Collegiate Nursing Education [CCNE], 2019) compared to 500 hours for master's APRN programs (CCNE, 2016), and they focus heavily on research implementation, culminating in a scholarly project. Nurses with a DNP who enter the healthcare workforce, therefore, are better poised to provide evidence-based patient care. Healthcare organizations and patients also benefit from additional APRNs being available to boost the healthcare workforce, particularly in primary care and mental health. Despite the exponential growth of DNP programs (AACN, 2019a, 2021a) and their original intent to replace master's nursing programs, the number of master's programs has not diminished (McCauley et al., 2020). Since at least 44% of DNP students intend to work in clinical practice upon graduation (Fang & Bednash, 2017), more APRNs are being deployed to the healthcare workforce with each additional DNP program opening.

However, without commensurate growth in the number of nurses graduating with a PhD, the gains experienced by healthcare organizations and patients from DNP growth are at risk of being stunted. Clear distinctions between DNP- and PhD-prepared nurses' roles in research have been articulated by numerous nurse leaders and organizations (e.g., AACN, 2019b, Broome & Fairman, 2018; Canady, 2020; Institute of Medicine, 2011; McSweeney et al., 2018; NACNEP, 2020). PhD education prepares nurses to conduct independent research, and DNP education prepares nurses to implement that research into practice. As the number of nurses with a PhD dwindle via increased retirements of current PhD holders (Fang & Kesten, 2017) and decreased graduations of new PhD recipients (AACN, 2019a, 2021a), the

research available for implementation in practice by DNPs will likely decline as well (McSweeney et al., 2018; Zoucha, 2020). Additionally, though most PhD-prepared nurses work in academic settings (Fang et al., 2016; Ketefian & Redman, 2017), some serve in research positions at healthcare organizations (Polomano et al., 2021; Trautman et al., 2018). These roles may become harder to fill in future years if PhD enrollment continues to remain stagnant. Ultimately, fewer nurses with a PhD will have the greatest effect on patients (Zoucha, 2020). Nurses apply a holistic perspective to patient care, have a keen understanding of patient concerns due to their direct care and advocacy for their patients, and display a consistently honest and ethical character to the public (Saad, 2022). Nurses who enter PhD programs have been formed by these unique qualities of the nursing discipline, and over 85% have experience in direct patient care (Fang, 2017). If their contributions to research diminish over time, evidence-based practices will be missing the crucial perspective nurses bring to healthcare science.

Overall Aims and Research Overview

Thus, the challenges facing the nursing profession, nursing education, healthcare organizations, and patients due to PhD nursing shortages are considerable. Nursing's PhD workforce is already in a deficit, so concerted efforts are needed to reverse the negative trajectory and ensure future growth of this essential group of nurses. This research aims to inform PhD recruitment and retention efforts, thereby increasing the number of PhD-prepared nurses in the coming years. Through three separate studies: (a) a concept analysis, (b) an integrative review of literature, and (c) a qualitative research study, I seek to provide a holistic view of the PhD nursing shortage in the hopes of generating interventions that will address the problem on many fronts.

I first attempted to understand the problems plaguing the PhD nursing workforce by examining the concept of self-efficacy among graduate students in regard to program recruitment, retention, and graduation (Muñoz, 2021). Social Cognitive Career Theory (Lent et al., 1994), a prominent career theory that holds self-efficacy as one of its three core constructs, contends that self-efficacy is integral to understanding and predicting a person's interest, choice, and performance in academic and career

pursuits. I had intended to examine self-efficacy specifically among *nursing* graduate students, but so little research was found that I broadened the topic to include self-efficacy among graduate student populations in any discipline. In this work, outlined in Chapter 2, I discovered that the antecedents to graduate student self-efficacy are perceived, positive experiences (Muñoz, 2021). Graduate student self-efficacy is a personal, malleable, goal-driven resource of knowledge and trust, and it leads to productive thoughts, feelings, and actions that eventuate in successful outcomes. Though I suggested ways that graduate student self-efficacy likely contributes to nurses' graduate school decisions, I acknowledged that additional qualitative work was needed to better understand this largely unexplored topic within nursing.

Desiring to focus specifically on PhD pursuits, I then conducted an integrative literature review of successful PhD enrollment strategies, which can be found in Chapter 3 (Muñoz, 2022). Once again, I intended to examine only strategies within the nursing discipline but found such a dearth of information that it was necessary to expand the scope of the review to include PhD enrollment strategies from any discipline. I discovered that most strategies had common components, such as hands-on research experience and faculty mentoring, but only one strategy had been used with a nursing student sample. Successful PhD enrollment strategies were concentrated in science, technology, engineering, or mathematics (STEM) fields and even those from other disciplines had significant limitations that made transferring the findings to a nursing context challenging.

Additionally, I found that, before strategies for PhD enrollments could be designed, implemented, and tested within nursing, nurse researchers must first garner a better understanding of the factors that draw nurses to PhD education or drive them away. Previous work to examine nurses' doctoral decision-making has largely involved the use of descriptive quantitative and qualitative methods (e.g., surveys and semi-structured interviews; Muñoz, 2022), leading to many *explanations* about the phenomenon but few richly descriptive *experiences*. Using qualitative methods with unstructured interviews to explore students' experiences might reveal major themes related to students' PhD decisions, which would then provide guidance for PhD enrollment strategies that would be successful in nursing populations.

Based on the findings of my literature review and the current state of doctoral education within nursing, I decided to conduct an existential phenomenological study of students who have completed the DNP degree and are currently pursuing a PhD in nursing. Before describing this third and final study, I will next discuss the challenges facing the DNP degree and describe the DNP-to-PhD phenomenon.

Challenges Facing the DNP Workforce

With the rapid expansion of DNP programs and students has come confusion about the degree's purpose and its graduates' career outcomes. DNP programs were initially created to prepare advanced practice registered nurses (APRNs) and replace Master of Science in Nursing (MSN) programs, but many students enrolling in DNP programs intend to work in education or administration (Dreifuerst et al., 2016; McCauley et al., 2020; Yancey, 2020). Fang and Bednash (2017) reported that 32% of their DNP student sample hoped to work in an academic setting after graduation. Studies have also shown that healthcare employers sometimes fail to understand the value of a DNP over a master's-prepared APRN (McCauley et al., 2020), which may lead to frustration for those who obtain a DNP. Additionally, prior research of DNP-prepared nurses seeking a PhD in nursing education identified a lack of acceptance that DNP-prepared faculty feel in academic roles (Sebach & Chunta, 2018). Nurses with a PhD, meanwhile, have had a relatively clear and consistent trajectory as the degree for professors, scientists, and leaders of the profession (Meleis & Dracup, 2005).

The DNP-to-PhD Phenomenon

Perhaps for these reasons, a small yet significant number of DNP-prepared nurses are returning for a PhD in nursing, and PhD program directors are noticing and responding to the demand. "Bridge" programs have been created to allow DNP-prepared nurses to utilize some of their DNP credits toward their PhD, thereby shortening their time to degree (Indiana University of Pennsylvania, n.d.). According to the AACN (2021a), 34 DNP-to-PhD programs existed at the time of their annual enrollment and graduation survey in 2020, and eight more were in the planning stages. While the AACN does not collect

data on DNP-to-PhD enrollment specifically (D. Fang, personal communication, February 7, 2022), their data shows that 121 students were enrolled in either DNP-to-PhD bridge programs or DNP/PhD dual degree programs in Fall 2020 (AACN, 2022a). Some DNP-prepared nurses also enroll in traditional PhD programs, taking coursework alongside MSN-prepared students.

Only two studies of DNP-to-PhD students have been conducted. Sebach and Chunta (2018) examined the experiences of six students in a single DNP-PhD bridge program with an emphasis on nursing education using qualitative descriptive methods with semi-structured interviews. They found that students returned for a second terminal degree to be accepted in nursing academia, to learn how to become an effective nurse educator, and to have a more prestigious degree for teaching and research work. Sebach and Chunta's work, while providing the first examination of DNP-PhD students, was limited by a homogenous sample who were focused on academic careers. Additionally, bias may have been introduced in the findings, as the participants were interviewed by a fellow classmate.

Greco (2019) conducted a heuristic, descriptive phenomenological study using semi-structured interview questions of 12 DNP-PhD students. He discovered three themes related to the experience of obtaining a PhD by DNP-prepared nurses: (a) students felt they had more to learn after obtaining their DNP; (b) they were seeking advancement in academia or acceptance in research-related work; (c) and their PhD experience was fraught with challenges. This study contained multiple limitations, though none were listed in the article itself. The themes were not substantiated by the quotes provided in the article, and it remained unclear whether the researcher himself was a DNP-PhD student at the time of the study. As with Sebach and Chunta's (2018) study, findings could have been biased if the researcher examined students at his own university. Perhaps most concerning, however, is that this article is published in a journal with predatory features (e.g., open-access, not indexed in Medline; Oermann et al., 2016), which would call into question the standards by which the manuscript was reviewed.

While these two studies provided a foundational understanding of the DNP-to-PhD phenomenon, both were missing a clear description of the philosophical underpinnings of the chosen methodology,

employed semi-structured interview questions which may have affected what participants decided to share, and either used a homogeneous sample (Sebach & Chunta, 2018) or provided inadequate information about the sample's composition (Greco, 2019). Therefore, with these limitations, it became evident that the reasons for nurses' pursuit of a second terminal degree remained unclear.

Third Study

Thus, in my third study, which is outlined in Chapter 4, I sought to understand the DNP-to-PhD experience by utilizing a diverse sample of DNP-to-PhD students and by employing existential, hermeneutic phenomenological methods, which are rooted in the philosophy of Maurice Merleau-Ponty (1945/2012). In this vein of phenomenology, participants are asked to share what stands out to them about their experience, and unstructured follow-up questions allow for a natural flow of conversation during the interview (Thomas & Pollio, 2002). This interview style provides for rich data that is not inhibited by the researcher's preconceived notions about the phenomenon (Sohn et al., 2017). Hence, DNP-PhD students could relate the experiences that were most figural to them rather than the experiences they perceived I was interested in. By examining DNP-prepared nurses' everyday, real-life experiences of their PhD pursuit, information missing from the current narrative on doctoral decision-making was brought to light.

Some findings from this third study were anticipated and aligned with previous research, while others were surprising and even shocking. Nurses with the practice doctorate sought the PhD because they were on a mission. Each mission was unique to the participant, but all saw acquiring the PhD as integral to achieving it. Participants' experiences played out on a backdrop of the nursing hierarchy, with the PhD located at the pinnacle. This hierarchy was implicit within nursing, seen by participants as a foregone conclusion in clinical practice and especially academia.

Figural Themes

Five figural themes emerged from the interviews. First, DNP-to-PhD students recognized that they had needs the DNP could not meet; they "had to go back and do more." Some were unhappy with

their DNP and viewed DNP education negatively. Their frustration with the degree fueled their motivation to pursue a PhD. For others, the DNP had served them well, but time and experiences had led to new interests or passions for which only the PhD could assist them.

The second major theme came from participants' descriptions of specific moments when they knew the PhD was right for them. They considered their long-held dreams and life circumstances and said to themselves and others, "Now's the time." Major events in their lives often affected their educational timeline, and they had to choose doctoral programs that made sense to them given their responsibilities, learning preferences, and career expectations.

Developing confidence for the PhD comprised the third theme. Most participants described being intimidated by the PhD before enrolling, and, for some, these feelings continued even *during* the program. However, getting to know others who had completed a PhD helped it seem less daunting, and a few pointed out the confidence boost that came from having one doctoral degree already. At various points along the pathway to the PhD, they told themselves, "You can do this!"

The fourth theme was related to support. Participants either enjoyed tremendous support or felt vulnerable in its absence. Many described the overwhelming support of supervisors, colleagues, and family. Encouragement from others helped participants make the leap into PhD education or served to confirm that their PhD plans were worthwhile. However, some experienced a lack of support from key mentors whom they felt had let them down or taken advantage of them. A lack of support in the DNP program served as the catalyst for two participants' PhD pursuit, while another's unsupportive experiences in the PhD program almost led her to drop out.

Finally, the fifth theme centered on the internal drive that was apparent in each participant. These DNP-to-PhD students had a love of learning and a strong desire to further themselves and others, both of which helped them persevere through the challenges they faced. A few had to overcome setbacks related to their health; some were met with others' doubt and discouragement; and others had various personal

struggles that had to be addressed before or during their PhD. However, participants recognized a tenacity within themselves that would not allow them to give up on their degree. Come hell or high water, they were “going to get this [PhD] done.”

Conclusion

These three studies, a concept analysis of graduate student self-efficacy (Muñoz, 2021), an integrative review of PhD enrollment strategies (Muñoz, 2022), and phenomenological research of the DNP-to-PhD experience, build on each other, providing a more holistic view of the factors surrounding the PhD nursing shortage. This research leads to important implications for educators, students, researchers, organizational leaders, and policy advocates, all of which are discussed in Chapter 5. Tackling the lack of PhD-prepared nurses from multiple angles will help to bolster the ranks of PhD nurses and ensure that nursing’s influence in research, leadership, and education continues, to the benefit of the individual patient and society as a whole.

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Chapter 2

Graduate Student Self-Efficacy: Implications of a Concept Analysis

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Abstract

Nurses with graduate degrees play pivotal roles in nursing care, education, and research. Alarming trends of a nurse faculty shortage and high levels of graduate nursing student attrition highlight the need to better understand the experiences of graduate nursing students. The purpose of this paper is to define the concept of self-efficacy in graduate students as it pertains to enrollment, retention, and graduation. Using Rodgers' Evolutionary Method of concept analysis, self-efficacy was analyzed from the literature of various disciplines, including nursing. Antecedents, attributes, and consequences of self-efficacy were identified from 23 studies. Self-efficacy in graduate students is sourced by perceived, positive experiences. Its attributes are personal, malleable, goal-driven, a resource, knowledge, and trust. Graduate student self-efficacy results in productive thoughts, feelings, and actions that culminate in successful outcomes. Self-efficacy has been identified by researchers in other disciplines as a helpful concept for understanding why and how graduate students initiate, continue, and complete their degrees. With a dearth of research exploring nursing graduate student self-efficacy, qualitative research is needed to understand the role this concept plays in nursing education. Nevertheless, the findings of this concept analysis may serve as a starting point to inform nursing graduate education practice.

Keywords: graduate nursing students, self-efficacy, graduate education, evolutionary concept analysis

Nurses are the largest portion of the healthcare workforce (American Association of Colleges of Nursing [AACN], 2019a) and are thus vital to healthcare. The Institute of Medicine (IOM, 2011) has called for 80% of registered nurses to be prepared at the baccalaureate level and has recommended that the number of nurses with a doctoral degree double by 2020. However, these recommendations are far from being met (AACN, 2019a). The health of our nation's citizens depends on more nurses attending graduate school, so they can provide higher levels of patient care, educate future nurses, and conduct research for the benefit of the population at large (IOM, 2011).

Individuals with greater self-efficacy are more likely to take on difficult tasks (Imus et al., 2017) like attending graduate school. They are also more apt to continue in their educational efforts and achieve their academic goals (Ferla et al., 2010). With low enrollment numbers, particularly for Doctor of Philosophy (PhD) programs (AACN, 2018), and attrition rates in nursing graduate programs between 46.8% and 70% (Dean, 2017), it is imperative that we understand the role self-efficacy plays in helping nurses start and finish their schooling.

The concept of self-efficacy was identified over 40 years ago by psychologist Albert Bandura (1977). He describes self-efficacy as "people's beliefs about their capabilities to produce designated levels of performance that exercise influence over events that affect their lives" (Bandura, 1994, p.71). Since Bandura introduced the concept of self-efficacy to the scientific community, it has proven to be an important concept for explaining and predicting behavior (Bandura, 1997). Self-efficacy impacts how much effort a person will put forward to achieve their goals and whether an individual will persevere through obstacles that arise on the way to those goals (Bandura, 1982). People with low self-efficacy are prone to giving up or decreasing their effort in the face of difficulties. Those with high self-efficacy, on the other hand, will expend greater energy in order to persevere through challenges.

Self-efficacy, as it relates to nursing students, has been evaluated for its application to clinical learning (Townsend & Scanlan, 2011) and teaching methods (Robb, 2012). However, self-efficacy's role in graduate nursing education appears to be understudied. This concept analysis was undertaken to define

self-efficacy in the context of graduate students at large, with the goal of determining how self-efficacy applies to nursing graduate students.

Methods

Rodgers' Evolutionary Method of concept analysis was utilized to clearly define self-efficacy as it is used in research of graduate students. The Evolutionary Method is systematic (Tofthagen & Fagerstrom, 2010), with six steps in the process of clarifying a concept (Rodgers, 2000): (a) identify the concept and surrogate terms; (b) identify the setting and sample for data collection; (c) collect data on the concept in regard to attributes and context; (d) analyze data by attributes and contextual factors; (e) provide an example of the concept in use, if appropriate; and (f) identify implications, hypotheses, and future development needed. Rather than focusing on the essential attributes of a concept, the Evolutionary Method emphasizes the use of the concept (Rodgers, 2000). Thus, this method recognizes the way that a concept's defining characteristics rely heavily upon contextual factors. Rodgers (2000) states, "The development of a concept for a person takes place with guidance from the social context in which the person interacts and develops concepts" (p. 78).

Self-efficacy's relevance for a wide variety of behaviors has led to extensive use of the concept in the literature of many disciplines and for countless research questions. Accordingly, the Evolutionary Method's significant attention to context provides an advantage in analyzing self-efficacy. This method allows the unique aspects of self-efficacy in particular contexts to become evident.

Self-efficacy's broad application has also led to generalized definitions of the concept by Bandura (1994, 1997), definitions which are frequently cited in the literature. However, the all-encompassing nature of Bandura's and others' definitions of self-efficacy renders the concept's application to specific situations and populations difficult to discern. Rodgers' Evolutionary Method, however, can provide clarity on the definition of self-efficacy explicitly for graduate students.

Data Collection

The Cumulative Index to Nursing and Allied Health Literature (CINAHL), Educational Resources Information Center (ERIC), Education Source, PsycINFO, Scopus, and Web of Science were searched to gather a comprehensive sample for analysis. Database searching began on September 18, 2019 and was completed on October 23, 2019. In order to locate appropriate literature, surrogate terms of personal efficacy and perceived efficacy were added to self-efficacy as search terms. Additional search terms, developed with the help of a health sciences librarian, helped to limit the literature to appropriate articles.

Inclusion and exclusion criteria ensured that the sample of literature was relevant to the goals of the concept analysis. Only original, empiric research articles were included because one of the goals of the concept analysis was to examine self-efficacy for its potential use in research and educational practice in order to attract and retain more nurses for graduate school. Limiting the analysis to primary sources was pivotal to this goal, as secondary literature may not describe the concept of self-efficacy as it was actually conceptualized in research of graduate students. Included articles were those that focused on self-efficacy as it relates to the enrollment, retention, and/or completion of graduate education (both doctoral and master's). Articles were not included if they focused on undergraduate students' intent for graduate school because intent and behavior are not entirely equivalent. Studies of former graduate students were included, as were studies with both undergraduates and graduate students, provided the graduate students were analyzed and discussed separately. Articles that studied self-efficacy in highly unique populations (e.g., graduate students who are incarcerated) were also excluded because they are not generalizable to the population of focus for this concept analysis.

ERIC provided the bulk of the articles retrieved with 141 results. PsycINFO, Scopus, and Education Source each yielded 20 articles. Four articles were retrieved from CINAHL, and 18 came from Web of Science. After duplicates were removed, 176 articles remained. All abstracts were read to assess the remaining articles against the inclusion and exclusion criteria. This left 27 articles for full analysis.

However, four articles were removed after review of the full manuscript revealed that they did not fit the inclusion criteria. In total, 23 articles were analyzed.

Data Analysis

Surrogate terms and related concepts were recorded and tallied as they were discovered in the literature. Rodgers (2000) states that thematic analysis should be conducted by “organizing and reorganizing similar points in the literature until a cohesive, comprehensive, and relevant system of descriptors is generated” (p. 95). Using this technique, antecedents, attributes, and consequences of self-efficacy were identified.

Surrogate Terms

Surrogate terms are words authors use interchangeably with the concept (Rodgers, 2000). Efficacy was the most commonly cited surrogate term throughout the literature analyzed. Efficacy was also found in some of the phrases used as surrogate terms such as efficacy beliefs (Dunn & Rakes, 2015; Grunert & Bodner, 2011; Ward & Dixon, 2012), sense of efficacy (Dunn & Rakes, 2015; Ward & Dixon, 2012), and efficacy expectations (Ward & Dixon, 2012). Interestingly, Laurencelle and Scanlan (2018), authors of the single nursing article, were the only authors who did not use efficacy as a surrogate term. Instead, confidence and ability were surrogate terms in their article. Confidence was also utilized by Iverson et al. (2005); McBrayer et al. (2018) and Phakiti and Li (2011) in the education literature, and self-confidence was a surrogate term in Harsh et al.’s (2012) STEM article. Expectancy beliefs (Ward & Dixon, 2012) and expectancy of success (Mosykowski et al., 2017), as well as competence (McCulloch et al., 2017) and phrases with competence (e.g., perception of competence [Hardré et al., 2019] and competence beliefs [Mosykowski et al., 2017]) were also found in STEM and education literature. McCulloch et al. (2017) used self-belief interchangeably with self-efficacy. Many of these surrogate terms were also located in the definitions of self-efficacy that authors provided.

Related Concepts

Related terms overlap partially but are not synonymous with the concept (Rodgers, 2000). The most commonly used related concept was self-regulation (Dunn & Rakes, 2015; Goldman, 2019; Holcomb et al., 2004; Maguire & Corbin, 2015; Marchand & Gutierrez, 2012; Phakiti & Li, 2011). Self-determination (Maguire & Corbin, 2015; McCulloch et al., 2017) was also utilized as a related concept, though to a lesser extent. According to Garrin (2014), self-regulation, self-determination, and self-efficacy are all concepts that hinge on a sense of personal agency to affect behavior change. However, self-regulation focuses on control of thoughts and emotions; self-determination is largely about internal motivation; and self-efficacy describes confidence in ability (Garrin, 2014). Motivation, another related concept used frequently in the literature (Hardré et al., 2019; Iverson, et al., 2005; Phakiti & Li, 2011), is similar to self-determination but differs from self-efficacy. Motivation is an internal force that moves a person to act (Merriam-Webster, n.d.-a), while self-efficacy is the belief one has about his or her ability (Bandura, 1997). Motivation and self-efficacy do not always go hand-in-hand. Graduate students may think themselves capable of an activity but not be motivated to complete it. Alternatively, they may be highly motivated to engage in a particular activity but feel incapable of pursuing it.

Barry et al. (2019), Hakkarainen et al. (2014), and Olive (2014) utilized resilience as a related term for self-efficacy, with the latter two authors also using the related concept of persistence. Indeed, these concepts are similar, as they all pertain to overcoming obstacles. However, resilience is a fixed, generalized trait that implies a good outcome at the end of conquering personal setbacks (Greene et al., 2004), and persistence is a generalized term describing the act of continuing forward despite difficulties. Self-efficacy, too, helps one overcome obstacles but is fluid, waxing and waning depending on personal experiences and the specific task to be undertaken (Bandura, 1997).

Self-concept, a related term used by Alexander and Hermann (2015), Barry et al. (2019), and Grunert and Bodner (2011) has often been used interchangeably with self-efficacy, but the two are quite different (Pajares & Schunk, 2001). According to Pajares and Schunk (2001), self-concept describes a

person's global assessment of worth, rather than a specific assessment of capability, as with self-efficacy. Goal orientation (Dunn & Rakes, 2015; Iverson et al., 2005) and attributions (Dunn & Rakes, 2015; Maguire & Corbin, 2015) are also related to self-efficacy. A person with high self-efficacy has a strong sense of personal agency, chasing after goals and possessing internal attributions for success and failure (Bandura, 1997).

Antecedents

Based on my analysis of the literature, perceived positive experiences appear to influence and feed self-efficacy in graduate students through their ability to build confidence and competence. Studies analyzed revealed that confidence-building and competence-building experiences are not mutually exclusive categories but rather serve to describe the mechanisms by which graduate students gain self-efficacy. Students may have some experiences that boost primarily their confidence; others may chiefly affect their competence, while still others may increase both equally. However, the literature showed that, in order for self-efficacy to be garnered, students must receive and engage in a variety of both confidence- and competence-building experiences. Without competence-building experiences, students may be confident to undertake graduate school but not be truly capable of graduate work. Alternatively, students who lack confidence-building experiences may have ample ability to do well in graduate school but not have faith in their capabilities.

Not only are both confidence- and competence-building experiences needed to foster self-efficacy, but they must also be perceived as positive experiences. Ward and Dixon (2012) provide a telling example of this important nuance. In their qualitative study of education students completing a research master's, they found that six of the seven participants viewed their thesis experience as positive.

Ruth, however, was an exception to this. In contrast to the others, while she believed that she had been on an "amazing journey", the experience of completing a thesis had left her demoralised and

deflated. She started the journey feeling “very confident” and finished it “totally knocked for six.”
(p. 175)

Ward and Dixon conclude: “The case of Ruth illustrates the fragility and contextual nature of strong efficacy beliefs and expectations” (p. 177).

Authors of the sampled literature cited numerous examples of confidence- and competence-building experiences. However, through thematic analysis, I consolidated them into five categories: (a) experiences of support; (b) key observational experiences; (c) experiences of feelings and thoughts; (d) challenging experiences; and (e) previous, similar, successful experiences. Students’ experiences of support, key observational experiences, and experiences of thoughts and feelings are primarily confidence-building. Challenging experiences are largely competence-building, and previous, similar, successful experiences are both confidence-building and competence-building.

Experiences of support were the most frequently cited antecedents of self-efficacy in graduate students. They occurred when professors provided helpful feedback on students’ work (Goldman, 2019; Hakkarainen et al., 2014; McBrayer et al., 2018), encouraged them to try new challenges (Hardré & Hackett, 2015), served as mentors and role-models (Hardré et al., 2019; Harsh et al., 2012; Holcomb et al., 2004; Ward & Dixon, 2012) and affirmed them with encouraging words (Holcomb et al., 2004; Laurencelle & Scanlan, 2018; Olive, 2014; Alexander & Hermann, 2015). Students were also supported when they were part of a community of graduate students (Hakkarainen et al., 2014); when family members, friends, or co-workers were supportive of their studies (Laurencelle & Scanlan, 2018; Mosyjowski et al., 2017; Olive, 2014; Ward & Dixon, 2012); and when they recalled their long-term goals in the midst of challenges (Ward & Dixon, 2012). Olive (2014) wrote of the crucial influence that support from family members and spiritual leaders had on first-generation Hispanic graduate students. Conversely, Alexander and Hermann (2015) described the role that lack of support plays in undermining a student’s self-efficacy, casting a negative light on the graduate school experience.

Key observational experiences typically involved students comparing themselves to other students they judged to be like them. For example, Hakkarainen et al. (2014) noted how doctoral students were encouraged by watching other students' dissertation defenses. They felt they were as smart as those defending and could probably be successful too. Ward and Dixon (2012) explained that key observational experiences will enhance self-efficacy only if the observer identifies strongly with the individual being observed. Alexander and Hermann (2015) recommended the formation of heterogeneous study groups so that minority students could observe students similar to them as they successfully engaged in graduate work. Grunert and Bodner (2011) spoke of the damage that "inaccurate social comparisons" (p.420) can wreak on a student's self-efficacy.

How people experience their feelings and thoughts can also influence their self-efficacy formation. Graduate students utilized their thoughts and feelings during challenging moments to convince themselves to press into their difficulties or to step away from them. Alexander and Hermann (2015) described how one participant in his qualitative study of Black women in STEM graduate programs felt "intimidated" (p. 7) and "set back" (p. 7) when she began her doctoral courses. Women also related their experiences of doubt and discouragement during their programs. However, participants in other studies felt confident in their knowledge (Grunert & Bodner, 2011), passionate about their education (Laurencelle & Scanlan, 2018), motivated to finish what they had started, and encouraged by supportive others (Ward & Dixon, 2012).

Challenging experiences, those that are stressful, demanding, or difficult, were commonly cited in the sampled literature as capable of building students' self-efficacy (Barry et al., 2019; Cheng et al., 2019; Goldman, 2019; Laurencelle & Scanlan, 2018). Hardships foster endurance in graduate studies (Laurencelle & Scanlan, 2018) and give students a sense of responsibility for their studies (Goldman, 2019). Goldman (2019) noted that professors who provided goals that were reasonable yet challenging encouraged the formation of self-efficacy in master's and doctoral students across disciplines. Even

corrective experiences, if viewed in a positive manner, were integral to competence-building because they enabled students to improve (Dunn & Rakes, 2015; Jan, 2015).

Previous, similar, successful experiences stimulate feelings of competence and confidence in graduate students. Grunert and Bodner (2011), Harsh et al. (2012), McCulloch et al. (2017), and Ward and Dixon (2012) described how past, positive experiences with research developed self-efficacy in master's and doctoral students. Holcomb et al. (2004) related how previous participation in online learning classes helped business graduate students feel capable and confident in their current online studies. Similarly, Jan (2015) reported increased self-efficacy among students in online programs who had previous experience with online coursework. Laurencelle and Scanlan (2018) noted how many nursing instructors spoke of their previous success in school that gave them both the tools for graduate work and provided them with confidence that they could succeed. McCulloch et al. (2017) described how most graduate students relied on their previous, successful experiences in school when considering whether to apply for doctoral education.

Experiences of support, key observational experiences, and experiences of one's feelings and thoughts align well with three of Bandura's (1997) sources of self-efficacy: verbal persuasion, vicarious experiences, and physiological and affective states. Bandura describes verbal persuasion as not only *words* that encourage but also other socially-derived influences that instill confidence in a person. Vicarious experiences, Bandura asserts, occur through modeling and referential comparisons. People need to compare themselves to others in order to gauge their own capabilities for tasks that are more abstract. Bandura's source of self-efficacy called physiological and affective states encompasses a broad range of physical and emotional responses to stressors that either promote or erode a person's confidence in a situation. Challenging experiences and previous, similar, successful experiences are closely related to Bandura's fourth and most important source of self-efficacy: enactive mastery experiences. Enactive mastery experiences give a person tangible evidence that they can succeed in future situations. As successes accumulate, self-efficacy increases.

Attributes

Rodgers (2000) labels the identification of attributes as the most important task of concept analysis. Terms used in the literature to describe self-efficacy in graduate students were extracted and coalesced into six themes. These themes constitute the overarching attributes of the concept specifically for the context of graduate school enrollment, continuation, and completion. Terms from each study that aligned with the six themes can be seen in Table 2.1. (All tables and figures are located in the Appendix.) Using Rodgers' (2000) Evolutionary Method, the attributes discovered were personal, malleable, goal-driven, a resource, knowledge, and trust.

Personal. Self-efficacy is unique to each individual, as implied by the term itself. Definitions, measurements, and discussions of self-efficacy in the articles sampled always focused on the personal nature of the concept with terms like individual, self-, one's/one's own, and person's. Self-efficacy is located within a graduate student; it is not transferable to other students, nor does a group of students have a collective self-efficacy. All authors displayed the personal attribute of self-efficacy by describing it in singular terms. Self-efficacy was also characterized as intrinsic, implicit, embedded, internal, innate, or deep. These descriptors imply that self-efficacy is not often obvious from the outside and may need to be drawn out by professors, administrators, and others. Additionally, the implicit and innate aspects of self-efficacy indicate that individuals may not be totally cognizant of their internal beliefs but may accept them as immutable, as part of who they are.

Malleable. Many authors mentioned the malleable nature of self-efficacy, how it can fluctuate, change over time, and be influenced by a variety of factors. Self-efficacy is specific to a task, goal, domain, condition, or situation. A person who has self-efficacy for one endeavor may not have self-efficacy for another. Thus, graduate students with self-efficacy for some tasks cannot be assumed by professors to be efficacious for others. Thankfully, however, self-efficacy can also be easily shaped and is amenable to intervention (Hardré et al., 2019).

Goal-Driven. Persons with self-efficacy are keenly focused on their goals. Self-efficacy was characterized as goal-oriented and expectant. Yet, those with self-efficacy are not just goal-oriented but goal-driven because they do what is necessary to move toward the objects of their ambition (Bandura, 1994). The terms persistence, diligence, perseverance, determination, commitment, and mastery were used to describe self-efficacy. Marchand and Gutierrez (2012) called self-efficacy a “motivational factor” (p. 153)-because of its ability to prod a student along toward a goal. The attribute of goal-driven was also apparent in the way self-efficacy results in actions. Self-efficacy was defined by most authors as the confidence, ability, or competence needed to get through not only graduate school in a general sense but also all the myriad tasks that must be accomplished to obtain a graduate degree. The terms success and successful were often present in the definitions of self-efficacy. Those with self-efficacy believe their actions will result in successful accomplishment of their goals.

Resource. Every author spoke of self-efficacy as a beneficial resource to graduate students. Lack of or low self-efficacy was described in negative terms, while high self-efficacy was expressed in a positive light. Laurencelle and Scanlan (2018) agree with other authors in viewing self-efficacy as an invaluable tool that graduate students need to successfully complete their programs. Self-efficacy was termed a factor, avenue, force, habit, “precursor for learning” (Goldman, 2019, p. 86), resource, and attribute. Self-efficacy’s function as a beneficial resource was seen in terms like ability, capability, efficacy, skill, and competence found in the various definitions of self-efficacy in the sample.

Knowledge. Self-efficacy is about knowing oneself. The concept was described as a judgement or perception, both of which indicate cognition. Alexander and Hermann (2015) even specifically stated that self-efficacy is cognitive in nature. However, judgements about one’s capabilities are not always accurate, as (Ward & Dixon, 2012) found in their sample of education students completing their master’s thesis work. A student’s knowledge of himself or herself can be over-inflated, biased, or skewed. However, Bandura (2012a) asserts that incongruence between persons’ perceptions of their abilities and their actual abilities occurs because of extraneous factors, not because of faulty thought processes.

Trust. Trust is “assured reliance on the character, ability, strength, or truth of someone or something” (Merriam-Webster, n.d.-b). Belief and confidence, synonyms of trust, were the most frequently cited attributes of self-efficacy in the sample. Students with self-efficacy are not just knowledgeable about their capabilities, but they trust their ability to accomplish their goals and succeed. In behavior change literature, this self-trust has often been attributed to efficacious persons’ internal locus of control and personal agency (Bandura, 2012b; Wu et al., 2015).

Consequences

The consequences of self-efficacy described in the literature were vast and highly dependent on the unique context of each study. Using thematic analysis, primary and secondary consequences of self-efficacy were identified. Self-efficacy was discovered to yield productive thoughts, feelings, and actions, which create successful outcomes.

Productive thoughts in graduate students with high self-efficacy included thinking of challenges as opportunities to learn and grow (Cheng et al., 2019), considering how to improve in their studies (Dunn & Rakes, 2015), setting goals (Hardré et al., 2019; Laurencelle & Scanlan, 2018; Ward & Dixon, 2012), “developing ‘mental stamina’” (Ward & Dixon, 2012, p. 173), and reflecting on their thoughts (Iverson et al., 2005). Self-efficacy also altered how students categorized their graduate experiences. Those with high self-efficacy were less apt to label graduate school as difficult and were more likely to see their courses as useful (Iverson et al., 2005). They focused on the positive and saw fewer obstacles than those with low self-efficacy (Jan, 2015). Self-efficacy helped to keep anxious thoughts at bay, decreased a student’s focus on his or her failures, and helped temper the negative opinions of others (Dunn & Rakes, 2015).

Productive feelings were also evident in efficacious students. Graduate students who displayed high self-efficacy were able to manage their emotions during challenges (Cheng et al., 2019), felt satisfied with their scholastic experience (Hardré et al., 2019; Jan, 2015), expressed enjoyment of graduate studies,

and had positive feelings about their schoolwork (Iverson et al., 2005; Marchand & Gutierrez, 2012). These productive thoughts and feelings not only represent the consequences of self-efficacy, but they also serve as additional antecedents to self-efficacy, raising students' confidence in their current and future endeavors (Cheng et al., 2019; Dunn & Rakes, 2015; Hardré et al., 2019; Iverson et al., 2005; Laurencelle & Scanlan, 2018; Marchand & Gutierrez, 2012; Ward & Dixon, 2012).

Self-efficacy resulted in productive actions among graduate students. Highly efficacious students were bold, as they initiated challenging tasks (Cheng et al., 2019; Goldman, 2019; Grunert & Bodner, 2011; Hakkarainen et al., 2014; Harsh et al., 2012; Holcomb et al., 2004; Iverson et al., 2005; Jan, 2015; Laurencelle & Scanlan, 2018; McCulloch et al., 2017; Mosykowski et al., 2017; Olive, 2014; Ward & Dixon, 2012) and confronted obstacles, persisting through them (Cheng et al., 2019; Dunn & Rakes, 2015; Hakkarainen et al., 2014; Hardré et al., 2019; Iverson et al., 2005; Jan, 2015; Laurencelle & Scanlan, 2018; Maguire & Corbin, 2015; Marchand & Gutierrez, 2012; McCann & Davis, 2018; Mosykowski et al., 2017; Ward & Dixon, 2012). They handled the stress of graduate school by engaging in healthy coping behaviors (Cheng et al., 2019; Dunn & Rakes, 2015; Hakkarainen et al., 2014; Holcomb et al., 2004; McCann & Davis, 2018; Olive, 2014; Ward & Dixon, 2012), building useful habits for their studies (Cheng et al., 2019; Goldman, 2019), and displaying resilience (Cheng et al., 2019; Hardré et al., 2019; Maguire & Corbin, 2015; Ward & Dixon, 2012). Graduate students who demonstrated self-efficacy were committed to their coursework (Cheng et al., 2019; McBrayer et al., 2018), took necessary steps to succeed (Cheng et al., 2019; Dunn & Rakes, 2015; Goldman, 2019; Iverson et al., 2005; McBrayer et al., 2018), and bought into the graduate experience (Hardré et al., 2019; Holcomb et al., 2004; Marchand & Gutierrez, 2012; Mosykowski et al., 2017). Iverson et al. (2005) explained that graduate students who possessed self-efficacy for online coursework were more likely to have intentions to take lessons learned in graduate school into their future careers. Like productive thoughts and feelings, productive actions resulting from self-efficacy also become antecedents as graduate students accrue additional competence- and confidence-building experiences.

The productive thoughts, feelings, and actions that followed self-efficacy culminated in successful outcomes. Efficacious graduate students did well in their studies, (Cheng et al., 2019; Dunn & Rakes, 2015; Goldman, 2019; Hardré & Hackett, 2015; Holcomb et al., 2004; Iverson et al., 2005; Jan, 2015; Laurencelle & Scanlan, 2018; Maguire & Corbin, 2015; McCann & Davis, 2018; Olive, 2014; Ward & Dixon, 2012), stayed in their programs (Dunn & Rakes, 2015; Hardré & Hackett, 2015; Hardré et al., 2019; Harsh et al., 2012; Jan, 2015; Ward & Dixon, 2012), graduated (Ward & Dixon, 2012), and achieved personal and professional goals (Goldman, 2019; Grunert & Bodner, 2011; Hardré & Hackett, 2015; Olive, 2014). Hardré et al. (2019) summarize well the role that self-efficacy plays in graduate student outcomes: “Self-efficacy predicts participation, engagement, satisfaction, and success on a range of graduate student activities across disciplines and subgroups” (p. 109).

Exemplars of Self-Efficacy in Graduate Students

Rodgers (2000) cautions against using a contrived exemplar of the concept, as this is not fitting for an inductive concept analysis method. Instead, researchers should examine the literature carefully for a case of the concept at work in a real-life situation. If one case cannot be found that encompasses all attributes of the concept, two or more cases might be required. Two exemplars from the sample display the attributes of self-efficacy.

The first exemplar comes from a mixed methods study by Harsh and colleagues (2012). In the qualitative portion of their study, they interviewed current STEM graduate students, asking them to identify aspects of their undergraduate experiences that encouraged them to pursue graduate school. Two students’ quotes stand out:

I knew how to do research. I mean, I really did. When I got into the [graduate] group at [research university], I had an enormous number of technical skills I had to gain with brand new instrumentation, brand new science—it did not scare me. I knew I could do it, right? ...I had confidence in my ability to research. [Elizabeth, scientist, chemistry]

Yeah, in the sense that it [undergraduate research] helped me—gave me confidence that this was something that I wanted to do for one thing. It gave me an in-depth exposure to inorganic chemistry as a subfield that I wanted to pursue. So that influenced my choice of graduate school. [Anita, scientist, chemistry] (Harsh et al., 2012, p. 1368)

Elizabeth's self-efficacy is obvious in her quote. She trusts her abilities. She knows who she is and what she can do. Her self-efficacy is personal. She uses the word I nine times in just 60 words. She exudes confidence and a can-do attitude. Challenges do not intimidate her. She obviously views her confidence as a beneficial resource for her. Anita's quote, on the other hand, exhibits how self-efficacy is malleable. She relates that it was her undergraduate research (a competence- and confidence-building experience) that spurred her on to consider graduate school.

The second exemplar comes from Ward and Dixon's (2012) qualitative study of graduate students. They sought to understand how education graduate students pursuing a research master's developed and maintained the self-efficacy to complete their degree. Students had to persevere as they worked to complete their thesis. Ward and Dixon (2012) note:

Participants drew on both internal and external sources of motivation to provide them with the strength to continue the journey and reach their goal of thesis completion...Personal accomplishment was a strong motivating force and non-completion was not a viable option. The notion 'I've started this, I'm going to finish' (Shona) helped them to persevere, particularly when faced with obstacles of self-doubt. Ruth...talked of developing 'mental stamina' and drawing on personal capabilities that she 'never knew existed.' (p. 173)

This quote exemplifies the goal-driven attribute of self-efficacy. Students were motivated to finish no matter how difficult the journey became. Students made a personal choice to keep going due in part to internal factors, such as determination. The attributes resource and malleable are evident in the authors' discussion of Ruth. She developed self-efficacy and drew on it to help her complete her thesis.

Contextual Factors

The use of Rodgers' (2000) Evolutionary Method to analyze the concept of self-efficacy helped reveal important interdisciplinary, sociocultural, and temporal contextual factors surrounding this concept's use in research of graduate students. The literature sampled contained a wide variety of student populations in terms of degree program (master's or doctoral), discipline, location (international vs. U.S.), and student demographics (race, ethnicity, and gender). Research methodologies of the sampled literature were also varied. Across the sample, self-efficacy was used consistently among disciplines and over time. Ten authors referred to or directly quoted one of Bandura's definitions of self-efficacy (Alexander & Hermann, 2015; Cheng et al., 2019; Dunn & Rakes, 2015; Goldman, 2019; Grunert & Bodner, 2011; Iverson et al., 2005; Marchand & Gutierrez, 2012; McBrayer et al., 2018; McCann & Davis, 2018; Mosyjowski et al., 2017). The consistent use of self-efficacy in the sample is not surprising, since Morse (2017) reminds us that scientific concepts like self-efficacy often have clear conceptual boundaries. Alterations in the concept between disciplines may also not have been found because the majority of studies were from the discipline of education. Other disciplines (public health, communications, nursing, STEM, and psychology) were represented by only one to three studies each. Consistency of self-efficacy's use across disciplines and over time, along with the variety of student populations examined in the sample, should provide confidence to nurse educators, administrators, and scientists that exploring self-efficacy's role in graduate nursing student matriculation, retention, and graduation is worthwhile.

Discussion

The final step of Rodgers' (2000) Evolutionary Method involves identifying the implications, hypotheses, and necessary future work uncovered by the analysis. A concept analysis, Rodgers says, is undertaken not only to clarify a concept but to determine its utility. Thus, I will synthesize the findings of the concept analysis for graduate students broadly and indicate particular implications for future research of graduate nursing students as well as for current practice of graduate nursing education.

This concept analysis sought to define and describe self-efficacy as it applies to graduate student enrollment, retention, and degree completion. Identification of self-efficacy's attributes in this context points to a more specific concept: graduate student self-efficacy, which can be defined as a goal-driven, malleable resource of personal knowledge and trust. It is the belief a person has that he or she can become, remain, and succeed as a graduate student. The antecedents, attributes, and consequences of graduate student self-efficacy are displayed in Figure 2.1. Perceived positive experiences, including those that are confidence-building and competence-building, foster self-efficacy. The productive thoughts, feelings, and actions that result from graduate student self-efficacy culminate in successful outcomes.

Figure 2.1 also displays the relationships between the antecedents, attributes, and consequences of graduate student self-efficacy. The consequences are depicted in two levels: (a) productive thoughts, feelings, and actions and (b) successful outcomes. Both levels of consequences create more perceived positive experiences and thus greater graduate student self-efficacy, forming a positive feedback loop. Productive thoughts and feelings become experiences of thoughts and feelings (confidence-building experiences); productive actions lead to challenging experiences (competence-building experiences); and successful outcomes serve as previous, similar, successful experiences (both confidence- and competence-building experiences).

Implications for Future Research

Though Rodgers' (2000) Evolutionary Method is rigorous and this concept analysis involved a thorough range of graduate education literature, it is not without limitations. The assumption that all graduate-level education can be analyzed together, an assumption that was necessary given the available literature, serves as a limitation to this research and indicates the need for additional conceptual clarity. Future research on self-efficacy in graduate students would benefit from examining self-efficacy in subgroups of graduate students, such as master's students versus doctoral students. Significant differences in self-efficacy may exist between these two groups, for example, due to the closer relationship with professors and advisors that many doctoral students benefit from. Additionally, variations in self-efficacy

may be seen in disciplines in which the master's degree is simply a stepping stone to the doctorate compared to disciplines in which the master's degree is the graduate student's ultimate goal.

Self-efficacy should also be examined in the context of graduate students' educational, cultural, and family background. Students who attend research-intensive schools for their undergraduate degree may develop higher self-efficacy for graduate studies because of more exposure to graduate students and faculty research. Olive (2014) found that a lack of family members with graduate degrees contributed negatively to self-efficacy among first-generation Hispanic graduate students. Significant differences in self-efficacy may also be present between genders, particularly in disciplines with an overrepresentation of males or females. Grunert and Bodner (2011) and Harsh et al. (2012) speak to the unique role of self-efficacy for women in STEM fields, which have historically been dominated by men. As nursing is overwhelmingly comprised of female students and faculty, male students may have lower self-efficacy for graduate nursing studies.

Perhaps the greatest limitation of this concept analysis is the fact that so little is known about nursing graduate students. Only one nursing research study was analyzed, so the findings of this concept analysis should be interpreted with due caution. Rodgers (2000) states that one of the goals of concept analysis is to generate ideas for future inquiry. As a goal-driven, malleable resource of personal knowledge and trust, self-efficacy has been found crucial to graduate student success in STEM, psychology, communications, and public health (Barry et al., 2019; Goldman, 2019; Grunert & Bodner, 2011; McCann & Davis, 2018; Ward & Dixon, 2012). Yet, self-efficacy as it relates to nursing graduate school enrollment, continuation, and completion is an understudied concept.

Studies investigating nursing graduate school success have involved asking faculty about their experiences or their opinions regarding the topic (Evans, 2013; Laurencelle & Scanlan, 2018), and research of undergraduate students has also been undertaken to assess their intent for graduate school (Bond, 2017; Plunkett et al., 2010; Squires et al., 2014) and to determine how to increase interest (Smith et al., 2016). Studies with current or recently-graduated master's or doctoral students have noted the ways

that funding, issues with supervisors, program layout, family responsibilities, and other external factors can promote or discourage enrollment, retention, and graduation (Dreifuerst et al., 2016; Geraghty & Olive, 2018; Havenga & Sengane, 2018; Volkert et al., 2018), and Salani et al. (2016) suggested a preimmersion course to help alleviate some of these difficulties. Studies exploring internal factors that helped current or recently graduated nursing master's or doctoral students decide to enroll and persist in their education are rare. Java (1994) sought to understand the self-concepts and internal motivations present in nurses who decide to pursue a master's degree. Wheeler and Eichelberger (2017) examined both internal motivations and external factors related to enrollment and retention of doctoral nursing students in Georgia.

Identifying the internal factors that lead to graduate nursing program matriculation, continuation, and completion could yield crucial information. Simply providing support for external stressors may not be enough if prospective or current graduate students lack the internal stamina necessary for graduate school success. With the overwhelming evidence for self-efficacy's role in describing and predicting individuals' ability to manage their external stressors and persist despite them (Bandura, 1997; Ferla et al., 2010), examination of this concept in graduate nursing education is paramount. To the author's knowledge, only Imus et al. (2017) have investigated self-efficacy in current graduate nursing students. They explored self-efficacy's role in nurse anesthesia students' academic and clinical performance but used a general self-efficacy scale in their study. Bandura (2012a) has continually questioned the validity of general measures of self-efficacy because of the domain- and task-specific nature of self-efficacy. Additionally, Imus et al. (2017) discuss the implications of their study largely for clinical practice, not program retention or completion.

Self-efficacy has been shown to predict and influence success in education and STEM graduate students (Grunert & Bodner, 2011; Hardré et al., 2019). Like researchers in other disciplines, nurse scientists should go to the source to examine internal factors involved in graduate nursing student matriculation, retention, and degree completion. Using exploratory, qualitative studies, students' graduate

experiences should be probed to illumine whether self-efficacy is a key player in graduate nursing student success, and, if so, to inform possible interventions to increase students' self-efficacies, laying the groundwork for quantitative research in this area.

Implications for Current Practice

Despite its limitations, this concept analysis sheds light on multiple implications for current graduate education practice. The antecedents of graduate student self-efficacy identified in this concept analysis should encourage nursing faculty to seek out and admit graduate students who demonstrate previous confidence- and competence-building experiences. Faculty who are mentoring undergraduate students, providing key observational and supportive experiences to them, should encourage their mentees to consider graduate education. Additionally, faculty should observe for undergraduate students who demonstrate productive thoughts, feelings, and actions as well as successful outcomes in class, engaging in individual dialogues with these students about their career plans. When sifting through graduate admissions applications, faculty should look for evidence of persistence through challenging experiences, successful engagement in experiences similar to graduate school, descriptions of the applicant's role models and others who inspired graduate pursuit, and even a cadre of individuals who have been and will continue to be supportive of the applicant's graduate school endeavors. These can all serve as external indicators of internal self-efficacy.

Once enrolled in graduate studies, the attributes of graduate student self-efficacy provide guidance for faculty wishing to retain and graduate their students. Since self-efficacy has this personal, embedded nature, instructors and advisors must ask students about their self-efficacy. They may not readily tell their professors that they have lost confidence in their ability to do well in graduate school. The personal attribute of graduate student self-efficacy should also remind professors to treat students individually. In a single cohort, the self-efficacy beliefs of each student may span a wide range.

The malleable attribute of graduate student self-efficacy cautions us not to assume that students who have been successful in undergraduate programs will have the self-efficacy needed for graduate study. On the other hand, self-efficacy is easily influenced. Graduate professors and advisors can encourage the development of self-efficacy by providing support and making opportunities available for key observational and challenging experiences. Additionally, self-efficacy's fluctuating nature should motivate instructors and advisors to frequently check in with students. Self-efficacy can change throughout the course of graduate studies, as Ward and Dixon (2012) discovered with their research master's students.

Efficacious students are very goal-driven. They are highly motivated to work, and their work is well-done. Academicians may be able to retain graduate students by reminding them periodically of their grander goals. Providing short-term, smaller goals may also serve as confidence-building and competence-building experiences for students, which could increase their graduate student self-efficacy.

Self-efficacy is a valuable resource for graduate students, but many may not recognize the role it plays in their success. Additionally, professors may fail to see the importance of self-efficacy in the midst of more tangible resources, such as high-quality textbooks, intuitive online learning platforms, and engaging instructional methods. This concept analysis revealed that graduate student self-efficacy is a crucial advantage that enables students to begin their studies and advance to graduation.

Knowledge as an attribute of graduate student self-efficacy is a reminder that students can make wrong judgements about their capabilities. Ward and Dixon (2012) found that students often started out with high hopes for their graduate studies but became despondent when their ideas of graduate work were found to be unrealistic. Nurse educators should provide students with realistic expectations of the amount of work required, inform students of the need for financial and personal support, and acknowledge the common temptation to give up at varying points throughout their studies.

Trust is the final attribute of graduate student self-efficacy, and it points to the connection that must be present between the head and the heart. A student may know in their mind that they can succeed but may not believe in their heart that they are truly capable. Educators should identify ways to reach the hearts of students, providing real encouragement, not just pat affirmations that are unconvincing to those who are struggling internally. Academicians must acknowledge the role that belief in one's self plays in successful achievements of graduate students. McCulloch and colleagues (2017) encourage professors to “de-mystify the PhD and develop self-belief in students where they recognize talent, ability, and potential” (p. 102).

Conclusion

Though nurses with graduate degrees provide higher levels of care, educate nursing students, and research pressing healthcare problems (IOM, 2011), we do not yet have adequate understanding of what draws nurses to graduate studies and what helps them persevere through the obstacles faced along the way. High attrition rates (Cohen, 2011; Dean, 2017) combined with a faculty shortage (AACN, 2018; AACN, 2019b; NLN, 2017a, 2017b) and, in turn, a nursing shortage (AACN, 2019c; McMenamin, 2014) in the U.S., should give us pause and prompt us to reflect on ways these discouraging statistics can be improved. Examining graduate student self-efficacy in prospective and current nursing graduate students could be pivotal to increasing enrollment, decreasing attrition, and preserving nursing science and education for years to come.

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Appendix

Table 2.1: *Defining Terms for the Attributes of Graduate Student Self-Efficacy*

Author(s), Year (Discipline) - Aim	Personal	Malleable	Goal-Driven	Resource	Knowledge	Trust
Alexander & Hermann, 2015 (education) – <i>To understand the experiences of Black women in STEM graduate programs at a predominantly White university</i>	One's/One's Own	Task-specific	Ability Successful	Factor Ability Efficacy	Cognitive	Belief
Barry et al., 2019 (public health) - <i>To assess the effect of guided mindfulness on doctoral students' self-efficacy</i>				Resource		
Cheng et al., 2019 (education) - <i>To determine if academic hardiness could predict academic self-efficacy</i>	Self- One's/One's Own Person's	Task-specific Domain-specific Condition-specific	Goal-oriented Diligence Determination Commitment Confidence Ability	Capability Skill	Judgement	Belief Confidence
Dunn & Rakes, 2015 (education) - <i>To assess self-regulation skills in online students after providing a brief training</i>	One's/One's Own Intrinsic	Task-specific	Future-oriented Confidence Ability Successful	Skill		Belief Confidence
Goldman, 2019 (communications) - <i>To “understand the effects of communication competence on graduate students' learning” (pp. 76-77)</i>	Self- One's/One's Own		Persistence Confidence Ability	“precursor for learning” (p. 86)		Belief Confidence

Table 2.1 continued

Grunert & Bodner, 2011 (STEM) - <i>To assess self-efficacy beliefs of women in chemistry</i>	Person's Implicit Deep	Task-specific Goal-specific	Mastery Confidence Competence Success	Competence	Confidence
Hakkarainen et al., 2014 (education) - <i>"To investigate knowledge-creating agency by examining doctoral students' accounts of their pursuits" (p. 83)</i>	Self-	Fluctuates	Confidence Competence	Competence	Confidence
Hardré & Hackett, 2015 (education) - <i>To examine graduate students' perceptions of graduate school</i>	Individual			Perception	
Hardré et al., 2019 (education) - <i>To determine the motivations for graduate student attrition across disciplines</i>		Goal-specific Amenable to change	Success	Perception	Belief
Harsh et al., 2012 (STEM) - <i>To see if undergraduate research experiences help women stay in STEM</i>	Self- One's/One's Own		Confidence Ability	Skill	Belief Confidence
Holcomb et al., 2004 (education) - <i>To explore the role of self-efficacy and self-regulation for distance education</i>	One's/One's Own	Task-specific	Ability Successful	Skill	Belief

Table 2.1 continued

Iverson et al., 2005 (education) - <i>To assess characteristics of learners in online courses</i>	Individual One's/One's Own		Confidence Ability	Factor		Belief Confidence
Jan, 2015 (education) - <i>To explore self-efficacy, "prior experience, and satisfaction with online learning" (p. 30)</i>		Task-specific	Confidence Ability Competence	Capability Skill Competence		Belief Confidence
Laurencelle & Scanlan, 2018 (nursing) - <i>To discover what helped former nursing graduate students through their studies</i>	One's/One's Own	Task-specific	Perseverance Determination Ability	Capability	Judgement	Belief
Maguire & Corbin, 2015 (education) - <i>To determine how Saudi Arabian women are motivated to pursue graduate school</i>	Intrinsic			Factor Skill		Belief
Marchand & Gutierrez, 2012 (education) - <i>"To examine the relations among temporally-ordered variables...and end-of-semester learning strategies in...graduate students" (p.150)</i>			"motivational factor" (p.153)	Factor Capability		Belief
McBrayer et al., 2018 (education) - <i>To investigate the relationship between self-efficacy and doctoral progression</i>	One's/One's Own		Confidence Ability Successful	Capability	Judgement Perception	Confidence

Table 2.1 continued

McCann & Davis, 2018 (psychology) - <i>To determine whether mindfulness and self-efficacy are related in doctoral students</i>	Individual Self- One's/One's Own Person's Embedded Internal Deep		Ability Competence	Competence	Judgement Perception	Belief
McCulloch et al., 2017 (education) - <i>To examine why students decide to pursue a PhD</i>	Self- One's/One's Own Person's Intrinsic Innate		Persistence Perseverance Ability	Factor Force Habit	Judgement	Belief
Mosyjowski et al., 2017 (STEM) - <i>To investigate the experiences of returning engineering doctoral students</i>	Individual	Task-specific Domain-specific	Confidence Ability Successful			Confidence
Olive, 2014 (psychology) - <i>To assess the experiences of first-generation Hispanic master's students</i>	Self- Intrinsic		Confidence			Belief Confidence
Phakiti & Li, 2011 (education) - <i>To examine challenges faced by Asian students in a TESOL program</i>	Individual One's/One's Own		Confidence Ability	Factor		Belief Confidence
Ward & Dixon, 2012 (education) - <i>To understand the experiences of students in a research master's program</i>	Individual One's/One's Own Intrinsic	Changes over time Task-specific Goal-specific Situation-specific	Future-oriented Expectant Confidence Ability Competence Successful	Factor Avenue Capability Efficacy Competence	Judgement Perception	Belief Confidence

Table 2.1 continued

Note. Terms used to describe self-efficacy in each study coalesced to form six themes, the attributes of graduate student self-efficacy. STEM = Science, Technology, Engineering, and Math; TESOL = Teaching English to Speakers of Other Languages

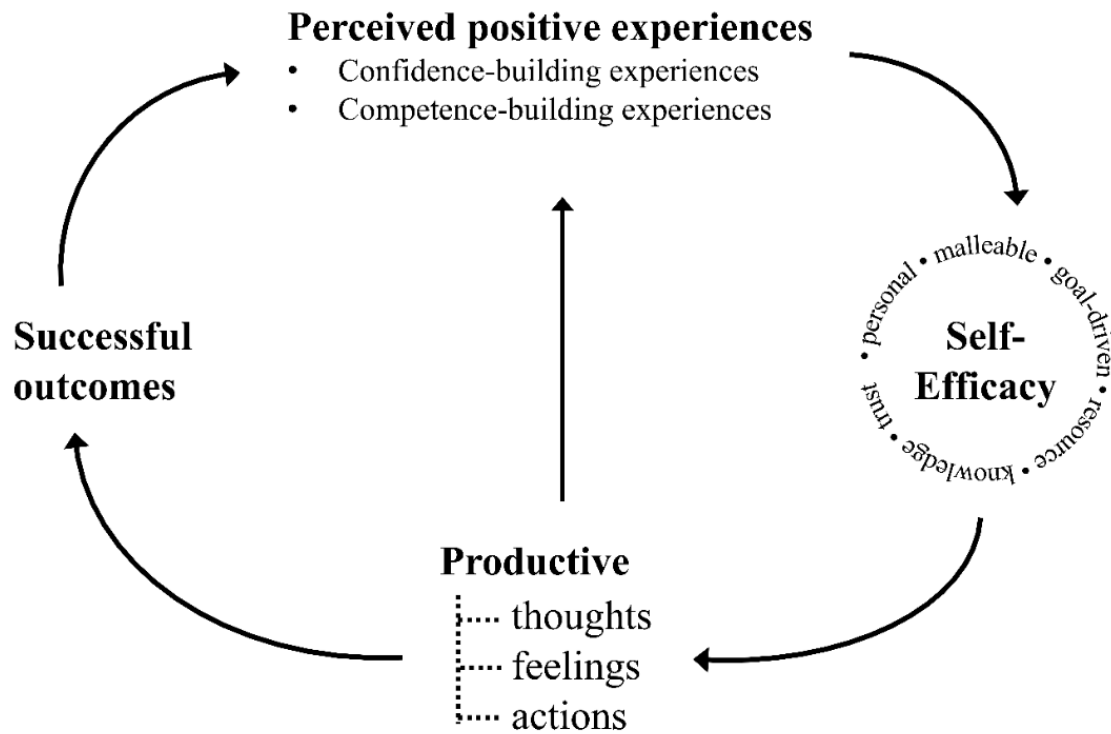


Figure 2.1: *Concept Diagram of Graduate Student Self-Efficacy*

Note. Perceived positive experiences contribute to the establishment of graduate student self-efficacy, which creates productive thoughts, feelings, and actions and leads to successful outcomes. Both the primary and secondary consequences of graduate student self-efficacy work to maintain and augment self-efficacy by boosting a student’s repertoire of perceived positive experiences.

Chapter 3

Interventions to Boost Enrollment in Nursing Doctor of Philosophy (PhD) Programs

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Abstract

Nursing Doctor of Philosophy (PhD) enrollments are languishing, and little is known about PhD enrollment strategies that may lessen nursing's PhD shortage. This study examined strategies for bolstering PhD enrollments or enrollment intentions among college students and graduates. An integrative review was undertaken using Whittemore and Knafl's methodology and Garrard's Matrix Method. Nine databases were searched, and a hand search was conducted. Strategies were predominantly situated in science, technology, engineering, and mathematics (STEM) disciplines. Features of successful strategies contained core components of faculty mentoring, hands-on research, funding and compensation, undergraduate participation, summer timeframe, informational sessions, and social support. Less rigorous study designs and mostly STEM samples inhibit the transferability of these strategies to nursing. Qualitative research is needed to better understand nursing students' perspectives about the PhD. Additionally, current PhD enrollment strategies within nursing schools need to be systematically evaluated and the findings disseminated.

Keywords: nursing education, Doctor of Philosophy, PhD, enrollment, strategies, integrative review

Nurses with a Doctor of Philosophy degree or other research doctorate (hereafter, PhD) are central figures in the nursing discipline and are indispensable to the profession. They are knowledge brokers (Thompson & Schwartz Barcott, 2019), stewards of the discipline (Morris et al., 2021), and leaders in nursing education (America Association of Colleges of Nursing [AACN], 2010; Bednash et al., 2014). Furthermore, nurses with a PhD are educated as scientists, equipped to generate new knowledge through independent research that informs healthcare delivery systems, health policy, and best practices in patient care (AACN, 2006; Institute of Medicine [IOM], 2010; McSweeney et al., 2018).

At only 0.6% of the total nursing population, however, nurses with a PhD are few in number (AACN, 2019c), and their ranks are shrinking each year due to retirements of current PhD-holders (Fang & Kesten, 2017), nearly stagnant enrollments in PhD programs, and inadequate numbers of PhD graduations (AACN, 2019a). For two decades, nursing leaders have been forecasting the consequences of these concerning trends, and strong recommendations have been issued to increase the number of nurses pursuing a PhD (AACN, 2006, 2010; Berlin & Sechrist, 2002; National Advisory Council on Nurse Education and Practice, 2010; National League for Nursing [NLN], 2013). The National Academy of Medicine (NAM), formerly the IOM (2010), issued its own challenge, recommending the number of nurses prepared at the doctoral level double by 2020.

Yet, 2020 has come and gone, and little positive change has occurred for the PhD-prepared nursing workforce. While NAM's overall goal was technically met through a flood of Doctor of Nursing Practice (DNP) enrollments, their five-year progress report highlighted the concerning lag in PhD growth (National Academies of Science, Engineering, and Medicine, 2016). Fang and Kesten (2017) projected that nearly one-third of all nursing faculty will retire by 2025, taking with them 44.3% of faculty with a PhD. Meanwhile, nursing PhD enrollments rose modestly from 2009 to 2018, moving from 4,177 to 4,698, a 12.5% increase (AACN, 2019b, 2019d). However, enrollments actually trended down from 2013—with a peak of 5,122 students—to 2019 when 4,568 students were enrolled (a loss of 554 students; AACN, 2019d). PhD graduations, which totaled 804 in 2019, increased significantly from 2009 to 2016

but have since grown by only eight students in the three most recent years of data (AACN, 2019d). These graduation and enrollment numbers are particularly discouraging since 23 new PhD programs were developed from 2009 to 2018. At the 2021 AACN Doctoral Education Conference, AACN Board Chair Dr. Susan Bakewell-Sachs reported that PhD enrollments increased by only 1% in 2020 (Bakewell-Sachs & Trautman, 2021). This miniscule growth contrasts sharply to DNP enrollments which increased by 9.2% in 2020 (Bakewell-Sachs & Trautman) and previously grew 12% to 36% (by an additional 1872-3808 students) *each year* from 2009 to 2018 (AACN, 2019b). There are now nearly 40,000 DNP students enrolled in 366 programs (Bakewell-Sachs & Trautman). While factors involved in the PhD-prepared nursing shortage are multifaceted, interventions to increase PhD enrollments are a crucial starting point to boost the small but essential nurse scientist population.

Low PhD enrollments are not unique to nursing. Many disciplines, from audiology and speech-language pathology (American Speech-Language-Hearing Association Academic Affairs Board, 2013) to pharmacy (Westrick et al., 2013) to accounting (Plumlee & Reckers, 2014) to medicine (Milewicz et al., 2015), are facing a similar problem. Yet, some have taken important steps to improve enrollments through programs and other approaches meant to attract students to PhD education (e.g., Pasick et al., 2012; Renbarger & Beaujean, 2020; Sens et al., 2017). Some nursing institutions and philanthropic organizations have crafted strategies to draw in more students as well, but none of these interventions have evaluated PhD enrollments or enrollment intentions with empirical research.

The purpose of this integrative review is to critically analyze and synthesize the existing literature surrounding strategies to increase enrollment intentions or actual enrollment in PhD programs among college students and graduates. Here, strategies are defined as anything that can be feasibly implemented at the institution, college, or school level. Enrollment intentions, though not equivalent to actual enrollments, are included as an outcome because a large volume of literature has shown that intention is predictive of true enrollment (Lent et al., 2005; Nevill & Chen, 2007) and because measuring academic-

related intentions is both common and acceptable practice in career counseling research (Deemer et al., 2020; Fouad & Santana, 2017). The specific questions this review aimed to answer were:

1. What types of programs, strategies, or methods are successful at increasing intent to enroll or actual matriculation into PhD programs?
2. What common elements are present in these interventions that successfully increase enrollment or intentions for enrollment in PhD programs?
3. What unique strategies help to mitigate or eliminate barriers to PhD education?
4. Which interventions are more appropriate for use in nursing, and how could nursing potentially implement them to increase PhD enrollments?

Methods

An integrative review was chosen as the appropriate method for this work because empirical research on interventions for PhD enrollment is highly variable both in terms of the interventions implemented as well as study designs. To enhance the rigor of this review, Whitemore and Knaff's (2005) integrative review methodology was employed, the Matrix Method (Garrard, 2017) was used for data extraction and analysis, and applicable Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA) reporting guidelines were followed. Since the quality of sources in integrative reviews is often difficult to determine due to lack of standardization among studies, critical analysis of the studies was undertaken using the Quality Assessment Tool for Studies with Diverse Designs (QATSDD; Sirriyeh et al., 2011; see scores in Tables 3.1 and 3.2). The QATSDD is a validated 16-item tool ($\kappa = 0.698-0.901$) useful for integrative reviews, allowing scoring of qualitative, quantitative, and even mixed methods studies (Sirriyeh et al., 2011). This tool was originally designed for systematic reviews, but its value has been noted for integrative reviews (Fenton et al., 2015). Studies of any quality score were described and synthesized in the Results section, but only those with higher quality scores ($> 25/42$) informed the Implications for Nursing Education subsection in the Discussion.

A health sciences librarian assisted with search terms; building blocks for searching can be seen in Figure 3.1. Databases used for literature retrieval included the Cumulative Index to Nursing and Allied Health Literature (CINAHL), Education Resources Information Center (ERIC), Education Source, PsycINFO, Business Source Complete, PubMed, Sociological Abstracts, Scopus, and Web of Science. This wide range of databases was necessary to capture literature from multiple disciplines. The only limiters placed on database searching were English language and a 10-year date range (2010-2020). Published articles prior to 2010 were deemed inappropriate for this review, as their findings would be outdated and, in the case of nursing literature, would not reflect the dramatic changes that occurred on the doctoral landscape with the introduction of the DNP in 2004 (AACN, 2020a). Whittemore and Knafl (2005) suggest the use of more than one strategy to identify relevant sources for an integrative review. Therefore, after database searching was complete, a hand search of reference lists in highly-relevant articles was performed, including all those that met the inclusion criteria for synthesis. Hand searching continued until no additional sources in reference lists fit the inclusion criteria.

Only primary sources detailing peer-reviewed, empirical research were included, which necessarily excluded literature reviews, conference proceedings, dissertations, theses, book chapters, expert opinion pieces, editorials, and basic program evaluations. To gain the broadest understanding of interventions for PhD enrollment, all types of qualitative and quantitative studies were considered valuable sources. All included articles needed to detail implementable interventions. For quantitative studies, intentions for PhD enrollment, actual enrollment numbers, PhD degree completions, and/or research career intentions had to be listed as an outcome. Studies of interventions that increased *interest* in a PhD were also included if a full-text reading revealed that interest was being used as a surrogate term (Rodgers, 2000) for *intention*. Qualitative studies had to explore or describe a proven, suggested, or assumed implementable intervention for increasing PhD enrollments or enrollment intentions.

To inform U.S. nursing research, practice, and policy, sources were limited to studies conducted in the United States. The U.S. higher education system is unique with its large variety of degrees,

numerous types of institutions, and lack of federal control (Loo, 2018). Moreover, the DNP degree, a significant factor in nursing students' doctoral decision-making, is awarded almost exclusively in the US (Bellini & Cusson, 2012; Ea et al., 2021). These challenges make it difficult to coalesce findings from studies in other countries. Furthermore, only interventions tailored to college students or graduates were considered, as these groups were deemed most accessible for nursing institutions. Studies were excluded if they pertained only to enrollment or enrollment intentions in other types of doctoral programs (e.g., Doctor of Physical Therapy, Doctor of Dental Surgery, etc.), though articles detailing recruitment for MD-PhD programs were included.

Using Whittemore and Knafl's (2005) analysis techniques, data were first reduced by providing an overall classification system. The initial subgroup analysis was based on methodology: quantitative versus qualitative research design. Within each of these two groupings of articles, the literature was examined from the oldest to the most recent. Using the Matrix Method (Garrard, 2017) as a means of data display, important components of each study were extracted. Then, Garrard's (2017) Matrix Method was used to compare the data under each column topic, which helped with recognizing patterns, relationships, and themes among the data. Finally, themes identified in the data comparison stage were moved to a higher level of abstraction, and their validity was verified by referring back to the data extracted from the synthesized articles.

Using the studies in this review, the various strategies employed by nursing and other disciplines to boost PhD enrollment intentions and actual enrollments were synthesized. To answer the research questions, I will present an overview and critical analysis of the studies, discuss the common components found in many strategies, highlight unique interventions, and outline the studies' findings. I will conclude with a discussion of the literature's pertinence to nursing PhD education and identify implications for future research, policy, and nursing education.

Findings

Database searching occurred from January 31, 2020 to February 12, 2020. Searching yielded 1,339 sources from the nine databases. The search in Sociological Abstracts yielded over 5000 sources, so the first and third blocks were limited to abstract only, which resulted in 46 sources. The details of searching and selection can be seen in Figure 3.2. Of note, one full-text article was excluded based on significant flaws in logic and grammar as well as journal characteristics that were consistent with predatory publishers (Oermann et al., 2016). Evaluation of database and hand-searched sources for inclusion in the review was completed on March 18, 2020 with a final sample of 18 sources: six qualitative studies and 12 quantitative studies. These 18 studies comprise the programs, strategies, and methods that are successful at increasing intent to enroll or actual matriculation into PhD programs (research question #1).

Characteristics of PhD Program

An overview and critical analysis of the studies with regards to theoretical frameworks, settings, samples, methodologies, and methods using Polit and Beck's (2018) guidelines is provided. Source details can be seen in the quantitative (Table 3.1) and qualitative (Table 3.2) matrix tables. Most studies outlined strategies for boosting PhD enrollments or enrollment intentions in underrepresented minority (URM) populations, typically defined as ethnic or racial groups which have historically received fewer PhDs. However, other authors also included rural (Oppenheimer et al., 2020; Salerno et al., 2017), socioeconomically disadvantaged (Salerno et al.), or first-generation students (Coronado et al., 2012), as well as individuals who are disabled (Salerno et al.) in their definition of URM.

Theoretical Frameworks

Theoretical underpinnings help to strengthen a study's internal and construct validity. Nine articles described a theoretical foundation. Theories fell into two broad categories: student-focused theories and institution-specific theories. Student-focused theories, which described the social processes

involved in the decision to pursue a PhD, included Anticipatory Socialization Theory (DeAngelo, 2010; Jablin, 1984; Kamens, 1981; Merton, 1968; Phelps-Ward & DeAngelo, 2016), Social Capital Theory (Aikens et al., 2016; Bourdieu, 1986; Lin, 2001; Phelps-Ward & DeAngelo, 2016), Status Attainment Theory (Blau & Duncan, 1967; Eagan et al., 2013; Sewell et al., 1969), the Theory of College Student Socialization (Eagan et al., 2013; Weidman, 1989), and Self-Efficacy Theory (Bandura, 1997; Salto et al., 2014). Remich et al. (2016) employed a theoretical framework that they crafted from previous research using Holland et al.'s (1998) Identity-in-Practice Theory and Bourdieu's (1986) Cultural Capital Theory (Gazley et al., 2014). Institution-specific theories helped explain characteristics of universities that play a role in PhD enrollment, and these included theories of symbolic and social boundaries (Posselt et al., 2017; Tilly, 2004) and the Theory of Institutions as Loosely-Coupled Systems (Griffin & Muñiz, 2011; Weick, 1976). Swail's (2003) Geometric Model of Student Integration, utilized by Slovacek et al. (2012), is unique because it describes both student and institutional factors that contribute to PhD enrollment.

Settings and Samples

Detailed setting and sample characteristics can be seen in Tables 3.1 and 3.2. Interestingly, California and the Midwest appear to be the sites of much research surrounding PhD student enrollment strategies in the last 10 years (Davis, 2010; DeAngelo, 2010; Phelps-Ward & DeAngelo, 2016; Posselt et al., 2017; Oppenheimer et al., 2020; Pasick et al., 2012; Salto et al., 2014; Sens et al., 2017; Slovacek et al., 2012). Five studies examined students from multiple universities across the US (Aikens et al., 2016; Eagan et al., 2013; Griffin & Muñiz, 2011; Remich et al., 2016; Schultz et al., 2011), and those remaining looked at single universities in other sites (Coronado et al., 2012; Junge et al., 2010; Pender et al., 2010; Salerno et al., 2017). Five authors focused entirely on minority-serving institutions (Coronado et al.; Oppenheimer et al.; Pender et al.; Salto et al.; Slovacek et al.); two examined both predominantly White universities and minority-serving colleges and universities (Davis; DeAngelo); four looked at only predominantly White institutions (Griffin & Muñiz; Junge et al.; Phelps-Ward & DeAngelo; Posselt et al.); and the balance of articles did not specify the names or minority status of the institutions.

Qualitative studies had sample sizes of 8 to 130, which were adequate given the methodologies used. Davis' (2010) study quality is questionable, as no total number of participants was provided, making sample characteristics and size difficult to discern. Quantitative studies had an even broader range, from 6 to 4152 participants. Salerno et al.'s (2017) and Coronado et al.'s (2012) very small samples significantly decreased their statistical conclusion validity and external validity. Most samples consisted of students or postgraduates, but four qualitative studies gathered information from other sources, including faculty members (DeAngelo, 2010; Phelps-Ward & DeAngelo, 2016; Posselt et al., 2017), university staff (Posselt et al.), and graduate diversity officers (GDOs; Griffin & Muñiz, 2011). Homogeneous samples of current or past participants from only one research program posed a threat to external validity in many studies (Coronado et al., 2012; Junge et al., 2010; Oppenheimer et al., 2020; Pender et al., 2010; Salto et al., 2014; Sens et al., 2017; Slovacek et al., 2012), and some studies' findings were only applicable to large research universities (e.g., Aikens et al., 2016).

The majority of student samples consisted of undergraduates, but master's students (Pasick et al., 2012) and PhD students (DeAngelo, 2010; Posselt et al., 2017) were also studied. Samples were largely from science, technology, engineering, and mathematics (STEM) fields (Aikens et al., 2016; Coronado et al., 2012; Eagan et al., 2013; Junge et al., 2010; Oppenheimer et al., 2020; Pender et al., 2010; Posselt et al.; Salto et al., 2014; Schultz, 2011; Sens et al., 2017; Slovacek et al., 2012), though one study (Phelps-Ward & DeAngelo, 2016) focused on communications students and another (Pasick et al.) on public health and behavioral/social science students. Sens et al. (2017) looked at both STEM and pre-medicine students, and Salerno et al. (2017) was the only study that focused on nursing students. Three authors did not specify the discipline(s) their samples represented (Davis, 2010; DeAngelo; Remich et al., 2016).

Methodologies and Methods

Qualitative Studies. Three qualitative studies employed descriptive designs (Davis, 2010; DeAngelo, 2010; Remich et al., 2016); two were case studies (Griffin & Muñiz, 2011; Posselt et al., 2017); and one was a phenomenological study (Phelps-Ward & DeAngelo, 2016). Data collection

occurred through semi-structured interviews (Davis, 2010; Griffin & Muñiz, 2011; Phelps-Ward & DeAngelo, 2016; Posselt et al., 2017; Remich et al., 2016), observation, and document review (Posselt et al.). It is unclear why Griffin and Muñiz's (2011) data collection and analysis stopped; no mention of data saturation or other rationale was provided. Thematic analysis (Davis; Phelps-Ward & DeAngelo; Griffin & Muñiz; Remich et al.) and constant comparison (DeAngelo, 2010; Posselt et al.) were used to analyze data. Davis (2010) analyzed her data alone, reducing her study's credibility because of a lack of investigator triangulation. Phelps-Ward and DeAngelo (2016), on the other hand, used peer debriefing and a reflexive journal to increase the credibility and confirmability of their findings. Griffin and Muñiz did not describe an audit trail, reflexivity, nor their credentials and experience. However, their study's transferability was enhanced through a thick description of the participants, research context, and findings (Polit & Beck, 2010). In contrast, two qualitative studies had limited transferability because important program details were omitted (Davis; Remich et al.). A unique strength of Remich et al.'s (2016) study was their use of quantitative descriptive data on PhD enrollments to accompany their qualitative research.

Quantitative Studies. None of the quantitative studies utilized a random sample and true experimental design; therefore, causal inferences were not possible, and the threat of selection bias could not be eliminated. Study designs were descriptive (Coronado et al., 2012; Junge et al., 2010; Oppenheimer et al., 2020; Pasick et al., 2012; Salerno et al., 2017; Salto et al., 2014; Sens et al., 2017), observational (Aikens et al., 2016; Pender et al., 2010; Slovacek et al., 2012), and quasi-experimental (Eagan et al., 2013; Schultz et al., 2011). Most studies were cross-sectional and contained samples from only one institution. However, a few studies involved longitudinal research (Coronado et al., 2012; Oppenheimer et al., 2020; Salerno et al., 2017; Schultz et al., 2011) and national samples (Eagan et al., 2013; Schultz et al.). Surveys were utilized in 11 studies as the primary or only means of data collection, introducing the possibility of social desirability bias. Some authors described longitudinal outcomes of PhD enrollment or completion collected via public domain, database searching (e.g., National Student Clearinghouse), or personal communication (Coronado et al.; Oppenheimer et al.; Pasick et al., 2012;

Pender et al., 2010; Salerno et al.; Sens et al., 2017; Slovacek et al., 2012). Internal validity was strengthened in Eagan et al.'s (2013) and Salto et al.'s (2014) studies through use of propensity score matching. Multiple researchers attempted to simulate a prospective design by either retrospectively gathering data from two time points (Eagan et al.; Salto et al., 2014) or by asking program alumni to rate their PhD intentions before and after participation (Junge et al., 2010), rendering these studies vulnerable to temporal ambiguity. The accuracy of responses is also called into question, particularly in Junge et al.'s (2010) study, whereby some participants had to think back 15 or more years about their PhD intentions.

Most quantitative studies had significant threats to internal validity through a variety of mechanisms. In two studies, students who had participated in a heterogeneous mix of research experiences comprised the intervention group (Pender et al., 2010; Schultz et al., 2011), making it difficult to know whether research in general led to their PhD outcomes or whether aspects of specific experiences contributed. Oppenheimer et al. (2020) stated in their methods that rates of PhD interest would be compared between enrichment program participants and controls, but only program participants rates were reported in the results. Two studies were missing complete information about sample size and attrition (Schultz et al.; Sens et al., 2017). Seven studies utilized instruments that had not been previously tested (Coronado et al.; Oppenheimer et al.; Pasick et al.; Pender et al.; Salto et al.; Schultz et al.; Sens et al.), and many failed to account for one or more important confounders through design and/or statistical controls (Coronado et al., 2012; Junge et al., 2010; Pasick et al., 2012; Salerno et al., 2017; Salto et al., 2014; Sens et al.). Only Aikens et al. (2016), Salto et al. (2014), Slovacek et al. (2012), Pender et al. (2010), Eagan et al. (2013), and Schultz et al. (2011) utilized more advanced statistical techniques such as binary logistic regression or hierarchical linear modeling, contributing to the validity of their findings.

Features of Successful Strategies

To answer the second and third research questions, I examined PhD enrollment interventions across studies to identify commonalities as well as unique features.

Common Components

Common aspects of PhD enrollment interventions and their presence in each of the reviewed studies can be seen in Table 3.3. Successful strategies were often discrete programs, those that were organized and promoted by schools specifically to boost PhD enrollments. Non-discrete strategies, on the other hand, were more organic, less formal approaches that researchers studied out of a hunch that they might increase PhD intentions or enrollments. Many successful interventions had a one-on-one faculty mentoring component, including the two non-discrete strategies. Twelve interventions used hands-on research to give participants personal experience with the work of a scientist. Twelve also targeted undergraduates exclusively, or in the case of Schultz et al. (2011) both undergraduate and master's students. Many strategies involved informational sessions on topics such as applying to doctoral programs, challenges during graduate school, and launching a research career. Ten of the 15 discrete programs took place only during the summer months, and just over half of them had their own funding from the federal government, private foundations, and/or the university itself. Those with funding often compensated students—and sometimes faculty—for participating. Six strategies provided built-in social support either through peer networking or informal activities with faculty and/or staff.

Unique Approaches

Non-Traditional Participants and Flexible Program Structure. Contrary to most strategies' focus on undergraduate students, three targeted master's and professional students (Pasick et al., 2012; Remich et al., 2016; Schultz et al., 2011), and three others outlined programs that offer greater flexibility for student participation. Salerno et al.'s (2017) strategy was the only part-time program. Pasick et al. (2012) described a two-phase strategy: a 5-day summer intensive informational program followed by paid summer research internships for select students. Sens et al. (2017), on the other hand, detailed two separate programs: a traditional summer research internship and the Short-Term Educational Experiences for Research (STEER) program for students with no prior research experience.

Minority-Serving Institutions and Holistic Admissions. Griffin and Muñiz (2011) and Posselt et al. (2017) described the importance of PhD program faculty and staff forming close relationships with minority-serving institutions (MSIs), which helps pave a clear path for URM students to transition to doctoral studies. They also explained the benefit of having less rigid admission criteria, including de-emphasizing the importance of Graduate Record Exam scores; carefully exploring all applicants, not just those from elite or familiar institutions; and recognizing diversity itself as a favorable quality on an application (Griffin & Muñiz, 2011). Faculty and staff at the University of Michigan's Applied Physics program displayed a readiness to question previously-held admission standards, willingness to consider students without top grades, and a unified desire to uphold new admissions practices (Posselt et al., 2017).

Addressing Less-Research Intensive Universities' Challenges. DeAngelo's (2010) work provided insights into the unique problems facing students attending universities where research is lower in priority. She found that undergraduates at such institutions were often discouraged from PhD pursuit because interactions with their faculty caused them to devalue their undergraduate degrees and see themselves as less competitive for PhD application at research-intensive institutions. Faculty, in turn, stated that the university's over-emphasis on undergraduate degree completion and preparation for the workforce left faculty with little time to help students explore the possibility of graduate school. Intervening in these two challenges, DeAngelo's participants argued, could increase PhD enrollments.

Outcomes of Studies

This integrative review included studies with multiple outcomes, including enrollment intentions, actual matriculation, and PhD completion, all of which help to move the needle toward the overarching goal of this review: describing ways to increase the number of PhD-prepared nurses. However, as enrollment intentions are a less-definitive outcome, results were separated into two categories: (a) PhD interest or intent and (b) PhD enrollment and completion. Studies with both types of outcomes were also examined. Outcome details can be seen in Tables 3.1 and 3.2.

PhD Interest or Intent

Effect of Mentoring. Aikens et al. (2016) found that students who had direct mentorship from faculty as well as from postgraduates (i.e., a “closed triad”) had greater PhD enrollment intentions than those mentored indirectly by faculty through postgraduates or mentored only by postgraduates. However, Schultz et al. (2011) found contrary results. Despite the effectiveness of the Research Initiative for Science Excellence (RISE) program, they discovered that mentorship did not significantly predict students’ PhD intentions over time. Eagan et al. (2013), on the other hand, suggested that mentoring might be an integral influence on enrollment intentions since their study found less effect of hands-on research once covariates, including mentorship, were taken into account.

In their qualitative research Davis (2010), DeAngelo (2010), and Phelps-Ward and DeAngelo (2016) highlight the mechanisms by which mentoring may be crucial for PhD enrollment intentions. When faculty talk with students about their own graduate school experience and allow students to share in their research, they can build students’ interest and self-efficacy for research and doctoral work (Davis, 2010). Mentoring provides tangible role models for students as well as space for faculty to help students assess their values and career goals (Phelps-Ward & DeAngelo, 2016). Likewise, DeAngelo (2010) found that the most effective faculty mentors are those who actively seek out students to encourage and who maintain a close relationship with them.

Effect of Hands-On Research. After careful analysis, Schultz et al. (2011) reported that the single greatest benefit of RISE participation was the greater opportunity for research experience, which was found to be the best determinant for PhD career intentions. Remich et al. (2016) found that engaging in typical activities of a PhD student, including an independent research project, dissemination opportunities, interactions with other scientists, attending graduate courses, and honing their writing and speaking skills, grew Post-Baccalaureate Research Education (PREP) participants’ confidence for PhD work and interest in PhD programs.

Effectiveness of Discrete Programs. Though some studies had significant threats to internal and external validity, discrete summer research programs were reported to be effective. After surveying 219 programs, Eagan et al. (2013) found that participation in structured research programs during undergraduate years increased the likelihood of STEM graduate enrollment intentions by 14-17 percentage points. Those with high intentions for a PhD and a research career—defined as a score of 9 or 10 on a 0-10 scale asking to what extent the student intended to pursue a science-related research career—upon entering college were more likely to maintain high intentions through college if they participated in RISE (Schultz et al., 2011). Likewise, RISE participants with medium intentions at college outset were more likely to report high intentions upon graduation. The number of students who expressed interest in a PhD or who intended to enroll also increased after participation in the programs outlined by Coronado et al. (2012), Junge et al. (2010), Oppenheimer et al. (2020), Salerno et al. (2017), and Salto et al. (2014).

As the only study of nursing students, Salerno et al.'s (2017) research, though merely exploratory and containing considerable threats to internal and external validity, deserves special attention. Though none of the six participants in the Health Disparities Summer Research Program had PhD intentions at program outset, three developed intentions by program completion. At one-year follow-up, four of six students described intentions to pursue a PhD, MD, or other professional degree. Participants said the program helped them gain an interest in health disparities research, awareness of graduate research education, and a better understanding of how research worked.

PhD Enrollment and Completion

URM PhD enrollments increased substantially after participation in programs described by Coronado et al. (2012), Pasick et al. (2012), Pender et al. (2010), Remich et al. (2016), Salerno et al. (2017), Salto et al. (2014), and Slovacek et al. (2012). Two studies also provided PhD completion data. Of 48 total PREP participants, Remich et al. (2016) reported that five had completed their PhD and 22 (45.8%) were currently enrolled in PhD or MD-PhD programs. Compared to unpublished data from

Emory University, Junge et al. (2010) found that 16.1% of SURE participants completed a PhD, while only 5.4% of all undergraduates who majored in science took on and finished a PhD.

Quantity and Timing of Research Experiences. Pender et al. (2010) discovered that the more summer research internships (SRIs) students participated in, the more likely they were to enroll in a PhD program, and Pasick et al. (2012) saw higher PhD enrollment rates for those who participated in a summer-long research internship compared to a 5-day intensive informational program. Yet, even students with no prior research experience in college demonstrated significant rates of PhD enrollment after engaging in the STEER program's research activities (Sens et al., 2017). Pender et al. also noted that the timing of SRI participation makes a difference. Those who participated in SRIs after their senior year were more apt to apply to PhD programs, and lesser, though still significant, increases in PhD enrollment were seen after sophomore and junior, but not freshmen, years. This aligns with Oppenheimer et al.'s (2020) findings, which showed that only three of 308 freshmen students in the Summer Math and Language Arts Enrichment Program had applied or were currently pursuing a PhD. However, 7% (n = 21) of participating students moved into Minority Access to Research Careers (MARC) or RISE programs, which promote PhD enrollment during junior and senior years.

Drawing in Underrepresented Students. Salerno et al. reported that one of the six URM nursing students in the inaugural Health Disparities Summer Research Program enrolled in a PhD in Nursing program, and participation in both research programs at the University of North Dakota helped encourage doctoral pursuit among first-generation students (Sens et al., 2017). In their qualitative studies Griffin and Muñiz (2011) and Posselt et al. (2017) described strategies to increase URM PhD enrollments. University staff and especially faculty should interact with prospective PhD students at graduate school fairs, conferences, summer research programs, and campus visits by prospective students (Griffin & Muñiz, 2011). They should also connect with faculty and students at MSIs and should alter the PhD admission criteria to reduce bias toward majority students (Griffin & Muñiz; Posselt et al., 2017).

PhD Intention vs. Enrollment and Completion

Six studies offered data on enrollment intentions as well as actual enrollments and/or degree completions (Coronado et al., 2012; Junge et al. 2010; Oppenheimer et al., 2020; Pasick et al., 2012; Salerno et al., 2017; Salto et al., 2014). However, accurately comparing these two outcomes within each study was difficult because of nonequivalent samples (Oppenheimer et al., 2020; Pasick et al., 2012), such as tracking only a subset of original participants for longitudinal follow-up (Coronado et al., 2012; Salto et al., 2014). Additionally, some PhD enrollments or completions were assessed between one and six years after the intervention (Coronado et al., 2012; Junge et al., 2020; Salerno et al., 2017). Junge et al. (2010), for instance, gathered PhD completion data on SURE cohorts from the previous six years and found that 39% of those with high intentions at program exit had completed a PhD. Given more time, however, other study participants may have finished PhD programs.

Discussion

Answering this review's fourth research question—*Which interventions are more appropriate for use in nursing, and how could nursing potentially implement them to increase PhD enrollments?*—was difficult, as I found that the interventions examined are not readily transferable to nursing PhD enrollment strategies. The majority of strategies were designed for student populations substantially different from those found in nursing, whose PhD enrollees are 88.6% female (AACN, 2019a), only 33% ethnic or racial minority (AACN, 2019a), 83.7% post-master's (Fang, 2017), and an average age of 42.2 years old (Fang & Zhan, 2021). In contrast, most of the reviewed studies utilized enrollment strategies meant for undergraduates, roughly equal numbers of male and female students, and higher proportions of URMs.

The generalizability of these findings to nursing is also limited because the few strategies that would be more appropriate for use in nursing have significant threats to internal and external validity. Salerno et al. (2017) conducted the lone nursing study, but with a sample size of six nursing students and no statistical controls applied during analysis, their findings should be viewed with great caution. Two other studies with applicability to nursing, through their use of master's students and health professionals

(Pasick et al.) and those with no prior research experience (Sens et al.), utilized a one-group, posttest only design, which limits their transferability. Nevertheless, the findings distilled from this review form a starting point for discussions surrounding enrollment interventions for nursing PhD programs and provide important implications for research, policy, and nursing education.

Implications for Future Research

Programs that are successful at enrolling students in STEM PhD programs may not be as effective for nursing PhD enrollment. With over 90% of nurses being females (National Council of State Boards of Nursing, n.d.) compared to only 28% females in the STEM workforce (National Girls Collaborative Project, 2020), nursing must contend more strongly with competing priorities of marriage and childrearing that can thwart or postpone female students' plans for graduate studies (Kovner et al., 2012). Additionally, STEM disciplines and nursing have divergent foci. Many STEM fields are categorized as basic sciences, where research reigns supreme. However, in practical sciences like nursing, clinical practice, not research, is the chief concern of students and most educators. Many authors of the reviewed studies admitted that programs for boosting PhD enrollments usually serve to bolster students' *pre-existing* interest in research, instead of creating it (Coronado et al., 2012; Eagan et al., 2013; Salto et al., 2014; Schultz et al., 2011). While some undergraduate nursing students enter their programs with an established interest in research, most hold a negative view of research (Hsieh et al., 2016; Liou et al., 2013) and find their research courses less appealing than coursework that provides them with tangible clinical skills (Coyne et al., 2018). Therefore, the greater challenge in nursing may be instilling baseline research interest in students who are preparing to enter a practice-oriented profession.

High-achieving nursing students and practicing nurses desiring a doctoral degree must make a choice between the DNP and the PhD (Bednash et al., 2014). While a handful of researchers have described the barriers and facilitators to PhD and/or DNP pursuit (Dreifuerst et al., 2016; Lee et al., 2013; Loomis et al., 2006; Rocafort et al., 2020; Sebach & Chunta, 2018; Squires et al., 2013), their use of surveys and semi-structured interview questions, often with small, homogeneous samples, may have

resulted in findings that are missing crucial information, leading to blind spots in our understanding of this phenomenon. Qualitative studies that employ unstructured interview questions and recruit a varied sample are needed to gain a richer understanding of PhD perceptions and decision-making regarding doctoral pursuit. For example, Xu et al. (2018) found that students who entered the PhD directly from baccalaureate programs were committed to science and wanted to contribute to the scientific knowledge base in nursing. The perspectives of students in dual degree (DNP and PhD) and DNP-to-PhD programs also need to be explored, as enrollments in these programs are steadily growing and may present a unique opportunity to bolster the PhD-prepared nursing workforce (AACN, 2010; Greco, 2019; Loescher & Love, 2021; May et al., 2020; Sebach & Chunta).

With the exceptions of Remich et al. (2016) and Pasick et al. (2012), most studies in this review examined programs for undergraduate students. Compared to other life sciences PhD students, over 80% of whom graduate by age 35 (National Science Foundation, 2018), the average age of nursing PhD graduates is 47.5 years old (Fang & Zhan, 2021). Nursing students are also more apt to delay graduate school pursuit in order to practice clinically (Squires et al., 2013), and many take on a master's before moving to doctoral education (Wheeler and Eichelberger, 2017). Therefore, more research needs to address how professionals can be brought back into the world of academia and how to encourage students to enroll in PhD programs immediately or shortly after undergraduate completion.

Nursing schools are acutely aware of the shortage of PhD-prepared nurses, and some have implemented strategies to boost PhD enrollments (McSweeney et al., 2018). The University of Cincinnati's PhD Diversity Pipeline Program Project (Smith et al., 2016), the University of North Carolina at Chapel Hill's Careers Beyond the Bedside program (Kowlowitz et al., 2018; Rowsey et al., 2013), and various research engagement approaches at Calvin College (Ayoola et al., 2017) all hope to increase PhD interest and enrollments. Less formal—and sometimes serendipitous—strategies were described at the 2021 AACN Doctoral Education Conference, including combined coursework with DNP and PhD students which served to interest DNP students in the PhD (F. Beason, personal communication,

February 3, 2021). Philanthropic organizations have also developed strategies, such as the Jonas Scholars Program (Carter et al., 2020), the Robert Wood Johnson Foundation's (2021) Future of Nursing Scholars, and the Hillman Scholars in Nursing Innovation (n.d.), to increase the number of nurse scientists. Yet, none of these nursing school or philanthropic strategies, to my knowledge, has been examined with empirical research methods to explain how they contribute to students' intentions for a PhD and/or actual enrollment. Therefore, rigorous qualitative and quantitative studies of these programs are needed so that other schools and organizations can learn from effective strategies.

Implications for Policy

This review showed that robust PhD enrollment strategies require significant financial resources. The STEM disciplines have enjoyed generous federal (e.g., National Institutes of Health [NIH] and National Science Foundation) and philanthropic funding for at least the last 35 years to create programs that propel students to PhD studies and research careers (e.g., McNair Scholars Program, n.d.; University of Maryland Baltimore County, n.d.). Even medicine has received NIH funding for this purpose (Sens et al., 2017). Yet, legislators have continually supported the National Institutes of Nursing Research with shamefully low funding, currently at less than 0.5% of the total National Institutes of Health budget (Kyeli & Wysocki, 2020). While philanthropic funding can be a partial means to support PhD enrollment strategies, nurse leaders must continue to advocate for substantially more funding specifically for nursing research and the nurse scientist workforce in the federal budget.

Implications for Nursing Education

Interventions in STEM tend to have a set of core components (Table 3.3) which contribute to their effectiveness. Studies in this review with higher quality scores (QATSDD scores >25/42; see Tables 3.1 and 3.2) demonstrated the benefits of hands-on research experience (Pender et al., 2010; Remich et al., 2016; Schultz et al., 2011), discrete research program participation (DeAngelo, 2010; Eagan et al., 2013; Griffin & Muñiz, 2011; Remich et al.; Slovacek et al., 2012), faculty involvement (Aikens et al.,

2016; DeAngelo; Eagan et al.; Griffin & Muñiz, 2011), an inclusive institutional culture (DeAngelo; Eagan et al.; Griffin & Muñiz; Posselt et al., 2017), and exposure to graduate students and courses (Eagan et al.; Remich et al.). Rigorous studies that presented unique strategies included targeting groups other than undergraduates (Remich et al.; Schultz et al., 2011), connecting to MSIs, and implementing forward-thinking admissions requirements (Griffin & Muñiz; Posselt et al.).

Though more research is needed to confirm the effectiveness of these strategies for nursing PhD enrollments, multiple schools, including those mentioned above (Ayoola et al., 2017; Rowsey et al., 2013; Smith et al., 2016), have already crafted formal programs and informal approaches that incorporate one or more of the features outlined in this review. Another example is the University of Pittsburgh's Undergraduate Research Mentorship Program, which is a discrete program that has provided hands-on research experience to the majority of the school's Bachelor of Science in Nursing students since 2008 (Y. Conley, personal communication, February 22, 2021; University of Pittsburgh School of Nursing, 2021). The AACN (2020b) is also on board, recently introducing guidance on holistic admissions to help schools diversify their nursing student populations. The AACN encourages admissions committees to evaluate not only traditional metrics but also how applicants' experiences and personal attributes fit into the nursing program's goals. While we wait for these and other strategies to be verified through qualitative and quantitative research, nursing administrators, PhD faculty, and school recruitment staff can cautiously utilize this review's findings to start or alter their own efforts for PhD enrollments.

Limitations

Integrative reviews, while valuable, are more prone to error than other types of reviews because of their broader scope and inclusion of a heterogeneous mix of research (Whittemore & Knafl, 2005). A significant limitation was the use of a single reviewer of data sources. More than one reviewer increases the likelihood that source inclusion, data extraction, and analysis are appropriate (Polit & Beck, 2018). Including both theoretical and empirical sources can also serve to strengthen an integrative review (Whittemore & Knafl, 2005), yet the focus on application-ready strategies prompted me to limit to

empirical sources only. Additionally, a lack of empirical research for PhD enrollment intentions among college students necessitated the use of other populations and outcomes, including college graduates, actual PhD enrollments, and interest in a PhD. Broadening the inclusion criteria may have decreased the strength of the findings. Nevertheless, the comprehensive search strategy, use of quantitative and qualitative research, and quality evaluation of each study strengthened this review and its findings.

Conclusion

A wide net was cast in order to ascertain and evaluate strategies to boost PhD enrollments and enrollment intentions. Yet, rigorous studies with trustworthy findings are all situated in the STEM disciplines. The lack of research within nursing at a time when PhD enrollments are woefully inadequate should serve as a clarion call to turn our attention, resources, and efforts toward this problem. Qualitative research is needed to gain a richer understanding of what draws nurses to PhD education or steers them away. Qualitative findings will inform the development of PhD enrollment strategies that can then be examined using quantitative methods. In the meantime, existing nursing programs that incorporate the elements of effective interventions for PhD enrollments must be rigorously studied and the findings published. Pending more available research, concerned nursing administrators, faculty, and staff can utilize the findings of this review to begin crafting their own strategies, evaluating them and disseminating the findings for the benefit of other nursing schools. Until interventions to bolster the PhD-prepared nursing workforce are identified and implemented, the future of nursing science, nursing education, and the nursing profession at large will continue to hang precariously in the balance.

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Appendix

Table 3.1: Quantitative Studies Reviewed ($n = 12$)

Author (Year) QATSDD Score	Purpose	Strategy Employed	Sample	Results
Junge et al. (2010)*^ 17/42	To assess former program participants' interest and pursuit of graduate STEM careers	<i>Summer Undergraduate Research Experience (SURE)</i> • At Emory University • 10-week program • Mentored research • STEM undergraduates • Weekly “Science Careers” meetings • Funded by Howard Hughes Medical Institute, National Science Foundation, Emory University, and National Institutes of Health	250 program alumni	<u>PhD interest</u> (baseline to program exit): • Overall interest: 48.4% to 58% ($p = 0.001$) • High interest: 26.4% to 40.8% ($p < 0.001$) <u>MD/PhD interest</u> (baseline to program exit): • Overall interest: 20.4% to 24.4% ($p = 0.07$) • High interest: 5.6% to 10.8% ($p = 0.001$) <u>Scientific research interest</u> (baseline to program exit): • 40% to 56.8% ($p < 0.001$) <u>PhD completion</u> : • 16.1% (compared to unpublished data from Emory that showed only 5.4% of all Emory science undergraduate alumni undertook PhDs)
Pender et al. (2010)◇ 30/42	To determine if minority student participation in undergraduate summer research internships increase the rate of STEM PhD (including MD-PhD) enrollments	<i>Summer research internships (SRIs)</i> • At University of Maryland Baltimore County • SRIs at university, governmental, and industry research sites • Through Meyerhoff Scholarship Program • For STEM URM undergraduates • Goal: increase the number of minority MD-PhDs and STEM PhDs**	452 total • 375 SRI students • 77 non-SRI students	<u>PhD enrollment</u> : • 32% of total SRI participants enrolled in PhD program • 25% more likely to enroll with SRI participation ($p < 0.01$) • 40% more likely with participation in 3 SRIs • 62% more likely with participation in 4 SRIs • SRIs more predictive than research during the school year ($p < 0.01$) • SRIs after sophomore, junior, and senior years predictive of enrollment (after senior year 23% higher) <u>Characteristics of enrollees</u> : • 95% of enrollees participated in ≥ 1 SRI • 83% participated in ≥ 2 SRIs • 53% engaged in research during school year also (compared to 28% of non-enrollees)

Table 3.1 continued

Schultz et al. (2011)§ 27/42	To examine persistence in intentions for a research career in URM students who participate in RISE programs	<i>Research Initiative for Science Excellence (RISE)</i> • At universities across the U.S. • For URM STEM undergraduate and master's students • Faculty mentored-research in the summer and during the school year • Financial support (annual stipends, conference attendance costs) • Graduate school preparation	415 total • 120 students from Fall 2005 cohort • 295 propensity score-matched students from upper-division science courses	<u>Characteristics between groups</u> (intervention vs. controls): • 94% vs. 36% had a research mentor • 100% vs. 41% had research experience <u>Science research career intentions</u> (intervention vs. controls at baseline and after 2.5 years): • 86% vs. 57% maintained high intentions*** • 52% vs. 27% moved from medium to high intentions • 0.38-point drop in intentions over time vs. 1.22-point drop <u>Key aspects of mentorship and research experience:</u> • Mentorship did not significantly predict intentions over time. • Those in both groups who participated in research had more stable intentions over time ($\beta = 0.51$; $p < 0.01$); more stability came with each semester of research. • RISE participation did not make a difference in the effect of research experience.
Coronado et al. (2012)^ 22/42	To assess whether URM undergraduate participation in the Cancer Research Internship for Undergraduate Students would increase intentions to attend graduate school	<i>Cancer Research Internship for Undergraduate Students</i> • At New Mexico State University • For STEM undergraduates • Funded by New Mexico State University, the Fred Hutchinson Cancer Research Center, and the National Cancer Institute • Conduct independent research with a mentoring faculty member • Receive social support • Engage in professional development and dissemination opportunities	19 students from 2008-2011 cohorts	<u>PhD intentions</u> (baseline to program exit): • 84% to 95% (non-significant; $p = 0.16$) <u>Graduate school interest</u> (baseline to program exit): • 95% to 100% ($p < 0.001$) <u>Graduate school motivation</u> (baseline to program exit): • 90% to 100% ($p < 0.001$) <u>PhD enrollment:</u> • 2 admitted to PhD programs (out of 13 who were tracked longitudinally)

Table 3.1 continued

Pasick et al. (2012) [^] 20/42	To describe doctoral enrollment outcomes and cancer research interest among participants of the Minority Training in Cancer Control Research program	<i>Minority Training in Cancer Control Research</i> • At three University of California campuses • Funded by National Cancer Institute • For public health and behavioral/social science URM master's students and health professionals • 5-day summer institute on research topics and careers in cancer control research as well as how to apply and persist in graduate school • Paid summer internships for 4-8 students/location to work with cancer disparities researchers • \$2000 awards for alumni applying to doctoral programs	367 students and professionals from 1998-2010 cohorts	<u>Doctoral enrollment intentions:</u> • 56% of current participants <u>Doctoral enrollment</u> (5-day institute only vs. summer internship): • 22% vs. 43% ($p = 0.0003$) <u>Characteristics of doctoral pursuits:</u> • 38% of participants since 1999 (95 current doctoral students and 44 doctoral graduates) • Doctorates mostly in health promotion, health education, health behavior, community health, and epidemiology, but some also in nursing and other disciplines • 69% of enrollments occurred within 2 years of program • 81% of current doctoral students said program had a strong influence on academic decision
Slovacek et al. (2012)* [◇] 31/42	To examine the pursuit of higher degrees in sciences by students who participated in MORE programs compared to those who did not participate	<i>Minority Opportunities in Research (MORE) programs</i> • At California State University Los Angeles • For URM STEM undergraduates • Funded by the National Institutes of Health • Faculty mentoring • Hands-on research experience • Financial assistance • Academic support	366 total • 183 MORE participants from 2000-2008 • 183 propensity-score matched non-participants	<u>Graduate enrollments:</u> • 100 MORE students: 61 in master's programs and 39 in PhD programs; then 32 master's students went on to PhD (total of 71 PhD enrollments) • 26 controls: 4 in PhD programs and 1 who enrolled in PhD after master's • Students who were accepted to graduate school were more likely to have participated in MORE programs ($\beta = 1.83$; OR = 6.23; 95% CI: 3.26-11.90)

Table 3.1 continued

Eagan et al. (2013)§ 34/42	To explore the effect of undergraduate research experiences and other aspects of undergraduate experiences on student aspiration for STEM graduate school	<i>Structured undergraduate research experiences</i> • For STEM undergraduates • Students paired with faculty mentors • Faculty are resource in networking with other researchers, graduate students, and graduate admissions personnel	4152 students from 219 4-year institutions across the U.S.	<i>Factors affecting STEM graduate enrollment intentions:</i> • <u>Research participation</u>: strong effect ($\Delta p = 14.50\%$; $p < 0.001$), but with covariates, less pronounced ($\Delta p = 9.04\%$; $p < 0.01$) • <u>Racial/ethnic background</u>: more Latinx, Black, and Asian American students had graduate aspirations ($\Delta p = 7.20\%$, 9.12%, and 8.98%, respectively; all $p < 0.05$) • <u>Time with graduate students</u>: $\Delta p = 5.00\%$; $p < 0.05$ • <u>Faculty support</u>: $\Delta p = 3.71\%$; $p < 0.01$ • <u>Career interests</u>: desire to discover new knowledge ($\Delta p = 5.66\%$; $p < 0.001$) vs. desire to promote social change among non-STEM graduate intenders • <u>Finances</u>: increased debt led to decreased intentions for non-STEM graduate enrollments ($\Delta p = 0.17\%$; $p < 0.01$) but did not affect STEM graduate enrollments • <u>Undergraduate institution</u>: those from selective institutions were more likely to intend STEM graduate enrollment ($\Delta p = 4.26\%$; $p < 0.01$). • Overall, participation in structured research programs during undergraduate years increased likelihood of STEM graduate intentions by 14-17 percentage points.
Salto et al. (2014)*^ 22/42	To compare the terminal degree and research career intent, research skills, and research self-efficacy gains of the Loma Linda University Summer Health Disparities Research Program on high school vs. undergraduate URM students	<i>Undergraduate Training Program</i> • At Loma Linda University • 8-week paid summer internship • For full-time STEM URM undergraduates from across the country • Research mentoring • Independent research • Dissemination of research findings (poster presentation at end-of-program campus research symposium) • Weekly teaching on health disparities	139 students from 1997-1999 and 2001-2012 cohorts	<u>PhD enrollment intentions</u> (baseline vs. program exit): • 26% MD-PhD, 13% PhD in basic sciences, 5% PhD in behavioral sciences vs. 45%, 16%, and 3%, respectively <u>Research career intentions</u> (baseline vs. program exit): • 47% vs. 92% <u>PhD enrollments</u> : • Out of 80 students tracked, 6% were in MD-PhD programs and 15% in basic science PhD programs

Table 3.1 continued

Aikens et al. (2016)◊ 34/42	To explore the effectiveness of various mentoring triads on students' intentions to enroll in a STEM PhD program	<i>Mentoring triads</i> • Students mentored by faculty and/or postgraduates (graduate students and/or fellows) • Research focused on life sciences undergraduates	748 students from 50 institutions across 25 U.S. states with ≥1 semesters of research work with faculty and/or postgraduates	<u>PhD enrollment intentions:</u> • 4x more likely if mentored by faculty and postgraduates (CE = 1.430; SE = 0.559; $p = 0.036$) • More likely with closed mentoring triads (students, faculty, and postgraduates all communicating directly) than with mentoring directly by postgraduates and indirectly by faculty (CE = 0.493; SE = 0.189; $p = 0.009$) or mentoring by postgraduates alone (CE = 1.255; SE = 0.394; $p = 0.001$)
Salerno et al. (2017)^ 20/42	To describe preliminary outcomes of a health disparities summer research program for minority nursing students, particularly intentions to pursue a PhD in nursing.	<i>Health Disparities Summer Research Program</i> • At an institution in south Florida (not specified) • Part-time, 10-week program • For URM undergraduate nursing students • Funded by Florida Blue Foundation • \$10/hour compensation • Research experience with PhD-prepared researchers in nursing and other health fields • Weekly 2-hour seminars on nursing science topics • Dissemination experience via poster presentation	6 students from 2015 (first) cohort	<u>PhD enrollment intentions</u> (baseline vs. program exit): • 0% vs. 50% (other 50% wanted to pursue DNP) <u>Research interest:</u> • 5 of 6 students wanted to make a career in health disparities research <u>Longitudinal outcomes:</u> • 4 of 6 students maintained intentions to pursue a PhD directly after undergraduate or pursue a PhD, MD, or other professional degree after working for a few years • 1 student admitted to PhD in Nursing program

Table 3.1 continued

Sens et al. (2017)*^ 16/42	To assess the effectiveness of the University of North Dakota's STEER and traditional 10-week summer research fellowship in terms of graduate school pursuit and careers	<i>Traditional fellowship</i> • 10-week summer research fellowship • For science and medicine undergraduates • Students paired with faculty to conduct research • Usually R01-funded research project <i>Short-Term Educational Experiences for Research (STEER) program</i> • 10-week full-time, paid summer program • Funded by National Institute of General Medical Sciences • For junior and senior science and medicine undergraduates with no prior research experience • Faculty-mentored research • Research and lab skills training • Career development lectures • Poster presentation at program conclusion	200 students from 2008-2015 cohorts of both programs at the University of North Dakota	<u>PhD enrollments</u>: • 41% of tracked students • 20.8% of first-generation students • 18.1% of non-first-generation students
Oppenheimer et al. (2020)*^ 18/42	To understand the effect of the Summer Math and Language Arts EP on student outcomes, particularly participation in MARC or RISE and PhD enrollments	<i>Summer Math and Language Arts Enrichment Program</i> • At California State University Northridge • 5-week program • For underrepresented freshmen • Weekly math and English workshops • Weekly field trips to biomedical research environments • Discussions about PhD research careers • \$600-\$700 to those for program completers	308 program participants	<u>PhD interest</u> (baseline vs. program exit): • 20% vs. 48% of 2016 cohort <u>PhD enrollments</u> (of entire sample): • 2 students pursuing a PhD and 1 applying

Table 3.1 continued

CE, contrast estimate; CI, confidence interval; NR, not reported; QATSDD, Quality Assessment Tool for Studies with Diverse Designs; OR, odds ratio; SE, standard error; STEM, science, technology, engineering, and mathematics; URM, underrepresented minority

* Only methods and/or findings related to this review's purpose are reported.

** Program information garnered from Gordon & Bridglall, 2004 and Maton et al., 2000, as cited in Pender et al.

*** High intentions were defined as a score of 9 or 10 on a 0-10 scale asking to what extent the student intended to pursue a science-related research career.

^ Indicates descriptive study design

◇ Indicates observational study design

§ Indicates quasi-experimental study design

Table 3.2: Qualitative Studies Reviewed (n = 6)

Author (Year) QATSDD Score	Purpose	Strategy (if applicable)	Setting	Sample	Findings
Davis (2010)^ 20/42	To describe the role of mentoring in helping students transition to PhD programs	<i>Committee on Institutional Cooperation Summer Research Opportunity Program (SROP)</i> • 8-10 week program • For undergraduates • Faculty mentoring • Research experiences • At 15 major research universities • Goal: increase URM doctoral students and eventually academics	Nine SROP universities in Midwest, including predominantly White institutions and MSIs	unknown size • 18 interviews (including 1:1 and focus groups) with current and former students in program	<i>Role of faculty mentoring in PhD transition:</i> • Faculty mentors were seen as both friends and intellectual challengers/sharpeners. • Mentoring increased students' interest in research careers, interest and confidence in conducting research, and aspirations to apply to graduate school. • Key to mentoring relationships were faculty's engagement in and support of students' research, provision of graduate school information, and encouragement toward graduate school and research.
DeAngelo (2010)^ 29/42	To understand interventions, as identified by faculty and URM students, that would help students at a non-research intensive university become interested in and attend PhD programs	N/A	University of California Los Angeles (UCLA) and California State University (CSU) campuses	130 total • 54 PhD students at UCLA who received bachelor's degrees from CSU campuses • 74 tenure-track faculty at CSU campuses who earned PhDs at UCLA	<i>PhD enrollment helped or hindered by:</i> • <u>Institutional environment</u>: Greater emphasis on completion of baccalaureate programs and preparation for the workforce plus less attention (or none at all) on graduate school encouragement = less time for faculty to mentor students, less discussions about graduate studies, and fewer resources to help students prepare for and apply to graduate school. • <u>Faculty influence</u>: Faculty who actively seek students to encourage toward a PhD tend to reach students earlier and help prepare students better for graduate school. Those who wait until students come to them or who do not enthusiastically encourage interested students often miss prime opportunities to prepare students for a PhD. • <u>Research programs</u> were influential in encouraging URM PhD pursuit, but some students were unaware of them or were not encouraged to participate.

Table 3.2 continued

Griffin & Muñiz (2011)** 29/42	To understand the work of Graduate Diversity Officers (GDOs) in recruiting diverse students into doctoral programs, including their suggestions for best recruitment practices and how organizational factors influence the success of their work	N/A	11 public and private research institutions across the U.S.	14 GDOs	<i>Strategies to recruit diverse PhD students:</i> • <u>Graduate school fairs and conferences</u>: particularly effective if GDO is a minority and if faculty and current graduate students participate as institutional ambassadors • <u>Summer research programs</u>: ideal place to connect with undergraduate students • <u>Campus visitation programs</u>: unique opportunity to engage with students in a smaller setting, particularly those from MSIs • <u>Building relationships with faculty at MSIs and providing informational sessions</u>: creates a natural bridge for URM students to attend research-intensive universities • <u>Commitment to diversity by institution, department, and faculty</u>: encourages URM students to enroll, particularly when faculty are involved in recruitment efforts • <u>Graduate admissions criteria changes</u>: valuing minority status as a competitive feature on the application and removing Graduate Record Exam as the main driving factor in who is accepted or not
Phelps-Ward & DeAngelo (2016)◇ 25/42	To examine how formal mentoring relationships between Black undergraduate students and White faculty align with the characteristics of informal mentoring and how they help guide students to doctoral studies	<i>Future Faculty Program</i> • Institution-funded pilot program • For communications undergraduate URM students • Faculty mentor students toward doctoral education and faculty careers • Faculty provide encouragement and resources	Midwestern, predominantly White, mid-size public university	4 mentoring dyads in Future Faculty Program • 4 White faculty • 4 Black undergraduate students	<i>Key ways mentoring can increase PhD enrollments:</i> • Serves as a vehicle for faculty to <u>introduce students to the idea of doctoral pursuit or to solidify preexisting interest</u> in graduate school • Helps students <u>identify their values</u> and how these contribute to career choices • Enables students to <u>see themselves in graduate school and beyond</u> by viewing faculty in educator and researcher roles (i.e., role modeling) • Opens the door for faculty to get to know students on a deeper level than simply their scholastic and occupational pursuits, <u>creating a friendship</u> • Starts <u>relationships with students that can extend for years</u>, even after graduation, and serve as a source of encouragement for students considering or engaging in doctoral work

Table 3.2 continued

Remich et al. (2016) [^] 39/42	To identify the process by which participants gain a desire to enroll in PhD or MD-PhD programs and to report the enrollment outcomes of those in the sample	<i>Postbaccalaureate Research Education Program (PREP)</i> • Year-long program • At research-intensive universities • For postbaccalaureate URM individuals who have an interest in a PhD or MD-PhD • Funded by National Institute of General Medical Sciences • Salary and benefits • 75% of time spent on a year-long independent, mentored research project • 25% of time spent on professional development activities	7 universities across the U.S.	48 individuals who participated in PREP between 2008-2011	<i>PREP participants' changes that encouraged them to apply to PhD and MD-PhD programs:</i> • <u>Readiness for academics</u> through graduate school application seminars and by attending graduate-level courses • <u>Readiness for research</u> via prolonged work on an independent research project with feedback from faculty and graduate students • <u>Readiness to present oneself</u> from interacting with faculty and graduate students and by attending writing and speaking seminars and presenting at conferences <i>PhD enrollments:</i> • 41 (85%) enrolled in PhD or MD-PhD programs • 36 enrolled directly after PREP • 4 enrolled after working or getting master's degree <i>Longitudinal outcomes:</i> • 5 graduated with a PhD • 21 still working on PhD • 1 working on MD-PhD • 12 left or transitioned out of PhD study • 2 participants' outcomes were unknown
Posselt et al. (2017)* 38/42	To understand how the Applied Physics program at the University of Michigan has been so successful at helping minorities get a PhD	<i>Applied Physics program at the University of Michigan</i> • Successful at training URM students in doctoral education • Exceeds national averages for physics PhDs: average time to degree only 5.8 years; 77% PhD completion rate for all students • Master's to PhD bridge program • Received federal funding in the past	University of Michigan	17 total • 5 faculty • 3 staff • 9 PhD students	<i>Strategies that draw in URM PhD students:</i> • <u>Collaborating with other disciplines</u> across campus • Providing <u>flexibility in course schedules</u> to allow for learning from faculty in other departments • <u>Customizing coursework</u> based on research interests • Emphasizing application of research and <u>practical aspects of career</u> (e.g., how to get a job) • Drastically <u>changing admissions criteria</u> to focus on diverse students and those who would thrive in program: very little emphasis on GRE scores, allowance for lower GPAs, more emphasis on research experience • <u>Networking to actively recruit URM students</u> and forming a bridge program with master's students at an HBC • Making the program <u>like a family</u> and having the attitude that everyone is there to succeed • Using <u>staff as culture brokers</u> for URM students and to advocate to faculty •

Table 3.2 continued

HBC, Historically Black College; MSI, minority-serving institution; N/A, not applicable; QATSDD, Quality Assessment Tool for Studies with Diverse Designs; STEM, science, technology, engineering, and mathematics; URM, underrepresented minority

^ Indicates descriptive qualitative study design

* Indicates case study design

** Indicates multi-case study design

◇ Indicates interpretive phenomenological study design

Table 3.3: Common Components of PhD Enrollment Strategies

	Discrete Program	Faculty Mentoring	Hands-On Research	Undergraduate Population	Informational Sessions	Summer Timeframe	Funding & Compensation	Social Support
<i>Qualitative Studies</i>								
Davis (2010)	✓	✓	✓	✓		✓		✓
DeAngelo (2010)		✓			✓			✓
Griffin & Muñiz (2011)								
Phelps-Ward & DeAngelo (2016)	✓	✓		✓	✓			✓
Remich et al. (2016)	✓	✓	✓				✓	
Posselt et al. (2017)	✓				✓		✓	✓
<i>Quantitative Studies</i>								
Junge et al. (2010)	✓	✓	✓	✓	✓	✓	✓	
Pender et al. (2010)	✓	✓	✓			✓		
Schultz et al. (2011)	✓	✓	✓	✓		✓		
Coronado et al. (2012)	✓	✓	✓	✓	✓	✓	✓	✓
Pasick et al. (2012)	✓		✓		✓	✓	✓	
Slovacek et al. (2012)	✓	✓	✓	✓	✓		✓	
Eagan et al. (2013)	✓	✓	✓	✓				✓
Salto et al. (2014)	✓	✓	✓	✓	✓	✓		
Aikens et al. (2016)		✓		✓				
Salerno et al. (2017)	✓	✓	✓	✓	✓	✓	✓	
Sens et al. (2017)	✓	✓	✓	✓	✓	✓	✓	
Oppenheimer et al. (2020)	✓			✓	✓	✓		

Discrete programs = programs organized and promoted by schools specifically to boost PhD enrollments; faculty mentoring = one-on-one faculty involvement with participants; hands-on research = participant involvement in research activities; undergraduate population = undergraduates targeted exclusively or in combination with other populations; informational sessions = participants provided with information about PhD education and career; summer timeframe = programs that took place exclusively during the summer; funding & compensation = specific funding for program and/or compensation for participants; social support = built-in peer networking or informal activities with faculty or staff

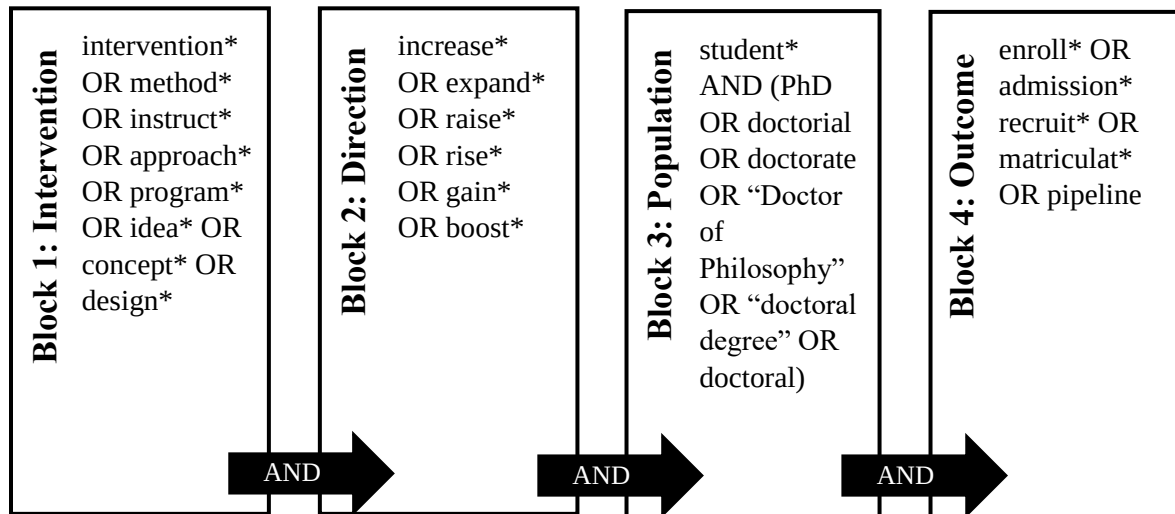


Figure 3.1: *Building Blocks for Database Searching*

Note: Adapted from Figure 1 in Tarbi and Meghani (2019).

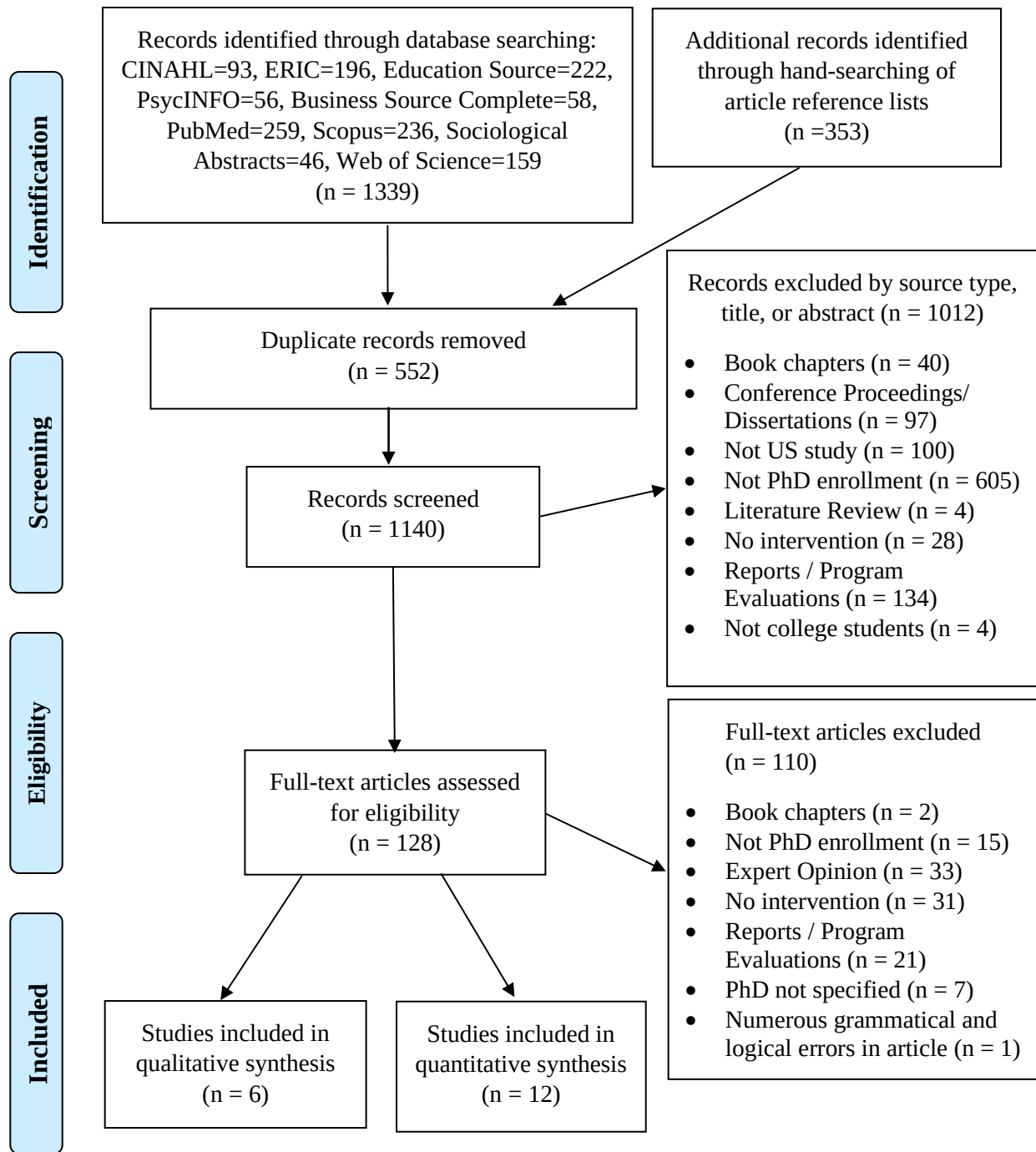


Figure 3.2: Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) Flow Chart.

Chapter 4

On a Mission: Experiences of Doctor of Nursing Practice (DNP)-Prepared Nurses Choosing to Pursue a Doctor of Philosophy (PhD)

Abstract

Increasingly, nurses with a Doctor of Nursing Practice (DNP) are seeking a Doctor of Philosophy (PhD). Considering the discouraging landscape of PhD enrollment, this subset of students may provide valuable insight for bolstering the PhD workforce. The purpose of this research, therefore, was to understand the experience of choosing to pursue a PhD as a DNP-prepared nurse. An existential phenomenological study was undertaken, and 10 DNP-to-PhD students were interviewed. Analysis revealed that the DNP-to-PhD experience is about being *On a Mission*. The *Nursing Hierarchy* was an implicit force in the background of students' missions, and their experiences were characterized by five themes: (a) *Having Needs the DNP Can't Meet*: "I had to go back and do more," (b) *Considering Dreams and Circumstances*: "Now's the time," (c) *Developing Confidence*: "You can do this!" (d) "I've been very supported" / "I had no support," and (e) "It had to be an internal drive for me." The findings demonstrate the profound effects of the nursing hierarchy on students' decisions as well as the misperceptions that still surround DNP and PhD education and careers. Nursing academicians, organizational leaders, and researchers must address PhD disinterest, intimidation, and imposter syndrome and improve messaging about both degrees.

Keywords: Doctor of Philosophy, Doctor of Nursing Practice, bridge programs, DNP-PhD, phenomenology

Nurses with a Doctor of Philosophy (PhD) degree wear many hats. They serve as leaders in academia (American Association of Colleges of Nursing [AACN], 2022b; Bednash et al., 2014), steward the nursing discipline (Morris et al., 2021), mediate knowledge between science and society (Thompson & Schwartz Barcott, 2019), and conduct independent research to inform health care (McSweeney et al., 2018; National Academies of Sciences, Engineering, and Medicine [NASEM], 2021). Most PhD nurses also work as faculty in nursing higher education, where they teach and mentor the next generation of nurses (AACN, 2022b; Fang et al., 2016). Yet, these weighty responsibilities rest on a group of nurses that comprises only 0.7% of the total nursing population in the US (Smiley et al., 2021) and is in a desperate state of decline. High PhD retirements (projected at 44.3% by 2025; Fang & Kesten, 2017), low PhD enrollment (a 3.2% decrease in 2021; Bakewell-Sachs & Trautman, 2022), and stagnant PhD graduations (hovering between 707-805 since 2014; AACN, 2022a) are major contributors to the shrinking PhD workforce. Concerned for the future of the nursing profession and patient care, national leaders (AACN, 2022b; NASEM, 2021; National Advisory Council on Nurse Education and Practice, 2020) have issued a slew of recommendations for bolstering the number of PhD-prepared nurses, including broadening PhD recruitment efforts by thinking outside the box of the traditional student.

Enter, then, the unexpected advent of Doctor of Nursing Practice (DNP)-prepared nurses seeking PhD education. Not even two decades have passed since the AACN (2004) endorsed the DNP as the terminal degree for nursing practice, and increasing numbers of DNP graduates are seeking a PhD. Some DNP nurses follow a traditional Master of Science in Nursing (MSN) course schedule, but progressively more schools are developing DNP-to-PhD (hereafter, DNP-PhD) bridge programs which utilize some of a student's DNP courses as credit toward a PhD, shortening the time to degree completion (Zoucha & Chunta, 2022). In fact, in 2020-2021, 34 schools had a bridge program, and eight were planning to create one (AACN, 2021a). The actual size of the DNP-PhD student population remains unknown as the AACN does not specifically track how many PhD students enter their programs with a DNP (D. Fang, personal communication, February 7, 2022). Reasons for DNP nurses' interest in PhD education are also unclear.

Ostensibly, the DNP workforce is moving from strength to strength. As of Fall 2021, 395 DNP programs enrolled 40,817 students (a 3.2% increase from the previous year) and graduated 10,086 DNP-prepared nurses (Bakewell-Sachs & Trautman, 2022). Many graduates intend to (Fang & Bednash, 2017) and do fill needed faculty positions (Ea et al., 2021) and administrative roles (AACN, 2020). Nursing education conferences and journals buzz with discussions of DNP curriculum, projects, and careers.

Beneath the DNP's surface, however, turbulent waters are visible. The degree was originally intended as the entry degree for all Advanced Practice Registered Nurses (APRNs; AACN, 2004), but MSN programs have not declined (McCauley et al., 2020), and the DNP's scope has expanded to include programs in administration, education, informatics, and others (AACN, 2020). Changes to DNP education over a relatively short period of time may be contributing to its muddled purpose in both clinical (Beeber et al., 2019) and academic (McCauley et al., 2020) settings, which creates frustration for educators and degree recipients. Faculty admit challenges in educating DNP students who have a wide variety of clinical and educational experiences (McCauley et al., 2020), and DNP graduates have been met with resistance to their roles as clinicians (Martinez, 2020) and educators (Staffileno et al., 2016).

Two previous studies with DNP-PhD students indicate that these challenges may be influencing DNP-prepared nurses' pursuit of the PhD. Sebach and Chunta (2018) found that DNP-PhD students returned for a second terminal degree to gain acceptance in academic circles, to receive pedagogical training, and to obtain a degree with greater prestige for teaching and research. Greco (2019) discovered that DNP-prepared nurses seeking a PhD had unmet learning needs after completing their DNP, desired to advance their career in academia or be accepted in research settings, and experienced challenges during their PhD. However, additional research that utilizes a diverse sample, innovative data collection techniques, and comprehensive analysis methods is needed to plumb the deeper meaning of the DNP-PhD pursuit, in hopes of yielding important insights for alleviating the nursing PhD shortage. The purpose of this existential phenomenological study is to answer the question: What is the essence of the lived experience of DNP-prepared nurses choosing to pursue their PhD?

Methods

Existential phenomenological methods were developed by a psychologist at the University of Tennessee, Knoxville (Pollio et al., 1997), have been refined with other scientists over the last 35 years (Sohn et al., 2017), and have guided over 100 studies (S. Thomas, personal communication, August 17, 2021). Existential phenomenology is rooted in the philosophy of Maurice Merleau-Ponty (1945/2012), and its methods are drawn from his unique understanding of Husserl's phenomenology (Thomas & Pollio, 2002), which will be expounded below. Before this study began, I conducted a pilot interview to practice my interviewing skills and determine if this research would yield valuable data. I also completed a bracketing interview to identify personal biases about the DNP-PhD phenomenon so I could hold them in abeyance throughout the research, a process Husserl called the epoché (van Manen, 2016). Given my own situatedness as a PhD student with an MSN, not a DNP, bracketing was crucial for the study's rigor.

After receiving study approval by the Institutional Review Board at the University of Tennessee, Knoxville, I recruited current PhD in Nursing students in the US who had previously obtained a DNP. I excluded those outside the US because the DNP, while growing in popularity, is not common in other countries (Bellini & Cusson, 2012; Ea et al., 2021). I also excluded dual DNP/PhD students, as this study's intent was to understand why some nurses pursue a DNP first and then a PhD later. Finally, DNP-prepared nurses obtaining a PhD in another discipline were excluded since I was seeking to examine issues surrounding nursing's doctoral degrees. Using maximum variation sampling guidelines outlined by Sandelowski (1995), I employed multiple recruitment strategies to obtain a diverse set of student experiences. I posted on the AACN and Graduate Nursing Student Academy (GNSA) community forums, contacted PhD program chairs, promoted my study at the 2022 Doctoral Education Conference, engaged in snowball sampling, and emailed personal acquaintances who fit the inclusion criteria. As I continually evaluated my sample, I requested participants from underrepresented demographics, as needed. In total, 10 DNP-to-PhD students participated in this research. Tables 4.1 and 4.2 show sample demographics, with Table 4.1 providing comparisons with demographics of the PhD student population as a whole.

One-on-one interviews were conducted via a HIPAA-compliant Zoom account. After participants consented to participate in the study and provided a pseudonym for their data (Allen & Wiles, 2016), interviews began with the only pre-planned question: “When you think about your decision to pursue a PhD as a DNP-prepared nurse, what stands out to you?” Subsequent questions were in line with Merleau-Ponty’s (1945/2012) rejection of Cartesian mind-body dualism and his belief that all experiences are embodied or *lived*. Thus, questions that prompted the telling of lived-through experiences of the phenomenon, such as “What was that like for you?” or “Can you tell me about a time when you...?”, were asked, rather than those that would have elicited participants’ *thoughts about* the phenomenon. Periodically, I summarized what I had heard in the interview and offered tentative interpretations, enabling the participant to offer feedback and correct or clarify my initial analysis. Interviews ranged from 55-109 minutes, with an average length of 77.5 minutes. Extensive interviews are not uncommon in existential phenomenology and align with Merleau-Ponty’s (1945/2012) belief that dialogue is crucial for eliciting rich descriptions of experiences. During interviews, existential phenomenological researchers take the position of learner at the feet of the participant, who is considered the expert (Sohn et al., 2017).

At the conclusion of the interview, I gathered demographic data, engaged in snowball sampling, and gauged the participant’s interest in member checking at a later date. Once the Zoom meeting was concluded, I typed up my field notes, including initial impressions of emerging themes. Transcripts of audio recordings were either created manually or were completed by transcriptionists at Rev.com. All potentially identifying information, such as names of persons, cities, or institutions and/or unique facts about the participant, were removed during transcription cleaning. Termination of data collection was determined using Malterud et al.’s (2016) Information Power model, which takes five aspects of the research into account when evaluating sample size: the study aim, the sample density, theory utilization (or not), strength of dialogue, and single case vs. multi-case analysis. Following Malterud et al.’s model, I assessed the sample size after analyzing the first set of interviews (interviews 1-6) and then after each

subsequent interview was analyzed. Once I determined that I had obtained adequate information power, I met with my dissertation committee chair to confirm that data collection should cease.

Existential phenomenology seeks to get to the meaning, or essence, of a phenomenon, a process called the phenomenological reduction (van Manen, 2016). However, Merleau-Ponty (1945/2012) argued that meaning cannot be determined without first identifying the *figure* and *ground* of a phenomenon, concepts he drew from art and Gestalt psychology. Figural aspects are those that stand out to the participant, while the ground is the implicit but influential backdrop to an experience (Thomas & Pollio, 2002). Thus, a comprehensive analytic process was undertaken in order to uncover the figure, ground, and meaning of the DNP-PhD experience. Analysis began with reading through the entire transcript to gain a sense of the whole, followed with meticulous line-by-line examination to identify meaning units, which are single words, phrases, sentences, or even entire paragraphs that depict stand-alone descriptions of the participant's experience (Sohn et al., 2017). Meaning units were grouped based on emerging themes.

In keeping with Merleau-Ponty's (1945/2012) proclivity for dialogue, four de-identified transcripts were brought to the Transdisciplinary Phenomenology Research Group (TPRG; Sohn et al., 2017), where they were read aloud and discussed by group members from a variety of disciplines and universities. I engaged in reflexive journaling during the iterative process of analysis, reworking figural themes until they succinctly captured all data. These themes were brought to the TPRG for review and discussion. After additional revisions to figural themes and ground, my dissertation chair reviewed all transcripts and audited my analysis, suggesting a few additional tweaks. Once the final thematic structure was identified, I engaged in member checking. All study participants had expressed a desire to review the results, so I emailed each with an attachment detailing the essence, ground, and figural themes. Seven participants responded (70% response rate), and their feedback was overwhelmingly positive. No one suggested any changes or further revisions to the thematic structure.

Findings

The essence of choosing to pursue a PhD as a DNP-prepared nurse is about being *On a Mission*. Participants had a plethora of reasons for seeking a PhD. Many wanted greater expertise or desired to make a bigger impact with their work. Some sought the degree so they would no longer be in a vulnerable position. Still others believed fulfillment would elude them until they obtained the clout a PhD affords. Whatever their mission, participants believed them to be incredibly meaningful and necessary.

Interpretive analysis also revealed five figural themes pertaining to participants' missions: (a) *Having Needs the DNP Can't Meet*: "I had to go back and do more," (b) *Considering Dreams and Circumstances*: "Now's the time," (c) *Developing Confidence*: "You can do this!" (d) "I've been very supported" / "I had no support," and (e) "It had to be an internal drive for me." As depicted in Figure 4.1, figural themes are not arranged in sequential order, as a timeline or process. Rather, all five wove together to enable participants to initiate, continue, and approach completion of their mission. Looming large in the background of their mission was the *Nursing Hierarchy*, which served as the existential ground for participants' DNP-PhD experience. Figure 4.1 shows how the *Nursing Hierarchy* casts a shadow over the mountain that participants are climbing to complete their mission.

Ground: The Nursing Hierarchy

Participants described a sort of pecking order that was implicit within nursing, and their experiences had taught them that those with a PhD were at the top of the hierarchy in both clinical and academic settings. Dannie called the PhD the "pinnacle," while James (female participant who chose a masculine pseudonym) described it as the "gold standard in nursing." Participants took a variety of stances toward this hierarchy. Some agreed with it; others accepted it as a fact that was unlikely to change; and a few were incensed by it. With its position atop the nursing hierarchy, the PhD was seen as possessing power in the profession. Most participants recognized how their colleagues with a PhD were more often held in deference by others, were given special or more prestigious opportunities, and were

afforded greater flexibility in their careers and control over their own work. Felicia saw the PhD's power as most evident in how doctorally-prepared nurses are introduced in formal settings. She recounted an exchange between herself and a hospital administrator after a meeting:

[The administrator] said, "Well, I mean, do you really want to be called 'Doctor?' They might think you're a physician." And I said,..."I mean, you introduced the PhDs in the room [as "Doctor"]." She's like, "Well, I mean, but they *do* have a PhD."

Dannie, who worked in an academic setting, also noticed this line of demarcation between PhDs and DNPs. She described a hurtful encounter with professors from other disciplines who referred to DNP-prepared faculty as "staff." Dannie told them, "With all due respect, we are *faculty* in the school of nursing, and we have doctoral degrees just like you." Kitty, who also engaged in academic nursing work, was one of many participants who described a strong divide between the DNP and PhD. This divide, she said, delineated the haves (those with a PhD) from the have-nots (faculty with a DNP). Kitty said, "[With a DNP, I] could only do quality improvement or evidence-based practice changes...I couldn't even be viewed as somebody who has opportunity to do something different." Additionally, "...anybody who's in administration or leadership in our school has a PhD. Nobody has a DNP...You hit this ceiling within nursing even though both [degrees] are supposed to be equal. They're not." Yet, as PhD students, participants often noticed a change in the hierarchy. Kitty described an internal shift; she felt empowered by the skills and clout afforded by her PhD education, while Felicia recalled an external change; others perceived her differently: "the hierarchy levels out when people recognize that I'm in a PhD program."

However, the PhD's position atop the nursing hierarchy, where it is distanced from other nursing degrees, also contributes to its mysterious nature. Philip said, "...even when I was in my...DNP program, what a PhD was, was kind of nebulous. I didn't really understand 'Doctor of Philosophy'...Like what do you do with that?" Most participants also admitted that, until recently, the PhD had seemed incompatible with their clinician identities. Becky recalled how PhD-prepared faculty "looked at things differently" and "did not seem congruent with how clinically-focused" she wanted to be earlier in her career. Leah

admitted that, even during her PhD program, she “felt a little bit removed from the nurse role...because right now I'm not doing anything with patients.”

For the PhD to become relatable to participants, it often took meaningful exposure to research and researchers. For Alexis, this occurred during her master’s program: “I had an awesome professor who kind of guided me in my research course. I did a huge research study with her, and that's where [my love of research] started.” Another participant said a post-doctoral position had opened her eyes to the impact research can have on patient care, prompting her to get a PhD. One participant took part in a PhD pipeline program earlier in her nursing career, which had introduced her to the work of a PhD-prepared nurse. Years later, when she began questioning her DNP career, she said the pipeline program’s activities helped her know that the PhD would lead her to the career she wanted.

Figural Themes

Themes depict the aspects that enabled or motivated participants’ PhD pursuit, helping them fulfill their mission (Figure 4.1). They were frequently reminded that the DNP could not meet their current career or personal needs. They knew the PhD was right for them, and, after considering their long-held dreams and life circumstances, they said, “Now’s the time.” Gaining confidence for a PhD education and career often unfolded over many years and continued during their PhD programs. Everyone described the invaluable role of supportive persons in their lives, and many also identified unsupportive individuals. Finally, their internal drive helped these DNP-PhD students persevere in the face of obstacles.

Having Needs the DNP Can’t Meet: “I had to go back and do more.”

Participants had mixed views about the DNP. Five spoke very highly of their first doctoral degree, one was ambivalent about it, and four were quite negative toward the DNP. Yet, however they viewed it, almost every participant explained that the DNP was no longer enough to meet their needs. For some, it had never been enough, and they felt they needed the PhD to finally obtain what the DNP lacked. Others, however, felt the DNP had been very beneficial, but they had developed new dreams or career

goals for which they saw the PhD as necessary. For instance, Leah had great things to say about her DNP, but after working with faculty colleagues on a research project, she said, "...I decided to pursue my PhD because I wanted to do more research to make a larger impact on the nursing profession, and I just didn't feel prepared to do that with my DNP degree." Similarly, Dannie, who continually praised her DNP education and career, "found [her] why" after being part of a research program. She opined, "...I want to generate research...I didn't want to just do quality improvement. I wanted to really make a change."

However, other participants were highly dissatisfied with the DNP. Kitty confessed, "At the conclusion of my DNP, I went, 'Oh. That's it?' I was somewhat disappointed even though I went through a really rigorous program." She continued, "...I felt like I chose the easier route of getting a DNP. Then I kicked...myself ...because I'm like, "Well, that was a huge waste because now I still have to go back and get a PhD." Later, she explained why the DNP no longer met her needs. With its increasing ubiquity among nurses, it did not enable her to stand out:

...everybody's getting a DNP now... it doesn't make you special. As a faculty member...you want to feel like there's some prestige in your position and what you do. But a DNP is not going to give that to you because you've got the same degree as many other nurses who may not be that impressive...I want to be something different...something that has got a leg up.

A few participants desired to use their PhD to bridge the divide between nursing's doctoral degrees. They felt that the unique combination of clinical and research expertise would allow them to advocate for the needs of nurses with both degrees and perhaps enable the two sides to work together more effectively. Becky's words epitomized this desire. After experiencing "microaggressions" from PhD colleagues (and witnessing them in the other direction), she wanted to improve the situation in academia:

I felt like if I [could broaden] my experience [and] my education to represent both sides...that perhaps I could help build, I don't want to say allegiances, but some understanding that both of these [degrees] are important, extremely important in the academic environment.

Considering Dreams and Circumstances: “Now’s the time.”

Dreams and circumstances also influenced participants’ decisions to pursue the PhD. For some, the PhD had been an abiding goal, elusive until recently. Major life events had affected their career timelines, and they had to choose educational programs that made sense given their situations. Yet, all described specific moments when they realized “now’s the time” for the PhD. No one spoke of further educational plans, and some stated plainly that this would be their last degree.

Toni’s dream of getting a PhD started in high school. While all her friends were talking about getting married, she set her sight on having “the highest degree in [my] profession.” Many years later when circumstances during her DNP caused her to reconsider a PhD, she decided to go for it: “...things happened that brought me back to the goals I set when I was 15, 16, and [I] said, ‘Yes, I need to go back and make sure I [get a PhD]’...” Alexis, too, had been dreaming about getting a PhD but did not think it possible until she talked with a PhD program recruiter, who told her about a tuition grant that would eliminate the greatest barrier to her PhD pursuit: cost. Then, when Alexis discovered a faculty member at this school who bridged two disciplines that Alexis loved, she knew the time for her PhD had come:

So you always have...in the back of your mind: I've got a doctorate. Do I really need to do this again...juggling everything: a full-time job and a family and schoolwork and all that?...And then, when I saw that video of [a faculty member working in] the best of both of my worlds, I just knew this was where I was supposed to be, and this is what I'm supposed to do.

Like Alexis, other DNP-PhD students explained how the PhD became available to them because programs accommodated their circumstantial needs with distance education, a bridge curriculum that accepted their DNP credits, and/or flexibility for their jobs. However, two participants recounted particularly unfortunate circumstances: traumatic experiences related to their DNP education that discolored their entire outlook on the DNP and convinced them to seek a PhD. Number (female participant who chose a nontraditional pseudonym) said, “Because of that [negative] experience, I knew

that I had to go into the PhD program, find a faculty [mentor who] is an expert in [my field] and work with her, because that is how [nursing doctoral education] should be.”

Circumstances also convinced many that the PhD would be their last formal degree. A sense of finality hovered around the PhD, as none of the participants spoke about getting other education. Dannie said jokingly: “I have an agreement with my husband...this is the last degree.” Toni explained, “...even [when] I was doing [the] DNP program, I knew I was still going to pursue more...I had no clue what it would be...But I knew then that I will still go back to school.” When I asked if she intended to do more after the PhD also, she responded, “No. I've already said [that I won't].”

Developing Confidence: “You can do this!”

DNP-PhD student participants described a process of developing confidence over time. Most had been intimidated by the PhD at some point during their careers. For example, Kitty said, “I should've done [my PhD] before, and I didn't because I was too afraid”, and Becky recalled, “I can remember someone asking me...‘Why don't you just get your PhD?’ And, at the time that seemed really scary,...like, ‘Oh, I can't do [a] dissertation...’” Similarly, Felicia said:

I had multiple people question me...“Well, why are you bothering to get a DNP? Why don't you just get a PhD if you're going to do all of that hard work?...” And in my head I was thinking, “Because I don't know if I can. I'm not sure that I can do it.” And I had a few other people tell me, “Go get the DNP. It's so much easier than the PhD, and you can do that.” And I felt like the implication was, you're not smart enough to get a PhD, so settle for a DNP.

Besides Felicia, four other participants noted that the DNP was often touted as the “quicker” and “easier” route to the doctorate. When considering whether to pursue doctoral education, they admitted to choosing the DNP over the PhD at least partially for this reason. Interestingly, James described using the DNP as a sort of trial run to prepare her for the PhD, which is what she desired all along:

[The DNP] was like the launching pad for me. If I couldn't get through that, it didn't make any sense to go to the PhD....[T]he last thing I needed was to know that I started a program that was unfinishable. That would've made me feel like crap.

For two participants, being intimidated by the PhD continued even during their PhD program. Leah explained, "...the whole research process...was a completely different way of thinking than what I was used to as a clinician...And I'm still not comfortable with it." Philip provided a helpful metaphor:

[The PhD is] hard in a different way... How I compare them sometimes is with my master's and my DNP program, you get a huge book thrown at you and you're told to memorize it...But with the PhD, I feel as though you're given a blank book and you're told to *write* it instead...

Nevertheless, participants' confidence increased over time, influenced by a variety of factors. Four individuals attributed some of their confidence to already having a DNP. One admitted that she and another DNP-PhD student in her cohort tended to fare better on assignments than the MSN or bachelor's-prepared students. Felicia was lavish in her praise of the DNP as a preparation for her PhD: "...having a DNP...has made my PhD be so much easier because I have a foundation that people [who] don't already have a doctoral degree don't have... That foundational knowledge has been incredibly helpful to me."

Interestingly, Philip's experience contrasted sharply to this. While he felt that his DNP had been valuable for his work as an APRN, he had not found it very helpful for his PhD pursuit. He described having "some pretty bad imposter syndrome" because other students without a DNP expected him to be more knowledgeable than he felt he was. He said, "...all of that really strong clinical knowledge... was not useless, but it was way less useful than I thought it would be. ...it doesn't give the advantage that I feel as though many people assign to it."

In addition to having a doctoral degree under their belt, another confidence booster often came from spending time with those who had a PhD. Doing so helped participants realize that PhD-prepared nurses were not unlike them. Becky shared, "To me, [the PhD] was something that was well beyond my

reach...until I got to [the university where I teach] full-time and [thought], ‘You know, well, if they can do it, I can do it.’” Likewise, James said that interacting with PhD professors who were minorities like her, increased her confidence. She reasoned, “Well, if they can do it, doggone it, I can do it.”

“I’ve been very supported.” / “I had no support.”

Participants’ PhD pursuits were highly influenced by others’ support or the lack thereof. Most noted that their decision to seek PhD education and remain committed required a cadre of supportive individuals, including mentors, work colleagues, fellow students, and family members. Many also shared unfortunate stories that depicted how vulnerable they were without support. Sadly, four participants mentioned few, if any, supportive individuals. For them, the quest for the PhD seemed a lonely affair.

Colleagues and supervisors were pivotal in participants’ PhD pursuits. For Alexis, her faculty supervisor continually reminded her of the passion Alexis had for research and took every opportunity to commend a PhD to her. Alexis commented, “I really kind of had her as a cheerleader to kind of get me to this point.” Likewise, Felicia described the overwhelming support she received from hospital coworkers and even the Chief Nursing Officer when she told them about her desire for a PhD: “...when I asked people for letters of reference [for the PhD program], they immediately responded and said, ‘Absolutely. You need to do this.’” Felicia noted how integral their support was to her decision: “So to have the chief nurse of our organization say, ‘Would you like a reference? I think that's a fantastic idea!’ To not argue with me at all...it was very validating...And I think it went towards that imposter syndrome...”

Family further helped to support participants on their PhD journey. Dannie said, “I’m really, really lucky that I have a wonderful family, supportive husband, two amazing...children.” Alexis quipped, “...my husband likes to say all the time, ‘I think in the years we’ve been married, you’ve been in school more than you haven’t.’ And he’s super supportive, thankfully...” An astonishing finding was the way two participants, who were originally from other countries, responded to their parents’ verbal encouragement to pursue higher education. Italics highlight the uncanny similarities:

...my parents came [to the US] to have a better life. And one of the things that I always heard was “Do better than us.” *So whatever I decided to do, my thought was...Whatever the end of the road is for that particular profession, that's where I'm going to go.* So the PhD is...my goal. – James

My focus was: *Whatever profession I found myself [in] down the road, I will have the highest degree in that profession.* If [the] PhD is the highest degree, then that's what I'm going after. So that was my thought from the get-go. And the Lord also blessed me with a father who drilled into me that education is very important...you will go far in life with education. – Toni

Mentors, however, served a special role for most participants in terms of support. Some had promoted the PhD to participants years ago, while others had more recently been encouraged to consider a PhD. One student explained that, during her undergraduate program, two faculty had suggested she enroll in a PhD program. Though she was a few decades past her Bachelor of Science in Nursing (BSN) and one of those mentors had even passed away, their words still influenced her. Kitty, too, noted how her most trusted mentor from her BSN verbally encouraged her in recent years to pursue her PhD: “I called [my mentor and asked]...‘[W]hat do you think I should do?’ She was like, ‘Definitely get the PhD’...”

However, three participants described how a primary mentor’s lack of support left them feeling vulnerable, which affected their PhD decision. Number felt like she was floating adrift as she prepared for and then executed her DNP project. She described frustration with her DNP chair, saying, “I felt like for spending...a year [on] this project [proposal], I should be getting feedback all along” and “It was very difficult doing the DNP project, not getting the guidance. Basically, I was doing things by myself.” Her ongoing frustration led her to enroll in a PhD program. Conversely, Toni said her DNP chair was *too* involved in her project and attempted to steal her work. She feared being taken advantage of again:

...when everything just unfolded with [my DNP chair saying], “I have to be the first author and everything,” I'm like, “Absolutely not! I need to...go back to school because I don't want to run into this kind of scenario again....years later and I can't go back...[and] get this PhD degree.

Dannie also experienced an unsupportive mentor, but hers was in the PhD program. She said her assigned mentor treated her with disrespect and gave her no attention, nearly prompting her to quit the PhD:

And what I felt was that I had no support from the get-go... So I took [a] leave of absence, and I tried to find my why...And I really decided I was committed to this...[so] I went back and I navigated the system without any support, which was just mind boggling to me.

“It had to be an internal drive for me.”

The final figural theme highlights the internal drive that all participants displayed. Each described a life-long pattern of perseverance, not just for their PhD but other career and educational pursuits as well. Obstacles often stood in their way, including family, friends, or colleagues questioning their decisions; personal health crises; as well as the self-doubt and unsupportive mentors mentioned in previous themes. Yet, their internal drive, which frequently included a keen desire to learn, carried them through.

Participants used strong language to convey their internal drive. James “barreled through” her previous educational programs and said of her PhD: “I push through. I don’t succumb...that is really how I have moved through life.” As Toni ticked off the many responsibilities she had juggled during her DNP, she surmised, “I just swallowed everything” and “powered through.” In terms of her work ethic, Dannie described herself as “the Energizer Bunny.” Multiple participants also referred to “perseverance”, including Kitty, who said, “You have to persevere.... It’s a commitment. It’s a focus that you have to want... I just remember feeling like...there’s absolutely no way I can give up.” Felicia also noted, “It was perseverance. It really was. And I’m smart, and I’m very good at what I do.... But I apply myself...” Meanwhile, Dannie described the perseverance she needed after taking a leave of absence:

“I wasn’t ready to give up on the PhD...So I decided that I would jump through the hoops, as they say. What is it they say about PhDs? It’s a marathon. So I said, ‘Okay, it’s a marathon. And I can run the marathon. I’ll jump through the hoops.’ And I returned.”

James, whose words comprise the title of this fifth theme, demonstrated her internal drive when she described how a health challenge caused her to withdraw from her PhD program years ago. During her current PhD pursuit, the health challenge resurfaced, but she was dogged in her determination to not give up this time. She noted, "...probably most people would've...taken a leave of absence. But I thought to myself, 'No...not again. This is just something I have to finish.'" With the sheen of tears in her eyes, she vowed, "...as they say, 'by hook or by crook', I'm going to get this done."

Becky, however, combated a different type of resistance to her PhD pursuit: doubt and discouragement from family and colleagues: "...they all think I'm loony. I mean, even the people I work with. They're like, 'Why are you doing this?'" She, too, found that an internal drive was necessary to press forward. Toni recalled her mentor's attempt to intimidate her from getting a PhD and how that compelled her to pursue one all the more: "I just thought to myself,...""You just spoke to the wrong person, because now I'm taking this as a challenge [to get my PhD]."

Part of participants' internal drive was a strong desire to learn. Felicia said, "Every once in a while, I go, 'Why am I doing [my PhD]? Oh my gosh, because it's so much fun!'" Toni explained, "So the thing about me is that I *love* school...I think for my first five or six years of my life, that's the only years I haven't been in school... Everywhere I go, it's just I love to study." Philip, too, noted, "...it's been that sort of constant curiosity and the need to know and inform others and just generate new thought, [that] has been my guiding light [to] the PhD."

Quotes by two participants summarize this theme. Philip's words depict the internality of his drive to succeed: "I'm not very competitive with others, but I am pretty competitive with myself. Once I've set a goal for something, I have a lot of difficulty convincing myself out of it." Toni opined, "I think whatever is worth doing at all will come with some challenges...That's my sincere belief about life itself."

Discussion

This research corroborates findings from previous studies and extends our knowledge of the experiences of DNP-PhD students by offering new and unexpected findings. Consistent with the work of Sebach and Chunta (2018) and Greco (2019), participants in this study desired the PhD to gain research skills as well as clout and opportunity in academic or research settings. Like Greco's participants, they were also met with challenges during their PhD pursuit. This work goes further, however, by detailing the nursing hierarchy and by revealing less obvious reasons for undertaking a PhD, such as wanting to stand apart from the crowd of DNP-prepared nurses, achieve the "pinnacle" of the profession, or be shielded from others who might disrespect or take advantage of them. For many participants, the PhD was a long-standing goal, not unlike Wheeler and Eichelberger's (2017) findings with doctoral nursing students in Georgia. However, this study shed light on the widespread intimidation participants felt toward the PhD, something that has not been described in the nursing literature. It also illuminated the barriers and enablers of PhD pursuit, many of which have been described elsewhere (AACN, 2022b; Laurencelle & Scanlan, 2018; Muñoz, 2021), and the make-or-break importance of academic mentors (Volkert et al., 2018).

Implications for Nursing Academia

Flatten the Hierarchy

The prominence of the nursing hierarchy in participants' experiences was a disturbing finding. Without hesitation, these DNP-prepared nurses offered numerous examples of incidents that left them feeling disrespected or inadequate. This harkens back to one of Meleis and Dracup's (2005) arguments against the DNP's endorsement: that it would create a "second-class citizenship in universities" (p. 3) and result in DNP-prepared faculty feeling marginalized. Indeed, previous research has revealed that many DNP-prepared faculty are not readily accepted in academic institutions (Greco, 2019; Sebach & Chunta, 2018; Staffileno et al., 2016). Some of this study's participants indicated that rigid hierarchies between DNP- and PhD-prepared faculty are more common at prestigious universities, and two participants who

worked for and/or attended an elite school appeared to have internalized a strong hierarchy, demonstrating the power of environment to acculturate our biases.

Much of the tension between the DNP and PhD in academic settings seems to surround tenure appointment and promotion. Foreseeing this challenge a decade ago, Columbia University provided detailed examples of their tenure guidelines for both DNP and PhD faculty (Honig et al., 2013), which were based on Boyer's (1990) model of scholarship. Leaders at the AACN (2018) also used Boyer's model to define scholarship for nursing academic institutions, noting that scholarship includes not only scientific discovery but also practice and teaching. Incorporating the AACN's guidelines, which outline each type of scholarship and discuss ways they can be combined, will help schools better support DNP-prepared faculty by communicating their value, helping them be successful in their careers, and giving them a sense of belonging with their PhD colleagues.

In addition to equitable tenure opportunities, a culture of respect is paramount. According to participants, incivilities were often directed *at* DNP-prepared faculty *by* those with a PhD, but one individual shared that the hostility goes both ways at her institution. Two others recounted how particular PhD-prepared faculty had made plain their lack of respect for those in DNP programs, and another two admitted *their own* negative view of DNP students. In light of these findings, all administrators and faculty must examine their personal biases and behaviors and seek to create workplaces that are not just civil, but kind. Meanwhile, the AACN can raise awareness of these issues and offer tools to improve academic environments by drafting position statements, conducting webinars, facilitating discussions at conferences, and conducting anonymous surveys that gauge the state of faculty relationships. Through individual and collective efforts, toxic hierarchies can be flattened to the benefit of academic nursing.

Rewrite the DNP and PhD Narratives

Another alarming finding in this study was the narratives surrounding the DNP and PhD, many of which were questionable or inaccurate. For instance, half of participants explained that the DNP is widely

considered the easier, quicker route to the doctorate, which prompted them to pursue the DNP first. Yet, generalizations about the ease or difficulty of a particular degree fail to account for myriad factors that influence educational pursuits, such as full- versus part-time status, the track/specialty, or personal circumstances, like support networks and family responsibilities. Moreover, perceptions of difficulty are subjective; they vary from person to person and are based upon criteria that are not always easy to discern. Felicia, one of the study participants, made a helpful realization during her PhD program:

My interpretation of people telling me [the PhD] was so hard was that it was so cerebrally hard, like it was difficult to do the coursework...[But], looking back,...they were not telling me that you had to be super smart. They were telling me you had to persevere.

It is essential that faculty convey to students that the PhD is not unattainable but requires perseverance and commitment, while the DNP, rather than being the “easier” option, is rigorous in its own right. The new AACN (2021b) *Essentials* are helping to address the need for consistent rigor across DNP programs.

While research has shown that the PhD does take longer, on average, than the DNP (Fang, 2017), the AACN (2022b) has been consistently urging for shorter PhD completion times and has provided recommendations for helping full-time students with an MSN finish in three years, which is the average time for DNP completion (Fang & Zangaro, 2022). The bigger challenge, however, is ensuring that prospective doctoral students receive accurate information about both degrees as well as counseling on which degree will best meet their career goals. Though the DNP may take less time to complete than the PhD, participants in this study who undertook a PhD after being dissatisfied with their DNP ended up taking longer to get to their desired degree than if they would have pursued the PhD from the outset. Kitty admitted the DNP did not give her what she needed and said, “[My DNP] feels like a huge waste of time and energy and money. Now here I am [in the PhD program]. I wish I made this decision 10 years ago...”

Most participants admitted to being intimidated by the PhD at some point in their career. Some saw it as nebulous or mysterious, far removed from the more familiar clinical aspects of nursing. PhD-

prepared nurses are accustomed to others outside of nursing questioning what kind of work they do, but even Philip, one of the participants, admitted wondering something similar while pursuing his DNP. The PhD is a degree recognized across the world for research, teaching, and leadership; and, before reaching doctoral education, most students will have been taught by multiple faculty with a PhD. Nevertheless, Granner and Ayoola (2021) noted that one of the barriers to PhD pursuit by BSN students was a lack of understanding and awareness of PhD education. Clearly, messaging about the nursing PhD is sorely inadequate. Faculty, whether PhD-prepared or not, must consistently include the PhD when discussing future education options with students, helping them see how a PhD may connect to their interests.

Rewriting the DNP and PhD narratives is also important because incorrect perceptions lead to unrealistic expectations. A few study participants were upset that the DNP failed to offer them advanced statistical coursework or prepare them to conduct independent research, and some were baffled to find that not all DNP graduates take positions of leadership or publish their scholarly project. Meanwhile, others expected the PhD to bestow power and prestige upon them, give them automatic acceptance in faculty circles, or shield them from those who might wish to take advantage of them. The narratives students internalize about the DNP and PhD surely come from many sources, but faculty, as one of those sources, must offer a realistic perspective on doctoral education and careers, helping their students avoid a prolonged, frustration-laden path to their desired career.

Focus on Mentoring

The importance of faculty mentoring for bolstering the PhD workforce cannot be overstated. Most participants in this study recalled how a relationship with just one mentor led them to reconsider their career path. Mentorship, to them, equaled quality time and verbal encouragement. They were inspired by faculty who took them under their wing, gave them their undivided attention, and praised their capabilities. Conversely, harmful mentors were described as distracted, uncaring, and discouraging. This aligns with previous work that has shown the importance of mentoring for graduate-level nursing education (Laurencelle & Scanlan, 2018) and PhD interest and pursuit (Muñoz, 2022). Based on the

findings of this study, faculty seeking to increase PhD enrollment should focus their mentoring efforts on students with internal drive, which includes a love of learning and a history of perseverance. Furthermore, deans and other administrators must prioritize mentorship in their academic institution by fiercely guarding faculty's time for mentoring and by offering mentorship training.

Supply Practical Facilitators for PhD Education

Previous research has uncovered multiple barriers to nursing PhD pursuit (e.g., Granner & Ayoola, 2021; Squires et al., 2014; Wheeler & Eichelberger, 2017), but this study offered insight into practical facilitators for a PhD. Financial assistance, program flexibility, and academic employer support all enabled participants to become DNP-PhD students. Alexis, for instance, was finally able to pursue a PhD because of a grant that covered her tuition, and more than half of participants had at least some scholarships or other aid (Table 4.2). Multiple students noted the benefit of online or hybrid programs, and all were able to work their jobs around school responsibilities. Additionally, a few of those employed by academic institutions described support from their administration to obtain a PhD. Leah even said she was given a small amount of workload by her academic supervisor for her PhD coursework. Thus, to increase the number of PhD-prepared nurses, administrators and faculty must ensure that PhD education is flexible and affordable for students' busy lives and competing demands. Institutions must also enable their own faculty to pursue a PhD without undue burden.

Implications for Future Research

Future research can extend this study's findings by exploring PhD intimidation in other populations, such as those obtaining a BSN. Understanding how this intimidation occurs would enable interventions to be developed and tested, hopefully leading to increased interest and confidence in PhD education among students. Imposter syndrome, the fear of being discovered as a fraud in one's education or career (John, 2019), was also mentioned by participants. This phenomenon was first described in high-achieving women professionals (Clance & Imes, 1978) but is an experience common to an estimated 70%

of the population (Mount & Tardanico, 2014). Imposter syndrome and PhD intimidation are related but separate issues, with the former being more than just a lack of confidence but also involving external attribution for success and assignment of failures to internal deficiencies (John, 2019).

Mullangi and Jagsi (2019) argue that imposter syndrome is common among women because they are socialized to behave in self-deprecating ways, which makes their accomplishments underrecognized and perpetuates the belief that men are more capable than women. Some research has also shown that imposter syndrome is more prevalent amongst those who are underrepresented in their respective fields (Parkman, 2016). Strangely, half of study participants (all females) specifically mentioned intimidation of the PhD before applying, but only two described imposter syndrome, one of whom was the only male student. Future research should examine imposter syndrome's presence in nursing PhD enrollees and parse out the findings by student demographics (e.g., PhD pathway, age, gender, race, etc.).

Nurse scientists should also examine existing programs that expose nursing students to research in order to determine their efficacy for increasing PhD interest and enrollment (Muñoz, 2022). As well, researchers must develop and employ new strategies for decreasing the PhD's nebulous nature and make it appealing to students earlier in their careers. Ayoola et al. (2017) provide a superb example of incorporating research into an undergraduate liberal arts nursing program, which has helped their students gain interest in PhD careers. Finally, quantitative studies which test the applicability of career theories, such as Social Cognitive Career Theory (Lent et al., 1994), for the nursing PhD shortage should be undertaken, as they may provide valuable insight for stabilizing and increasing the workforce.

Strengths and Limitations

This study's rigorous methods led to trustworthy findings according to criteria established by Lincoln and Guba (1985, as cited in Polit & Beck, 2018). Credibility was enhanced through use of a bracketing interview, reflexive journal, Malterud et al.'s (2016) model of Information Power, and member checking as well as careful attention to the accuracy of transcripts. The sample's diversity (Tables 4.1 and

4.2) naturally provided disconfirming cases, as a few participants had highly unique experiences and backgrounds. Additionally, the TPRG and dissertation committee provided peer review, which strengthened the study's credibility and confirmability. Comprehensive field notes contributed to transferability, while a careful audit trail of decision-making in terms of study planning, sampling, data collection, and analysis aided this research's dependability and confirmability. Nevertheless, the sample's diversity was not completely representative of the entire PhD nursing student population (Table 4.1), and only one researcher completed the bulk of data analysis, so researcher triangulation was not possible. This work was conducted during the COVID-19 pandemic, and while few mentioned the pandemic and only one discussed its effects at length, it may have influenced participants' experiences in undisclosed ways.

Conclusions

The small but meaningful movement of DNP-prepared nurses into PhD nursing programs has been a curious development in recent years. As PhD programs struggle to increase enrollment, the DNP-PhD pathway may become a lifeline for the dwindling PhD nursing workforce. This study's findings provide a deeper understanding of the DNP-PhD phenomenon, demonstrating the profound effects of DNP education, research exposure, personal and circumstantial barriers, supportive others, internal drive, and workplace incivility on PhD pursuit. Figural and background elements of participants' experiences call attention to improvements that must be made to nursing academia in order to ensure a bright future for nursing science, nursing education, and nursing leadership.

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Appendix

Table 4.1: Gender, Race/Ethnicity, and PhD Institution Location of Sample and PhD Student Population

Demographics	Sample, <i>n</i> = 10 (100%)	% US Nursing PhD Student Population[§]
Gender		
<i>Female</i>	9 (90%)	88.3%
<i>Male</i>	1 (10%)	10.5%
Race/Ethnicity		
<i>African American/Black</i>	2 (20%)	17.3%
<i>Asian American</i>	1 (10%)	6.0%
<i>White/Caucasian</i>	6 (60%)	66.2%
<i>Hispanic or Latino</i>	1 (10%)	6.2%
Location of PhD Institution		
<i>Midwest</i>	1 (10%)	23.8%
<i>North Atlantic</i>	3 (30%)	24.7%
<i>South</i>	5 (50%)	36.7%
<i>West</i>	1 (10%)	14.7%

Note. PhD, Doctor of Philosophy.

[§]Data for the PhD population were derived from the American Association of Colleges of Nursing's (2021) PhD enrollment numbers for the 2020-2021 academic year (Tables 9, 10, 14). Only percentages are provided since sample sizes vary across categories (*n* = 3954-4625). Not all sections add up to 100% due to some categories in AACN data not being present in the study sample.

Table 4.2: Demographics of DNP-PhD Students

Demographics	No. of Participants (n = 10)	Percent of Participants (100%)
<i>Age Range</i>		
19-39	3	30%
40-55	5	50%
>55	2	20%
<i>Current, Primary Workplace[°]</i>		
Academic	5.5	55%
Clinical	4.5	45%
<i>DNP Program Characteristics</i>		
<i>Plan of Study</i>		
*post-BSN ^κ	3	30%
*post-MSN	7	70%
<i>Concentration</i>		
*APRN certification	5	50%
*Non-APRN (e.g., education)	2	20%
*No concentration/focus	3	30%
<i>DNP Graduation</i>		
0-2 years ago	1	10%
3-5 years ago	3	30%
>5 years ago	6	60%
<i>Type of PhD Program</i>		
<i>Delivery Format[†]</i>		
*Hybrid	5	50%
*Online	5	50%
<i>Plan of Study</i>		
*DNP-PhD Bridge	5	50%
*Traditional	5	50%
<i>Phase of PhD Work</i>		
Coursework	7	70%
Dissertation	3	30%
<i>PhD Funding</i>		
Complete external funding	2	20%
Partial external funding	5	50%
Self-funding	3	30%

Note. APRN, Advanced Practice Registered Nurse; BSN, Bachelor of Science in Nursing; DNP, Doctor of Nursing Practice; MSN, Master of Science in Nursing; PhD, Doctor of Philosophy

[°]One participant worked equally in academic and clinical settings.

[†]Some programs changed delivery format because of the COVID-19 pandemic.

^κOne BSN-DNP participant was in a combined MSN/DNP program of study.

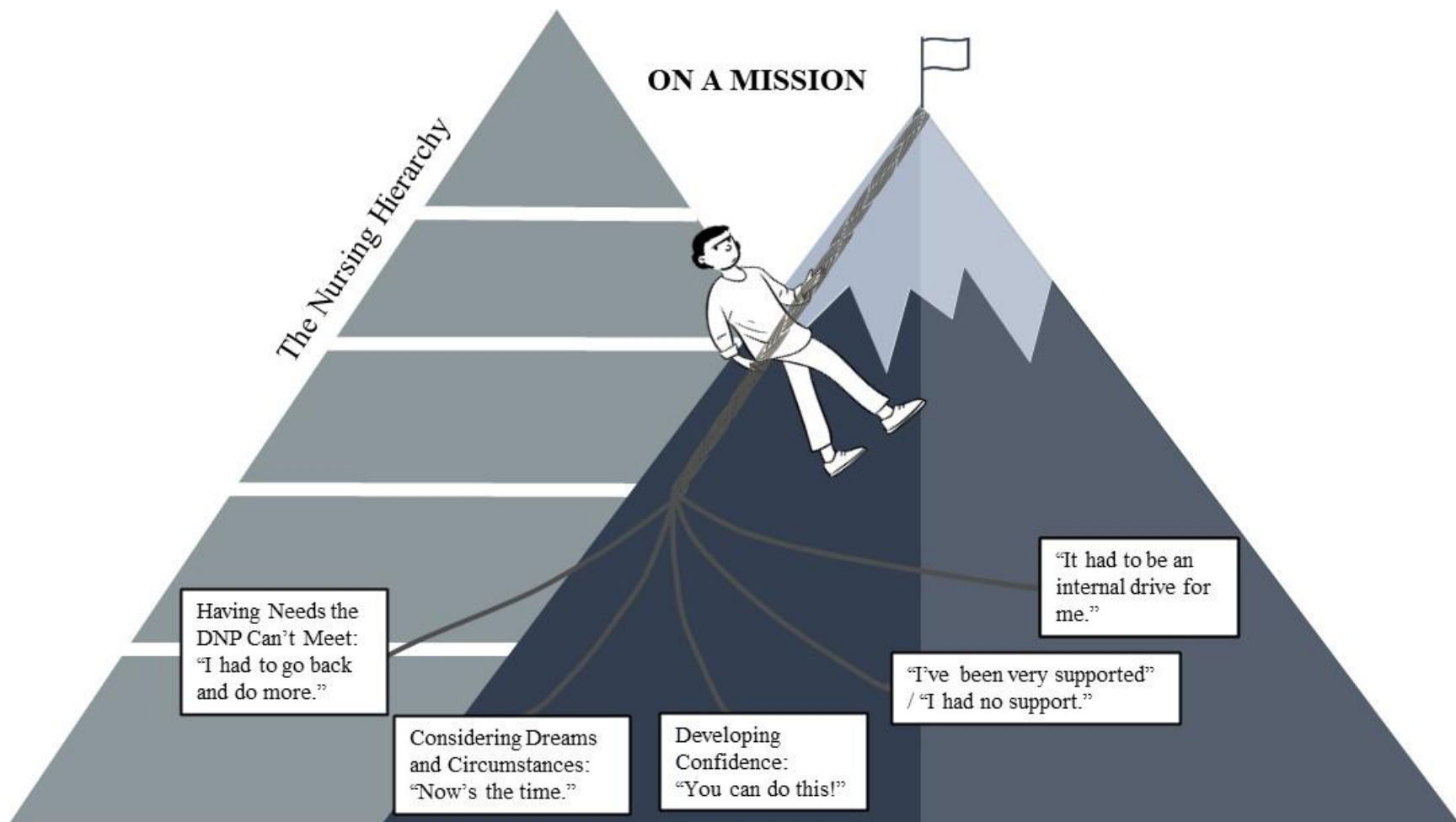


Figure 4.1: *The Experience of Choosing to Pursue a Doctor of Philosophy (PhD) as a Doctor of Nursing Practice (DNP)-Prepared Nurse*

Note. In choosing to pursue a PhD, DNP-prepared nurses are on a mission. Five factors (themes), which are woven together, enable them to draw ever closer to the summit. However, the nursing hierarchy looms in the background, casting a shadow over their mission.

Source: Portions of the "rope" in the figure were created using an image from Pixabay: <https://pixabay.com/vectors/braids-rope-hair-celtic-border-29912/>. All other components of the figure were created using Microsoft PowerPoint.

Chapter 5

Conclusion

Abstract

With the goal of increasing the Doctor of Philosophy (PhD) nursing workforce, this dissertation examined graduate student self-efficacy, PhD enrollment interventions, and experiences of Doctor of Nursing Practice (DNP)-prepared nurses enrolled in PhD programs. The findings yield important insights on the PhD shortage, particularly when they are linked to Social Cognitive Career Theory (Lent et al., 1994). They also illumine implications for nurse educators, practicing nurses and students, researchers, organizational leaders, and policy advocates. Based on these implications, recommendations are provided for bolstering the population of PhD-prepared nurses.

As the Doctor of Philosophy (PhD) nursing workforce continues to decline, the three studies contained in this dissertation contribute to a more multi-faceted understanding of nurses' decisions for or against a PhD. Altogether, this research proffers ideas for increasing interest in PhD-related work, enrollment in PhD programs, and successful completion of the PhD. In this conclusion I will identify and discuss the overarching themes from my work, link the findings from the phenomenological study to Social Cognitive Career Theory (Lent et al., 1994), and present implications and recommendations for various stakeholders.

Overarching Themes of the Three Studies

Looking across the three studies—a concept analysis of graduate student self-efficacy (Muñoz, 2021), an integrative literature review of PhD enrollment strategies (Muñoz, 2022), and a phenomenological study of PhD student experiences—five major themes related to PhD pursuit are apparent. They include (a) drive and challenges; (b) going it alone/needing support; (c) fluctuating confidence but abiding curiosity; (d) perceptions and prestige; and (e) exposure, barriers, and timing.

Drive and Challenges

This work showed that being driven is a core feature of those considering and undertaking graduate school, especially PhD studies. Goal-driven was one of graduate student self-efficacy's (GSSE's) six attributes in my concept analysis (Muñoz, 2021). In that study, I was careful to point out that students with GSSE are not merely *oriented* to their goals; they move *toward* them with fierce determination (Muñoz, 2021). Similarly, having an internal drive was figural in the experiences of Doctor of Nursing Practice (DNP)-to-PhD (hereafter, DNP-PhD) students in the phenomenological study. Being driven was part of their DNA, and their numerous accomplishments displayed this life-long pattern of drive and determination. The literature review of PhD enrollment interventions also showed that most discrete research programs draw in those who already have a strong drive for a PhD (Muñoz, 2022).

Challenges often go hand-in-hand with students' driven nature. In the concept analysis, challenging experiences were a major antecedent to GSSE (Muñoz, 2021), and this was corroborated in the phenomenological study, where significant trials often preceded DNP-PhD students' achievements. Having goal-driven GSSE also made students more apt to see challenges as opportunities and persist through them to successful outcomes, the ultimate consequence of GSSE (Muñoz, 2021). Hence, a person's drive is stimulated by challenges *and* used to surmount them (Muñoz, 2021). This helps explain how driven individuals often have accomplished careers. Toni, one of the participants in the phenomenological study exemplified this. Challenges with her DNP chair made her determined to pursue a PhD, and she remarked that encountering challenges shows that one is pursuing something of value.

Going It Alone / Needing Support

The second theme prevalent across studies was a tension between going it alone and needing support. Another attribute of GSSE was personal, indicating the internal nature of the concept (Muñoz, 2021). Likewise, many DNP-PhD students in the phenomenological study described their PhD pursuit as a solo venture; their personal missions frequently led their path to diverge from others'. Some mentioned few supportive persons in their life, and others said they had chosen to seek a PhD because they wanted to be independent, not needing to rely on others for research or other work. One participant, Kitty, even mentioned that she was seeking the PhD to stand apart from the crowd.

Nonetheless, all three studies indicated the importance of support for PhD aspirations. An antecedent to GSSE is experiences of support, which includes receiving mentoring, having a sense of community with other students, and being encouraged by family and co-workers (Muñoz, 2021). Conversely, unsupportive others erode GSSE. The literature review, too, revealed the importance of mentors, especially one-on-one mentoring with a faculty member, as well as providing opportunities for individuals to socialize with PhD students or others in research programs (Muñoz, 2022). Experiences of DNP-PhD students in the phenomenological study confirmed the necessity of mentors when they revealed the power that faculty mentors have in encouraging or discouraging career and educational pursuits.

Fluctuating Confidence but Abiding Curiosity

Related to going it alone/needing support is the third theme from this work: fluctuating confidence but abiding curiosity. Trust and malleable were attributes of GSSE, indicating that GSSE is a confidence in oneself that fluctuates rather than remaining fixed (Muñoz, 2021). This fluidity of confidence was apparent in the phenomenological study too, as participants described seasons when they had little to no confidence, growing confidence, and firm confidence in themselves as they pursued the PhD. Felicia, for example, admitted that she was not confident in her ability to succeed in a PhD program earlier in her career, but her confidence increased when supportive others encouraged her. She then exuded tremendous confidence when she spoke about her ongoing success in the PhD program.

Yet, despite alterations in students' confidence, their curiosity was unshakable. Nearly every DNP-PhD student in the phenomenological study described a love of learning, a curious nature, or a desire to understand phenomena. One of the consequences of GSSE in the concept analysis was productive feelings, such as enjoyment of graduate school and coursework (Muñoz, 2021). Dannie and Felicia, phenomenological study participants, embodied this when they said, respectively, "I loved [school] so much that once I completed my MSN, I immediately enrolled in a DNP program" and "[My PhD] is so much fun." Finally, the literature review demonstrated the need for informational sessions and hands-on research experience to pique students' interest in a PhD (Muñoz, 2022).

Perceptions and Prestige

Perceptions and prestige constitute the fourth major theme of PhD pursuit. This research showed that perceptions matter. According to the concept analysis, experiences that build a student's GSSE, must be *perceived* as positive (Muñoz, 2021). Perceptions were also king in DNP-PhD students' experiences. Many perceived that the PhD was too hard, and a few said others told them that the DNP was easier. These impressions altered their doctoral pursuits, often leading them away from the PhD and toward the

DNP. Similarly, PhD enrollment strategies covered in the literature review were all devised to improve students' perceptions about PhD education and careers (Muñoz, 2022).

Prestige, which is defined as “standing or estimation in the eyes of people; weight or credit in general opinion” (Merriam-Webster, n.d.), is essentially a favorable perception. In the phenomenological study, DNP-PhD students explained that the PhD was perceived as prestigious in academic and clinical settings. Its prestige, some participants said, even changed others' perceptions of them once they became PhD students. One participant also noted that her self-perception improved once she started her PhD education.

Exposure, Barriers, and Timing

Finally, exposure, barriers, and timing comprise the fifth major theme. Observational experiences were an antecedent to GSSE because watching others often helped graduate students gain confidence in their own ability to succeed (Muñoz, 2021). The literature review bears this out with its inclusion of hands-on research and mentoring as core components of most PhD enrollment strategies, both of which expose individuals to PhD-related work and persons who have obtained a PhD (Muñoz, 2022). Even in the phenomenological study, many DNP-PhD students indicated that their interest in a PhD came from participating in a research study, PhD pipeline initiative, or post-doctoral program and/or by spending time with PhD-prepared nurses. Most strategies outlined in the literature review were developed to draw underrepresented minority students into PhD careers (Muñoz, 2022). To achieve this goal, programs ensured that participants were exposed to PhD-prepared faculty, students, or aspirants who came from similar racial, ethnic, or cultural backgrounds. Relatedly, one of the phenomenological study participants indicated that seeing Black professors early in her nursing career had inspired her to undertake a PhD. She saw obtaining her own PhD as paying it forward for future minority students, helping them witness Black nurses doing more than working at the bedside.

Barriers were also an important and related factor for PhD pursuit. Individuals face multiple barriers to the PhD, and the literature review showed that successful PhD enrollment interventions attempt to remove as many of these barriers as possible (Muñoz, 2022). Most strategies accomplished this by directing their efforts at undergraduate students (who are less encumbered with life responsibilities) and by placing research programs in the summer (when students typically had free time), covering the costs of their participation, and providing built-in social support. Removal of barriers also enabled DNP-PhD students in the phenomenological study to embark on their PhD journey. For instance, Alexis said the PhD became a reality for her when the school she was considering provided a tuition grant and offered her the chance to work with a faculty member bridging two disciplines she loved.

Finally, the timing of exposure and barrier removal was crucial, and the literature review bore this out. Researchers of one PhD enrollment strategy found that undergraduate research programs are less effective for freshmen students, who are still years away from considering graduate school (Muñoz, 2022). And though most strategies targeted upperclassmen undergraduate students, a few attempted to reach graduate students or professionals when they were at a transitional point in their career, offering flexible opportunities for participation. Likewise, in the phenomenological study, most participants recalled how their decision to pursue a PhD came when all the stars aligned. When exposure was high and barriers were low, the decision to pursue a PhD was a no-brainer.

The DNP-PhD Experience Through the Lens of Social Cognitive Career Theory

Next, I will situate the findings of the phenomenological study in one of the top five career theories: Social Cognitive Career Theory (Lent et al., 1994; Leung, 2008). Career theories have been underutilized in discussions of nursing education, particularly for graduate student populations, but they offer valuable frameworks for examining nurses' vocational pursuits. The ground and figural themes identified in the phenomenological study most closely align with the constructs of Social Cognitive Career Theory (Lent et al., 1994). Linking the qualitative findings to theory will expand their scope and illumine critical changes that are needed to bolster the PhD nursing workforce.

Social Cognitive Career Theory Overview

Robert Lent, Steven Brown, and Gail Hackett, all counseling psychologists, developed SCCT in the mid-1990s (Lent et al., 1994). They intended for the theory to unify the copious career theories and describe not only occupational but also academic decision-making. Much as its name implies, SCCT was heavily informed by Bandura's (1986) Social Cognitive Theory and adheres to many of its tenets. SCCT began with three models, the interest, choice, and performance models (Lent et al., 1994), but now also includes the satisfaction model (Lent & Brown, 2006) and the self-management model (Lent & Brown, 2013). Through its five models, SCCT addresses the full spectrum of career and educational development across the lifespan.

All five SCCT models hinge on three central concepts drawn from Social Cognitive Theory: self-efficacy, outcome expectations, and goals (Brown & Lent, 2019; Lent & Brown, 2019). Self-efficacy is described as belief in one's ability to do something; outcome expectations are what a person envisions will happen if certain actions are taken; and goals are one's "determination to engage in a particular activity or to affect a particular future outcome" (Lent et al., 1994, p. 85). While each model of SCCT has its own unique propositions, in general, background and personal inputs are thought to affect an individual's self-efficacy and outcome expectations (Brown & Lent, 2019; Lent & Brown, 2019; Lent et al., 1994). Self-efficacy and outcome expectations then directly and indirectly—through the formation of goals—influence career and academic interests, choices, performance, satisfaction, and self-management.

SCCT has held up well to formal testing over the last 28 years (Brown & Lent, 2019; Lent & Brown, 2019). While the bulk of research has been quantitative (Sheu & Borden, 2017; Sheu & Lent, 2015), many qualitative studies (e.g., Bikos et al., 2019; Millner et al., 2015; Mozahem et al., 2019; Wang et al., 2007) have also been informed by SCCT and supported its constructs (Lent, 2013). The lion's share of research involving graduate students/aspirants has focused on STEM populations, but studies have also utilized samples from psychology (e.g., Deemer, 2009; Marks, 2014), medicine (e.g., Bierer et al., 2015; Blatt et al., 2013), education (e.g., Mills et al., 2020), and a smorgasbord of disciplines (e.g., Bozionelos

et al., 2015; Curtin et al., 2016; Seo et al., 2020). Research with nursing graduate student/aspirant populations has been sparse but includes studies of nurse educator career intentions (Bond, 2017; Thungjaroenkul et al., 2016), development of a Nurse Educator Scale (Samra et al., 2013), and an examination of education and employment differences in nurse-midwives (Woeber & Sibley, 2018). Clearly, SCCT has untapped potential to explore PhD nursing aspirants, students, and graduates.

Linking Phenomenological Themes to SCCT

Since the phenomenological study in this dissertation examined DNP-prepared nurses' experience in *choosing* to pursue a PhD, the ground and figural themes will be linked to the constructs in SCCT's choice model (Lent et al., 1994; see Figure 5.1). As the essence of the DNP-PhD experience, *On a Mission* encompasses all parts of the model, so it is not paired with a particular construct. Additionally, qualitative methods are not designed to determine causality nor directionality, therefore no attempt will be made to map the phenomenological findings to SCCT's propositions.

Shown in Figure 5.1, the ground *Nursing Hierarchy* aligns most closely to the choice model's construct of learning experiences (Lent et al., 1994). The developers of SCCT describe learning experiences as the four sources for self-efficacy outlined by Bandura (1984), "(a) previous personal performance accomplishments (e.g., recall of how one has performed in relevant prior situations), (b) vicarious learning (or modeling), (c) social persuasion, and (d) physiological and affective states" (Lent & Brown, 2019, p. 6). According to participants, the hierarchy within nursing often determined the opportunities they were given, activities they were exposed to, mentors they had, and feelings they internalized. A few participants noted that they were excluded from administrative positions without a PhD as well as limited in their ability to take part in many research projects at their institutions. One participant, Kitty, even noted that she saw herself as "not enough" with a DNP. In contrast, simply being in a PhD program improved some participants' self-esteem or helped them expand their career horizons and collaborate with others who were typically out of reach.

Self-efficacy, one of the key constructs of the choice model (Lent et al., 1994), corresponds to the figural theme *Developing Confidence: “You can do this!”* (Figure 5.1). Bandura (1977) first described the term self-efficacy and has argued that self-efficacy is not an overall character trait but domain specific. It fluctuates depending on the task at hand and the learning experiences a person is exposed to, which are described in the previous paragraph. This was evident in the phenomenological study, where participants’ stories showed that they had confidence for many challenging activities (e.g., providing intensive care as a nurse practitioner) yet were intimidated by the PhD. Vicarious experiences (e.g., watching others conduct research), previous successful endeavors (e.g., having completed the DNP), persuasive others (e.g., mentors, supervisors, coworkers), and emotional states (e.g., being inspired by research) all contributed to participants’ confidence for PhD pursuit.

Having Needs the DNP Can’t Meet: “I had to go back and do more” connects to outcome expectations in the choice model (Lent et al., 1994), as shown in Figure 5.1. For some of the phenomenological study participants, the reality of working with a DNP in a clinical or academic setting had not met their outcome expectations for the degree. Others, however, saw nothing wrong with the DNP but developed new vocational goals over time. Yet, experiences told both groups that the PhD would lead them to their desired career or lifestyle, whether conducting research, having more control over their work, standing out from the crowd, or bridging the DNP and PhD gap.

In Figure 5.1, goals (Lent et al., 1994) are mapped to the theme *“It had to be an internal drive for me.”* Participants described how their internal drive pushed them forward through challenges, much as goals compel individuals to overcome obstacles that stand in the way of reaching them. According to Lent et al., goals in SCCT are not objectives for one’s education or career but rather the “determination” (p. 85) to undertake certain activities that will lead to desired results. All phenomenological study participants shared profound stories of perseverance, not just when pursuing the PhD but over their lifetimes. Some even stated outright that being able to successfully pursue a PhD all comes down to having perseverance or internal drive.

Finally, the choice model's (Lent et al., 1994) contextual influences proximal to behavior, which encompass the barriers and supports individuals encounter, are similar to two themes from the phenomenological study: *Considering Dreams and Circumstances: "Now's the time"* and *"I've been supported."* / *"I had no support,"* as seen in Figure 5.1. While their dreams and supportive/unsupportive experiences often happened well in the past, they were figural in participants' minds and thus were proximal to their PhD decision-making. DNP-PhD students in the phenomenological study stated plainly that supportive—and, for some, unsupportive others—were highly influential in their decision to undertake a PhD. Meanwhile, remembrances of unrealized dreams and current circumstances, including health, finances, and world events like the COVID-19 pandemic, affected their PhD readiness.

These clear connections between the phenomenological study findings and constructs within SCCT's choice model (Lent et al., 1994) illustrate the theory's potential to broaden our understanding of the PhD nursing shortage, hopefully giving rise to viable interventions. However, quantitative research using structural equation modeling and path analysis is now needed to determine the directionality of themes and whether they align with the propositions of the choice model. Other implications are discussed below.

Implications and Recommendations

The major themes of this work as well as the links between SCCT's choice model (Lent et al., 1994) and the experiences of DNP-PhD students lead to implications and recommendations for nurse educators, practicing nurses and students, researchers, organizational leaders, and policy advocates. Each group can support the PhD nursing workforce in distinctive ways.

Nurse Educators

This work teaches us that faculty affect students' outcome expectations, self-efficacy, and goals and thus play a pivotal role in shaping their career and educational plans. Therefore, to increase interest,

enrollment, and success in PhD programs, nurse educators should make mentoring a priority, demystify the PhD, seek out driven individuals, and affirm students' capabilities.

Prioritize Mentoring

The largest study of PhD students in the US was conducted by Nettles and Millett (2006). Even though their findings are dated, implications from this classic study still ring true and are timely for the difficulties facing the PhD nursing workforce. Nettles and Millett found that every measure in their study—time to degree completion, research productivity, satisfaction with doctoral experience, etc.—was improved by students having a mentor. Faculty mentoring, they argued, should be emphasized just as much as the tripartite mission of teaching, research, and service. This primacy of faculty mentors was evident in this dissertation as well. Therefore, nurse educators of PhD students/aspirants must approach mentoring with the mindset of preserving nursing for future generations. They should proactively seek out mentees and devote significant time and attention to them. Academic administrators, for their part, should make mentoring part of faculty workload, create awards for outstanding mentoring, and record and disseminate positive mentorship stories.

Demystify the PhD

Another point made by Nettles and Millett (2006) that connects to this research is the mysterious nature of the PhD. Students they surveyed often described frustration and disenfranchisement when parts of the PhD process were undisclosed or when their degree was dragging on. Their data suggested that faculty may not always provide PhD students with the information they need to be successful. For instance, faculty may fail to warn students about the all-too-common temptation to give up (Muñoz, 2021), or they may not steer them away from overly complex research topics that will slow their completion time, as happened with one participant in the phenomenological study.

The mystery surrounding the PhD also affects interest in the degree and program enrollment. One phenomenological study participant stated frankly that the PhD was nebulous to him until he began to do

research work. Likewise, PhD enrollment strategies (Muñoz, 2022) were often effective because they moved the PhD from an obscurity to a clear career possibility. Faculty must be intentional to create opportunities that give students a taste of the PhD. For example, faculty might ask prelicensure students to interview a PhD-prepared nurse about his or her work and write a report, detailing what they learned and whether it changed their view of the PhD.

Seek Out Those Who Are Driven and Independent

Mentoring and demystifying the PhD are important external supports, but without their own internal source of drive, PhD aspirants/students will have a bumpy and possibly short-lived PhD experience. Therefore, it is incumbent upon faculty to identify and nurture individuals who are driven, particularly toward research, as the new *PhD Pathways to Excellence* by the American Association of Colleges of Nursing (AACN, 2022) recommends. Faculty should also seek out individuals who display independence. The purpose of the PhD is to develop an individual research interest and conduct independent research (AACN, 2022; Nettles & Millet, 2006). PhD education and work are highly individualistic and require autonomous function for a sustained period of time. Interestingly, phenomenological study participants never spoke at length about their classmates, suggesting that they recognized the independent nature of the PhD. Thus, when seeking out students to encourage toward a PhD, faculty should observe for those who forge their own paths and gravitate to independent work.

Continually Reaffirm Students' Capabilities

Finally, nurse educators, whether during one-on-one mentoring or when teaching a course, must continually reaffirm students' capabilities. Faculty may be lulled into thinking that their students, who have shown confidence for significant undertakings in the past, will carry that confidence into all aspects of their PhD. Yet, this is not consistent with the attributes of GSSE nor was it borne out in the experiences of DNP-PhD students in the phenomenological study. GSSE is malleable, meaning it ebbs and flows (Muñoz, 2021), so faculty encouragement must be consistent throughout the students' program. It is also

personal, or internal (Muñoz, 2021), hence its fluctuations may not be obvious to faculty. Accordingly, nurse educators must express their belief in all students' capabilities and take every opportunity to celebrate their accomplishments, big and small. By building a surplus of encouragement in the minds of students, faculty may help them develop the all-important perseverance needed to complete their degrees.

Practicing Nurses and Students

Practicing nurses and students who are considering graduate school also have a hand in bolstering the PhD nursing workforce. They must carefully consider their career goals and educational options, and, for those who aspire or undertake the PhD, take steps to decrease intimidation and imposter syndrome.

Carefully Consider Goals and Options

The onus for increasing the PhD workforce does not lie solely with faculty; nurses and students must take ownership for their degree pursuits. They bear the responsibility for carefully evaluating their short- and long-term career goals and conducting their own in-depth evaluation of all potential educational options. This research, along with a scoping review by Granner and Ayoolola (2021), unfortunately show that such thoughtful consideration does not always occur. In the phenomenological study, even a few DNP-PhD students—arguably some of the most competent and capable nurses—failed to prudently consider their future careers, instead forging ahead with educational plans based on others' opinions and choices. Undertaking such a significant, life-altering endeavor without due planning and rigorous investigation of all options is both unadvisable and unwise.

Practicing nurses and students could start by charting a prospective course for their career and discussing their plans with a trusted mentor. Then, they could talk with individuals who have a degree or career that they are interested in, which would help confirm or redirect their plans. Most importantly, however, they must keep their options open, as having a narrow view of graduate degrees/careers can unknowingly remove valuable options and may also create blinders that prevent students or practicing nurses from seeing the ill fit of a particular path. This was evident in the phenomenological study. Some

DNP-PhD students admitted to previously holding narrow views of the PhD, which prevented them from seeking it earlier. A few also obtained a DNP despite the degree being unsuitable for their career goals.

Take Steps to Decrease Intimidation and Imposter Syndrome

The phenomenological study showed that PhD intimidation before and while enrolled is not uncommon, and one participant specifically mentioned experiencing imposter syndrome during his PhD program. SCCT (Lent et al., 1994) proves illuminating for both issues. Outcome expectations for a PhD can be high, and a nurse or student may have set a goal to obtain a PhD. Nevertheless, self-efficacy is necessary for starting and continuing PhD education. Students and aspirants can boost their self-efficacy by seeking out learning experiences (Lent et al., 1994), including spending time with others who have or are obtaining a PhD (vicarious learning); trying their hand at PhD-related work, such as conducting and presenting research (previous successful accomplishments); finding mentors (social persuasion); and choosing to see challenging situations as opportunities for success (affective states).

Researchers

While this work could spawn research in numerous directions, three priorities stand out for strengthening the PhD workforce in terms of enrollment, completion, and career. Researchers should study and share PhD enrollment strategies, explore the prevalence of Superwoman Schema in PhD students, and correlate PhD motivations with workforce measures.

Study and Share PhD Enrollment Strategies

Multiple PhD enrollment strategies exist within nursing, but few have been investigated with empirical research (Muñoz, 2022). Strategies in other disciplines, particularly the fields of science, technology, engineering, and mathematics (STEM), have common characteristics that contribute to their success, but these professions, and the potential PhD students they target, are significantly different from those found in nursing (Muñoz, 2022). Both formal and informal strategies employed by nursing schools (e.g., Ayoola et al., 2017; Kowlowitz et al., 2018; Smith et al., 2016; University of Pittsburgh School of

Nursing, 2021) hold potential for boosting PhD enrollments across the country. Without rigorous investigation and dissemination of the findings, however, interventions to bolster the number of PhD-prepared nurses will continue to be siloed. Research of PhD enrollment strategies within nursing would show other nursing schools how to remove as many barriers from students' PhD pursuit as possible and might also inform interventions for the pervasive PhD intimidation highlighted by this work.

Explore the Prevalence of Superwoman Schema in PhD Students

Increasing PhD enrollments will not solve every problem. Researchers must also explore ways to retain students and help them graduate, especially those from underrepresented backgrounds. While being driven is often deemed an admirable quality in graduate students, it may also lead to negative consequences. Researchers have identified a phenomenon called the Superwoman Schema (Woods-Giscombe, 2010) that helps to explain the persona often adopted by African American women who learn to hide their emotions and appear strong, resist vulnerability but help others, and succeed no matter how limited their resources (University of California-Berkeley, 2019). The Superwoman Schema has been shown to increase self-efficacy and help African-American women be resilient in the face of challenges, but it is also associated with increased psychological distress, particularly when women perceive little emotional support in their lives (Watson-Singleton, 2017). In my phenomenological study of DNP-PhD students, the two Black participants appeared to display attributes of the Superwoman Schema. Future research should use the Giscombe Superwoman Schema questionnaire (Woods-Giscombe et al., 2019) to explore the prevalence of this phenomenon among African American female nurses—and perhaps other groups—in PhD programs, with the goal of implementing support measures for these students.

Correlate PhD Motivations and PhD Workforce Measures

Nettles and Millett (2006) point out that doctoral degrees have, over time, become less about being a knowledge expert in a particular area of study and more focused on skills and prestige. This still holds today. In my phenomenological study, reasons for DNP-prepared nurses' PhD pursuits were varied.

Some were expected, such as interest in conducting research or seeking administrative positions. Others, however, were unexpected and perhaps even problematic, such as a desire for prestige or to be less vulnerable. Those who see the PhD as a seal of approval rather than a set of skills or expertise may differ in empirical ways. Using a sample of PhD students and graduates, future research should attempt to tease out their primary motivations for a PhD and observe for correlations with measures important to the PhD workforce, like degree completion rates, post-PhD positions taken, and scholarly productivity.

Organizational Leaders

The AACN has significant influence over the course of doctoral education in the US. Its leaders should clarify the purpose, expertise, and career trajectories of DNP-prepared nurses as well as partner with practice-oriented organizations to inspire nurse clinicians to consider a PhD. Lauren, can you add anything here, so that you do not have a one-sentence paragraph? Perhaps move some of the material in the next section, which discusses the faulty understanding of the purpose of DNP education and the need for AACN to bring clarity

Clarify the Purpose, Expertise, and Career Trajectories of DNP-Prepared Nurses

SCCT delineates how learning experiences affect individuals' outcome expectations for a particular degree or career (Lent et al., 1994). Regrettably, some DNP-PhD students in the phenomenological study appeared to have a faulty understanding of the purpose, expertise, and career trajectories of DNP-prepared nurses. One participant was disappointed that her DNP program did not offer advanced statistical coursework, while another expressed frustration at the DNP's inability to prepare her for a faculty position in an R1 university. These experiences of DNP-PhD students, along with the challenges discussed in Chapter 4's introduction, demonstrate the urgent need for the AACN to bring clarity to the DNP. Language about the degree should be standardized and consistently applied to help get the DNP back on track (McCauley et al., 2020). This, along with promotion of the PhD, may

help individuals considering doctoral education make decisions that more closely align with their goals (as noted above). It may also increase appreciation for those who obtain both nursing doctoral degrees.

Inspire Nurse Clinicians to Consider the PhD

It is no secret that nurses and nursing students are strongly oriented toward clinical practice rather than research. Nursing faculty have only a few short years to communicate the importance of PhD education to their students, and, given the growing dearth of PhD-prepared nurses in academic settings, relationships that may inspire nursing students to undertake a PhD are becoming few and far between. Therefore, the AACN should enlist the help of practice organizations, which service nurse clinicians, to communicate the need for additional PhD-prepared nurses. These organizations, many of which are part of the Nursing Community Coalition (<https://www.thenursingcommunity.org/>), could highlight the crucial role that PhD-prepared nurses play in educating their clinicians, advocating for the concerns of their patients, and conducting research that affects their population. This information could be posted on the organization's website, emailed to their constituents, or published in their peer-reviewed journals.

Policy Advocates

Policy advocacy represents the final pillar of support for the PhD nursing workforce. The shortage of PhD-prepared nurses has reached a critical level, and the need to intervene can no longer be discussed only in nursing circles. Legislators must be made aware of the consequences of a PhD nursing shortfall. Hence, policy advocates should strongly urge for federal attention to PhD nursing education and convey the importance of the PhD nursing workforce for federally-funded research.

Strongly Advocate for Federal Attention to PhD Nursing Education

Nettles and Millett (2006) argue that many of the more salient problems in our society could be improved by giving attention to PhD education. Since most PhD-prepared nurses work, at least in part, as educators (Broome & Fairman, 2018), the shortage of PhD-prepared nurses affects the size of the nursing workforce at large (AACN, 2020a). This is a particularly poignant issue in the US, where 32% of nurses

providing direct care in late 2021 said they are likely to quit their jobs in the next year (Berlin et al, 2022). Mass numbers of nurses leaving bedside care impacts patient safety, particularly when healthcare utilization is high, as with the COVID-19 pandemic. Therefore, policy advocates must be relentless in bringing PhD nursing education to the attention of the federal government, urging for the passage of supportive legislation, such as the Future Advancement of Academic Nursing Act (2021a, 2021b) which called for specific grant funding to enhance and expand nursing PhD programs. They must seize what Kingdon (1984) called the “window of opportunity” to get PhD education needs onto the policy agenda.

Convey the Importance of the PhD Nursing Workforce for Federally-Funded Research

Patient care is affected not only by fewer nurses providing direct care but also by fewer nurse scientists conducting research that has life-changing implications (Broome & Fairman, 2018). PhD-prepared nurses are integral members of interdisciplinary research teams and lead studies that result in major breakthroughs for acute, chronic, and terminal health conditions (Zenk, 2020). However, federal leaders may not understand the irreplaceable role that PhD-prepared nurses play in advancing healthcare through science (Broome & Fairman, 2018). Thus, policy advocates should convey to members of Congress that nurses, as the largest group of healthcare professionals (Bureau of Labor Statistics, 2021) and those providing the most direct care, are best able to bring patient concerns to the research table. Introducing legislators to nurse scientists who are doing hot-topic work and presenting testimony by nurse leaders, nurses at the bedside, and patients who have tangibly benefited from nursing research could increase buy-in from federal decision-makers. When congressional leaders understand the importance of the PhD nursing workforce, they are more likely to support it in substantial ways.

Conclusion

The shortage of PhD-prepared nurses has placed the nursing profession and the public in a precarious situation. Yet, the three studies contained in this dissertation fill many gaps in our understanding and can inform approaches to support meaningful PhD growth. A concept analysis of

GSSE (Muñoz, 2021), a literature review of strategies to increase PhD enrollments (Muñoz, 2022), a phenomenological study of DNP-PhD experiences, and SCCT (Lent et al., 1994) together render a clearer picture of the PhD nursing journey, complete with its twists and turns, peaks and valleys. Nurse educators, practicing nurses and students, researchers, organizational leaders, and policy advocates can intervene at a variety of points along the route. But intervene we must, before the PhD-prepared nurse moves from endangered (McSweeney et al., 2018) to extinct.

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Appendix

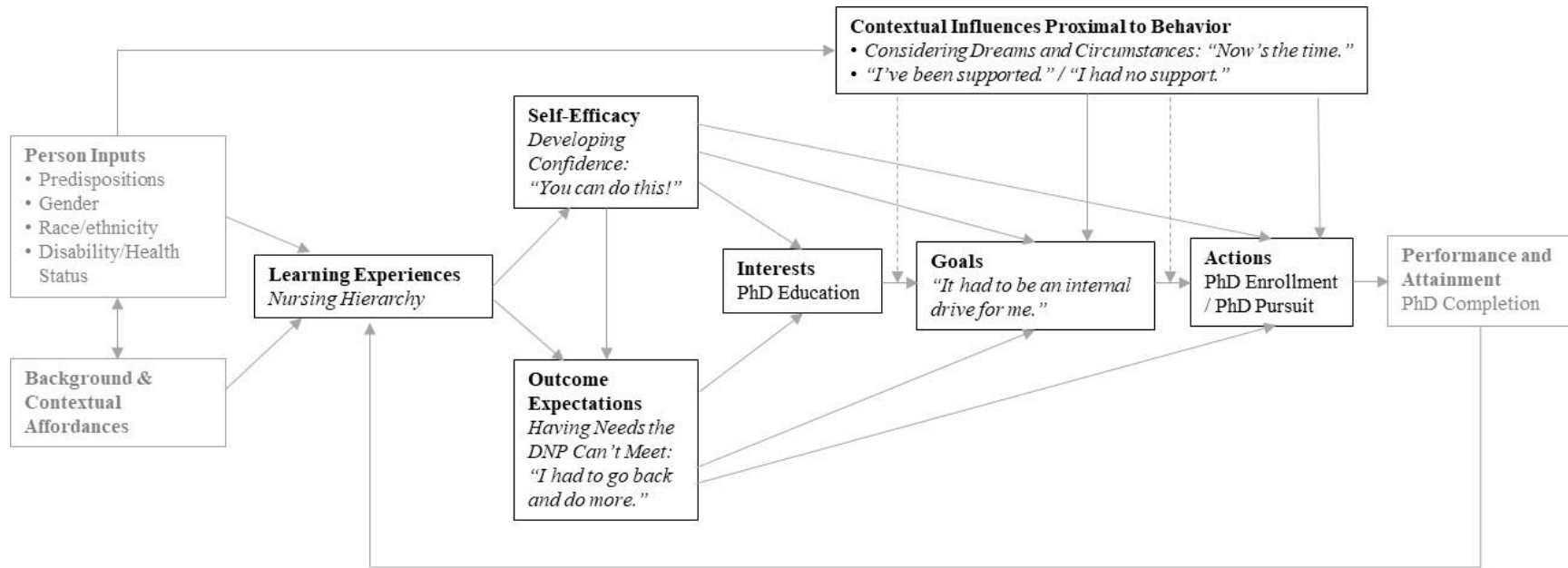


Figure 5.1: Linking Phenomenological Themes to Social Cognitive Career Theory Choice Model Constructs (Lent & Brown, 2019)

Note. Dashed lines indicate moderating effects. Arrows depict the directionality proposed by the original choice model, which has been validated by structural equation modeling and path analysis. However, arrows are shown in gray here because the phenomenological themes are mapped only to constructs; a quantitative study is needed to assess directionality of themes. Some boxes and text are also shown in gray because these portions of the SCCT choice model were not discussed. Adapted with permission from Lent & Brown, 2019.

Vita

Lauren Renee Muñoz earned her Bachelor of Science in Nursing from the University of Tennessee-Knoxville in 2010. She was selected to participate in Vanderbilt University Medical Center's Critical Care Nurse Residency Program, where she cared for critically and acutely ill pediatric and adult patients suffering from burns and other injuries. In 2011 she moved to the Chicago suburbs to work in NorthShore University Health System's cardiac imaging labs. She then relocated to Knoxville, TN in 2014 to begin her Master of Science in Nursing (Family Nurse Practitioner concentration) at the University of Tennessee-Knoxville. During that time, she worked as a Graduate Teaching Assistant for the College of Nursing and was employed as a registry nurse for the University of Tennessee Medical Center. Upon receiving her Master of Science in Nursing (Family Nurse Practitioner concentration) from the University of Tennessee-Knoxville in 2015, she worked as a nurse practitioner at Rheumatology Consultants, PLLC in Knoxville, TN until 2018, at which time she moved to Charlotte, NC. She worked briefly for Integrative Rheumatology, PLLC in Charlotte before starting her PhD program at the University of Tennessee-Knoxville in 2018. During her PhD program, she served as a Graduate Research Assistant for multiple faculty in the College of Nursing.

During her doctoral program, Ms. Muñoz has authored two manuscripts. The first was published in the *Journal of Professional Nursing* and described a concept analysis of graduate student self-efficacy, discussing implications for nursing education, research, and policy. The second was published in *Nursing Outlook* and outlined strategies to boost enrollments in nursing PhD programs. She has also been a second or third author on five other in-press or published manuscripts.

Ms. Muñoz received an Outstanding Graduate Teaching Award from the University of Tennessee Graduate School while completing her master's degree. For her PhD pursuit, she was granted the prestigious Tennessee Fellowship for Graduate Excellence from the Graduate School at the University of Tennessee-Knoxville. At the conclusion of her PhD, she received a Volunteer of Distinction Award for Exceptional Professional Promise from the University of Tennessee.

Ms. Muñoz is a member of Sigma Theta Tau International nursing honor society (Gamma Chi and Gamma Iota chapters) and a reviewer for the *Journal of Professional Nursing*. She graciously received three grants for her dissertation work: the Sigma Theta Tau Gamma Chi Chapter 2021 Small Research Grant, the University of Tennessee College of Nursing Dean's Dissertation Award from the Sara Rosenbalm Croley Endowed Dean Chair Funds, and the 2022 National Association of Graduate Admissions Professionals (NAGAP) Graduate Education Research Grant (Silver Award).