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Exploring the Characteristics of Physical Therapist Assistant - Doctor of Physical Therapy Bridge Programs that Increase Accessibility and Support for Nontraditional Students

by
Jessica J. Scholl

A dissertation submitted to the faculty of Bethel University
in partial fulfillment of the requirements for the degree of
Doctor of Education.

Saint Paul, MN
2023

Approved by:
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Abstract

The number of nontraditional students in higher education continues to increase. Despite the increase in the number of nontraditional students overall, the majority of students enrolled in doctor of physical therapy programs are considered traditional. In addition, physical therapy students are among the least racially and ethnically diverse which does not match the demographics of society and is a contributing factor in ongoing health disparities and inequity. Educational bridge programs are a known strategy for improving diversity in healthcare and supporting nontraditional students. There are two skilled and licensed providers of physical therapy; physical therapist assistants (PTA) who are educated at the associate degree level and physical therapists who are educated at the doctoral level. The purpose of this qualitative comparative case study was to identify the characteristics of two PTA to DPT bridge programs that increase accessibility and support for nontraditional students. Fourteen faculty and students involved with PTA-DPT bridge programs were selected via purposive sampling and interviewed for this study. Two themes and several subthemes emerged from the data and were framed within Urie Bronfenbrenner's Ecological Systems Model (1979) to describe the various systems, individual to societal, that impact an individual student's access to and success in PTA-DPT bridge programs. The implications for this research highlight a new supportive educational pathway, which is responsive to current trends in society and higher education, for students interested in pursuing a career in physical therapy.

Acknowledgements

My educational journey has been exciting and fulfilling, but untraditional and at times, challenging. I could not have gotten to this point and completed my doctoral dissertation without the never-ending love and support from my family, friends, and colleagues. To my husband, Mick, thank you for supporting me through the good, the bad, and the ugly times of this doctoral journey. I am eternally grateful for your never-ending support and encouragement. Amelia, thank you for sharing your “mommy time” with my studies and writing. Megan, Justin, Robby, and Eli, I never knew how much I would cherish being a “bonus mom” and “Gigi” until you graciously embraced me into your family.

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List of Abbreviations

PTA	Physical therapist assistant
DPT	Doctor of physical therapy
PT	Physical therapist or physical therapy
CAPTE	Commission on Accreditation in Physical Therapy Education
APTA	American Physical Therapy Association
PTCAS	Physical Therapy Computerized Application System

Chapter I: Introduction

Overview

The diversity of students enrolled in higher education is increasing. Diversity is described as the individual and collective representation of various identities and differences such as race, ethnicity, disability, age, sexual orientation, gender identity, national origin, socioeconomic status, thinking, and communication styles (Ford Foundation, n.d.). Traditional students, who are between 18-24 years old, report no dependents, and are financially dependent on parents or family, are no longer the primary demographic of students in higher education (Wood, 2023). The number of nontraditional or post-traditional students has steadily increased over the past several years (Moore, 2020; Wood, 2023). In 2015, 38% of all undergraduate students were identified as nontraditional students (Glancey, 2018). That number has increased, and nontraditional students now make up approximately 50% of students in higher education in the U.S. (Cahalan et al., 2020). The number of nontraditional students is expected to continue to grow (Bellare et al., 2023).

Students are considered nontraditional or post-traditional, terms that will be used interchangeably in this paper, if they possess at least one of the following characteristics: 25 years of age or older, delayed enrollment to college, part-time attendance, full-time employment in addition to their coursework, financial independence, or have dependents (Glancey, 2018; Moody, 2019; Postsecondary National Policy Institute, 2021). Age tends to be the most defining characteristic of nontraditional students (National Center for Educational Statistics, n.d.).

Students enrolled in higher education may also be considered nontraditional based on their race or gender if they are preparing for fields where their identities are underrepresented (Dalporto & Tessler, 2020; National Center for Educational Statistics, n.d.). In addition to the

demographics of students enrolled in higher education diversifying, the racial and ethnic makeup of society continues to diversify. In 2019, 39.9% of the total population in the U.S. identified as non-White while 50.05% of the total population under the age of 16 identified as non-White (Frey, 2020). Despite the increased diversity of society and increase in the number of nontraditional students in higher education, programs educating future healthcare professionals, including physical therapy programs, are not keeping up with the trends.

Physical therapists (PT) and physical therapist assistants (PTA) are the two skilled and licensed providers of physical therapy services. PTs, who are educated at the doctoral level, earn a clinical doctorate or DPT. The degree for a PTA is an associate degree. PTAs train to work under the direction and supervision of PTs and follow rules, regulations, and statutes that guide what PTAs do clinically and how much supervision they require from their supervising PTs. According to the Commission on Accreditation of Physical Therapy Education (CAPTE) there are over 268 accredited DPT programs in the U.S. (Commission on Accreditation of Physical Therapy Education, 2023). Of those institutions most use a centralized application system, Physical Therapist Centralized Application Service (PTCAS), to admit students (American Physical Therapy Association, 2023). Most students enrolled in DPT programs are considered traditional based on their age. In the most recent PTCAS applicant report, 85% of all applicants are under the age of 25 (American Physical Therapy Association, 2023).

Most DPT students are considered traditional based on their age. There is also a lack of racial and ethnic diversity amongst students enrolled in DPT programs. Although the racial and ethnic diversity of society is burgeoning, the current healthcare workforce does not match the demographics of society which contributes to significant healthcare disparities attributed to race and ethnicity (Agency for Healthcare Research and Quality, 2019). The recent focus on diversity,

equity, and inclusion efforts in the physical therapy profession has underscored the need to increase the diversity of physical therapist providers (Loria, 2021). Table 1 illustrates the dearth of racial and ethnic diversity, specifically amongst DPT students.

Table 1

Race and Ethnicity: Comparing US Census Data with DPT and PTA Student Data

Ethnicity	U.S. Population (towns or cities with 5,000 residents or more)	DPT Students	PTA Students
African America	13.6%	4.65%	7.7%
American Indian / Alaskan Native	1.3%	.39%	.8%
Asian	6.1%	10%	5.7%
Hawaiian / Pacific Islander	.3%	.33%	.84%
Hispanic / Latino	19%	7.82%	16.1%
White alone (not Hispanic / Latino)	59%	69.6%	63%
Other		2%	3.3%
Unknown		2.4%	2.4%

Note. 2022 US population data gathered from the United States Census Bureau (2023). 2021 statistics for DPT and PTA students gathered from the Commission on Accreditation in Physical Therapy Education (2023).

Race is a socially constructed categorization which refers to physical differences that are deemed socially significant, and ethnicity refers to shared cultural characteristics such as language, beliefs, and practices (American Psychological Association, 2019). It is noteworthy that although various racial and ethnic categories are specifically identified and defined in this research, the list is not exhaustive, terms change over time, and racial and ethnic designations should be based on personal preference (American Psychological Association, 2019).

For the purpose of this research, the following definitions for racial and ethnic categories from the National Institute of Health (2015) will be used although the researcher recognizes this list is not exhaustive nor fully inclusive.

American Indian or Alaska Native. A person having origins in any of the original peoples of North and South America (including Central America) and who maintains tribal affiliation or community attachment.

Asian. A person having origins in any of the original peoples of the Far East, Southeast Asia, or the Indian subcontinent including, for example, Cambodia, China, India, Japan, Korea, Malaysia, Pakistan, the Philippine Islands, Thailand, and Vietnam.

Black or African American. A person having origins in any of the black racial groups of Africa. Terms such as "Haitian" or "Negro" can be used in addition to "Black or African American."

Hispanic or Latino. A person of Cuban, Mexican, Puerto Rican, South or Central American, or other Spanish culture or origin, regardless of race. The terms, "Spanish origin, or Latinx" can be used in addition to "Hispanic or Latino."

Native Hawaiian or other Pacific Islander. A person having origins in any of the original peoples of Hawaii, Guam, Samoa, or other Pacific Islands.

White. A person having origins in any of the original peoples of Europe, the Middle East, or North Africa.

The above racial categories or designations are widely accepted and used but are limited in their ability to accurately capture or report the experiences and needs of everyone living in the U.S. These racial designations may not capture significant differences and needs of individuals within a specific group. The needs or disparities experienced by immigrants from the Middle

East and North Africa, for example, are not reported or considered because they are labeled as White (Samari et al., 2020). In general, there is a gap in information about immigrant health (Pavlish et al., 2010). Healthcare research typically assess all immigrants together as one group which ignores the fact that experiences can differ significantly by one's country of origin and citizenship status (Pavlish et al., 2010; Samari et al., 2020).

Healthcare Disparities

A lack of diversity of healthcare providers is a contributing factor in healthcare disparities and inequity (Kelly-Blake et al., 2018; Moerchen et al., 2018). Lack of diversity in healthcare providers can result in a provider-patient mismatch due to cultural concerns and communication problems due to lack of trust (Alizadeh & Chavan, 2016; Halbert et al, 2006; Institute of Medicine, 2003). Healthcare disparities result in poorer access to quality and affordable care, as well as higher rates of disease and/or disability (Agency for Healthcare Research and Quality, 2019). The National Healthcare Quality and Disparities Report provides an overall assessment of the healthcare system in the U.S. including disparities in access to and quality of care. The 2019 Report is based on over 250 measures of quality organized into six priorities: patient safety, person-centered care, care coordination, effective treatment, healthy living, and care affordability (Agency for Healthcare Research and Quality, 2019). Blacks, American Indians, and Alaska Natives received lower rates of quality healthcare than Whites in 40% of quality healthcare markers such as death related to colorectal or breast cancer. Hispanics, Native Hawaiians, and Pacific Islanders received worse care in one-third of the measures such as receiving an appropriate flu vaccination. Asians also received poorer quality care in one-third of the measures but better care than Whites in another one-third of the measures (Agency for Healthcare Research and Quality, 2019).

An important strategy to mitigate healthcare disparities is to increase diversity in the healthcare workforce (Thomas, 2014). Many patients prefer receiving medical care from a provider of the same racial or ethnic background, referred to as concordance, or similarity between the patient and provider (Kelly-Blake et al.,2018). Patients prefer to interact with a healthcare provider with similar values or backgrounds (Garces & Mickey-Pabello, 2015). Patients who share similar backgrounds and values with their provider reported improved communication and overall quality of care (Johnson Shen et al., 2018). Racial discordance, conversely, often resulted in lower quality of communication, less patient participation in care planning, and shorter visits (Johnson Shen et al., 2018).

Trust, or lack of, between patient and provider may contribute to healthcare disparities. Black patients report lower levels of trust with healthcare providers than White patients (Halbert et al., 2006; Sullivan, 2020). Many non-White patients exhibit distrust towards the medical system. Patients refusing treatment due to mistrust, feelings of discrimination, and decreased participation in decision-making may be factors in healthcare disparities (Institute of Medicine, 2003). Minority patients reported higher levels of satisfaction and trust with minority physicians than White physicians (Institute of Medicine, 2003). Increasing the diversity of healthcare providers will strengthen the patient/provider relationship especially for non-White patients. Racial or ethnic concordance promotes higher levels of patient participation in their care, higher levels of satisfaction, and improved adherence to care plans (Institute of Medicine, 2003).

In physical therapy, disparities exist for Black patients diagnosed with a musculoskeletal condition in their utilization of and time to access services (Richter et al., 2022). White patients are 60% more likely to access physical therapy services after a musculoskeletal diagnosis than Black patients and report a shorter time accessing care, 8 days versus 12 days, to access physical

therapy (Richter et al., 2022). In addition to disparity in access to physical therapy services based on race, an example of the impact of racial discordance between patient and provider is disparity related to pain, a common impairment for patients, especially with musculoskeletal conditions (Anderson et al., 2020; Guillermo, & Barre-Hemingway, 2020). Black patients reported less pain with racial patient/provider concordance and more pain with discordance during various medical procedures (Anderson et al., 2020). Having racial concordance with a provider may increase trust and decrease anxiety during a painful procedure and consequently less pain (Anderson et al., 2020). Black adolescents, in particular, are often undertreated for pain and prescribed fewer pain medications (Guillermo & Barre-Hemingway, 2020). Increasing the number of Black clinicians may improve concordance due to increased patient trust in their provider (Anderson et al., 2020; Guillermo & Barre-Hemingway, 2020).

The vision statement of the American Physical Therapy Association is "transforming society by optimizing movement to improve the human experience" (American Physical Therapy Association, n.p.). To fully achieve this vision, physical therapy providers must address healthcare disparities based on race. The physical therapy field contains little racial and ethnic diversity with respect to providers. Physical therapy has the lowest percentage of Blacks and Hispanics in the current healthcare workforce (Salsberg et al., 2021). Additionally, Salsberg et al. (2021) predicted the representation of Blacks in physical therapy will continue to decrease due to the small number of Black students enrolled in Doctor of Physical Therapy (DPT) programs.

Increasing Diversity by Increasing Access for Nontraditional Students

One contributing factor to the lack of diversity of students and providers of physical therapy could be attributed to the fact that the majority of current applicants to and students enrolled in DPT programs are defined as traditional, versus nontraditional, students. Students

may be considered nontraditional based on a variety of descriptors or characteristics including age, enrollment status, financial independence, have dependents, or if their race or ethnicity is underrepresented in a given field. Regardless of the characteristic(s) that students possess to be considered nontraditional, the challenges they face in higher education are similar. Many nontraditional students reported feelings of isolation due to the difference in their life circumstances compared to their traditional classmates (Moore et al., 2019; Wood, 2023). Nontraditional students also have many other outside demands on their time which may limit their ability to enroll in a full-time, fully face-to-face program. Nontraditional students with dependents, for example, are more likely to enroll in a two-year versus four-year institution (Postsecondary National Policy Institute, 2021). In 2019-2020, 3.8 million students enrolled in community colleges were student parents (Hatch & Toner, 2020). Community colleges, where many PTA programs are located, often serve as a less expensive and more flexible entry point into higher education.

Two known strategies for improving diversity in healthcare are student recruitment efforts and pipeline programs (Glazer et al., 2018; Kelly-Blake et al., 2018; Wise et al., 2017). Increased recruitment efforts, alone, may not be enough to improve diversity due to disproportionate attrition rates for students from underrepresented group compared to students from the dominant group (Girotti et al., 2015). The purpose of pipeline programs is to reduce the educational barriers caused by various social determinants that impact students prior to and during their educational experience. Pipeline programs provide the additional personal, academic, and professional support needed to complete healthcare programs early in their educational career (Girotti et al., 2015). Kelly-Blake et al. (2018) in an extensive 15-year review of the literature suggested that pipeline programs are the most effective strategy to increase the

number of underrepresented clinicians in healthcare, specifically in the medical professions of medicine and nursing.

Statement of the Problem

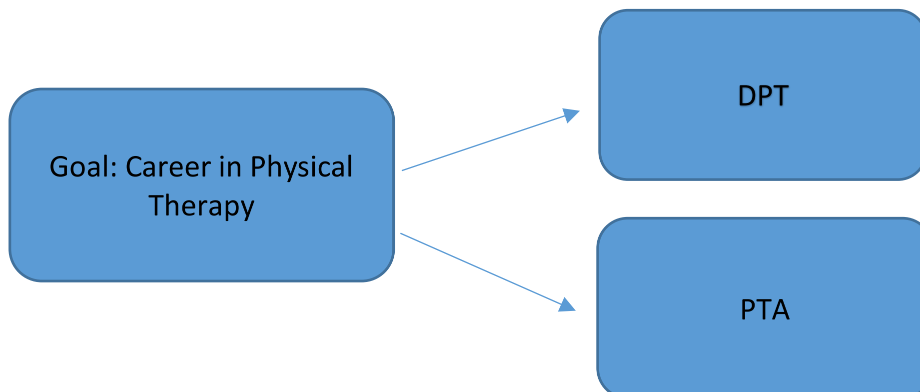
Nontraditional students have typically been excluded from various opportunities in higher education (Dalporto & Tessler, 2020). There is a history of unequal access to resources for nontraditional students and systemic, institutional, and internalized bias have limited equitable access (Dalporto & Tessler, 2020). Dalporto and Tessler (2020) defined equity as all students having the opportunity to engage in high-quality education with the support needed to succeed and graduate, regardless of their identities. Nontraditional students often encounter unique challenges in earning a degree compared to their traditional counterparts (Council on Adult and Experiential Learning, 2018).

A large percentage of DPT students are considered traditional students; most are under the age of 25 and matriculate into their three-year graduate DPT program immediately after earning their four-year baccalaureate degree. From this researcher's experience in physical therapy education, few DPT students have dependents. DPT students who identify as White are also considered traditional based on the mismatch between the racial and ethnic demographics of DPT students and society. For nontraditional students, the educational path may not linear. Several factors may alter the educational path of nontraditional students and decrease their chance of becoming a DPT. A number of variables such as age, race/ethnicity, and socioeconomic status decrease the chance of becoming a DPT as educational paths or life circumstances restrict full-time investment in seven consecutive years of higher education. Due to these variables, some students may choose to pursue a career as a PTA as the educational process involves significantly less time and money.

The current norm in physical therapy education is that students either choose to pursue a PTA or DPT degree. If they choose to become a PTA, the journey ends for most after earning their associate degree.

Figure 1

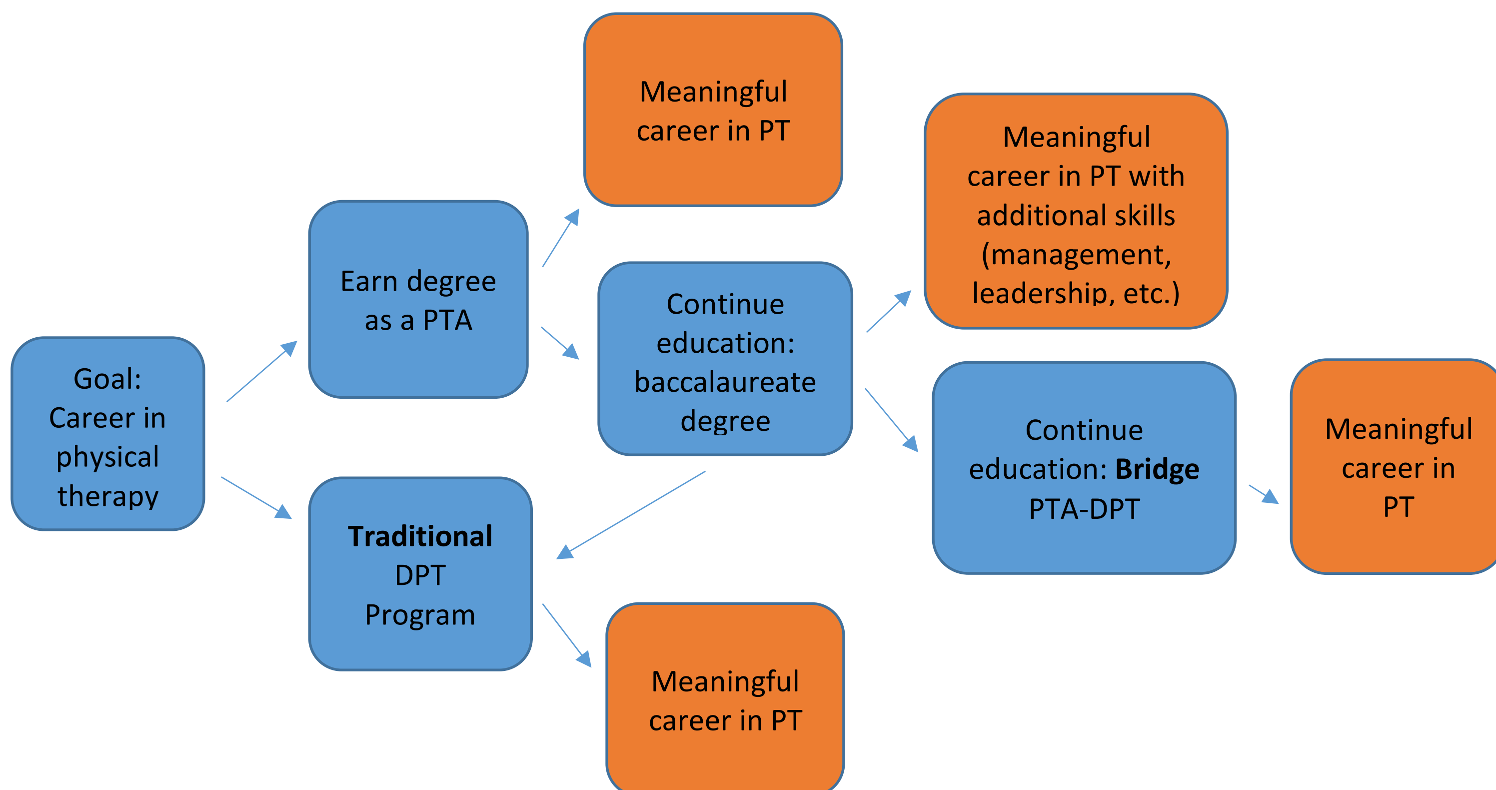
Traditional Paths for Physical Therapy Education



Individuals from underrepresented groups in healthcare are over-represented in entry-level or lower-skilled positions (Snyder et al., 2018). Physical therapy parallels this pattern with more diversity among PTA students and clinicians compared to DPT students and clinicians. Many PTAs never consider returning to school to become a DPT due to the financial and time commitments previously described. Bridge programs, however, create an alternative pathway allowing PTAs to continue their education while working, and become a DPT. PTA-DPT bridge programs offer more flexibility in terms of curriculum design and content delivery which results in additional career pathways as illustrated in Figure 2.

Figure 2

Conceptual Model for Additional Pathways



The above figure presents a model with multiple on and off ramps which allow for more opportunity for students to transition from education, to work, and back to education which may increase access for nontraditional students who are currently not well served by the traditional system of education in physical therapy. Given the additional flexibility, PTA-DPT educational bridge programs in physical therapy have the potential to improve the diversity of physical therapists by increasing access for nontraditional students.

Purpose of the Study

The purpose of this study was to explore the characteristics of PTA-DPT educational bridge programs that may increase accessibility and support for nontraditional students. The intent of the research was to describe the various systems that impact individual students as well

as the policies, format, environment or culture, and pedagogical practices of PTA-DPT bridge programs that support nontraditional students' success for completing DPT programs.

Research Questions

RQ 1: How do participants describe environmental characteristics of PTA-DPT educational bridge programs that can increase accessibility for nontraditional students?

RQ 2: How do participants describe environmental characteristics of PTA-DPT educational bridge programs that can support retention for nontraditional students?

Significance of the Study

The history of medical education has shaped the current landscape of healthcare by creating standards and practices that determine who becomes a professional and how they are educated. The Flexner Report (1910) advocated for developing university-based medical school education and eliminating proprietary schools. This change resulted in longer curriculum, increased costs of education, more rigorous standards for admission, and a focus on the Germanic tradition of scientific research (Institute of Medicine, 2003). The result of the Flexner Report was a decrease in the number of medical schools which limited student accessibility. These standards and practices have impacted the educational approaches of many health professions, including physical therapy.

Most students pursuing a degree as a DPT earn a (required) bachelor's degree and matriculate immediately to a DPT program. This traditional delivery method for DPT education, full-time with face-to-face instruction, may limit accessibility for potential students, especially nontraditional students, which may contribute to the lack of diversity in physical therapists and DPT students. Although many students pursuing a PTA degree have already earned a baccalaureate degree, it is not required. Unlike most DPT programs, many PTA programs are

transitioning from a fully face-to-face curriculum delivery to a hybrid model. Only 47.96 % of PTA programs are still delivered in a traditional, fully face-to-face, format (Commission on Accreditation in Physical Therapy Education, 2023). On average, the cost, degree requirements, and length of a PTA program are less than a DPT program illustrated by Table 2. Becoming a PTA as the entry point to the profession of physical therapy may be more feasible for nontraditional students.

Table 2

DPT and PTA Program Comparison

	Average DPT Program	Average PTA Program
Total cost: Public in-state institution	$69,826	$12,777
Total cost: Private institution	$120,656	$38,267
Average GPA of incoming students	3.56	Not reported
Didactic classroom and lab coursework	88 weeks	62 weeks
Clinical education	35 weeks	15 weeks
Curricular model	Not reported	47.96% traditional 42.09% hybrid 9.95% other

Note. Information from 2021-2022 Aggregate PT and PTA Program and Salary Data report developed by the Commission on Accreditation in Physical Therapy Education (2023).

The strategic plan for the American Physical Therapy Association (n.d.) includes a workforce that reflects the diversity of society. Diversity includes multiple identities and differences such as age, sexual orientation, gender identity, socioeconomic status, and communication and learning styles. Achieving health and healthcare equity is also dependent on an ethnically and racially diverse workforce (Thomas, 2014). Healthcare disparities, which can

be influenced by lack of provider diversity, challenge the values of the physical therapy profession. For example, social responsibility, or responding to the health needs of society, is a core value of the profession (American Physical Therapy Association). Clinicians from historically marginalized groups are more likely to serve in communities that are underserved with limited access to healthcare which can enhance care for society's most vulnerable individuals (Institute of Medicine, 2003; Kelly-Blake et al., 2018; Saha et al., 2008). It is imperative to develop a physical therapy workforce that is diverse and can address the social determinants of health and work towards health equity.

The benefits of diversity extend beyond the relationship with individual patients and decreasing health disparities. A diverse workforce can increase financial profits and overall performance for an organization that has created an open and inclusive environment. A 2019 review of the literature, focused on the impact of diversity in the workplace specifically in healthcare organizations, reported that increased diversity resulted in improved organizational performance. Healthcare organizations with more diversity had higher productivity, improved communication, and better retention of employees. Diverse organizations also reported improved accuracy with risk assessment as well as an environment that fosters creativity and innovation. The benefits were maximized when diversity was present at all levels of the organization, including top management and board positions (Gomez & Bernet, 2019).

The field of nursing has significantly increased the diversity, specifically the racial and ethnic diversity, of its providers since 2011 and could provide a model for education that informs other health professions (National Academy of Sciences, Engineering, and Medicine, 2021). The nursing profession has several degree levels allowing clear opportunities for educational advancement or laddering. For example, registered nurses (RN) who earn an associate degree

can further their education by pursuing a Bachelor of Science in Nursing (BSN) degree. In 2021, a higher percentage of Black, Hispanic, and Asian RNs versus White RNs trained initially at the associate level earned their BSN (National Academy of Sciences, Engineering, and Medicine, 2021). BSN programs typically allow nurses trained at the associate level to finish their degree in less time with more transfer of credits from their previous education. Black RNs who earned a Doctor of Nurse Practice (DNP) increased from 139 in 2010 to 826 in 2017 and Black nurses who earned a PhD increased from 52 in 2010 to 107 in 2017 (National Academy of Sciences, Engineering, and Medicine, 2021).

A key strategy for increasing diversity within the nursing profession included offering multiple educational pathways (National Academy of Sciences, Engineering, and Medicine, 2021). These pathways included accelerated educational programs that allow students with previous educational experience to complete a higher degree in less time using a variety of methods such as distance learning options and competency-based education. Developing articulation agreements or partnerships with community colleges to recognize credits toward a degree was also identified as an important strategy to improve diversity and increase transferability of earned credits (National Academy of Sciences, Engineering, and Medicine, 2021).

Pipeline or bridge programs provide one potential solution to address the lack of diversity in physical therapy. Pipelines refer to programs designed to increase representation that provide early exposure to, immersion in, and ongoing development during a professional program and may include mentoring, financial, and academic support (Crews et al., 2020; Mason, 2020; Snyder et al., 2018). Bridge programs are designed to allow students, often nontraditional students, to build on prior knowledge and education in an efficient and cost-effective manner

(George & Dutton, 2019). In the U.S. a paucity of evidence exists regarding the effectiveness of pipeline or bridge programs in various healthcare fields. Specifically, the literature fails to adequately describe pipeline or bridge program efforts in the allied health professions, including physical therapy (Synder et al., 2018). Developing pipeline or bridge educational programs may offer flexibility in physical therapy education but have not been systematically studied (Moerchen et al., 2018). The terms *pipeline* and *educational bridge programs* will be used interchangeably throughout this paper as both have the potential to increase representation in a particular field. Some professions such as nursing refer to these programs as pipeline programs and others such as physical therapy refer to them as bridge programs. The intent of this study was to describe the characteristics of existing PTA-DPT bridge programs that may create an environment that increases accessibility and support retention for nontraditional students.

There are currently only three PTA-DPT bridge programs in the U.S. accounting for approximately 1% of the total number of DPT programs. Educational bridge programs increase the diversity of healthcare providers by increasing access for nontraditional students, yet there is a lack of evidence describing the characteristics or effectiveness of PTA-DPT bridge programs (Glazer et al., 2018; Kelly-Blake et al., 2018; Moerchen et al., 2018; Snyder et al., 2018; Sullivan Commission, 2004). Previous efforts to increase diversity in physical therapy have included enhancing recruitment efforts or adopting holistic admissions practices. Girotti et al. (2015) suggested that holistic admissions in isolation may not be enough; without appropriate support throughout their education, there is a disproportionate rate of attrition for students who are from groups that have been socially and economically marginalized. Creating an inclusive environment for students who are nontraditional is essential for retention (National Academy of

Sciences, Engineering, and Medicine, 2021). Educational bridge programs may offer the inclusion, accessibility, and support needed for nontraditional students.

Increasing the number of PTA to DPT bridge programs could diversify the physical therapy profession by increasing access for nontraditional students. PTAs are more diverse than PTs, and most PTA programs are located in community colleges whereas DPT programs are located in four-year institutions (Commission on Accreditation of Physical Therapy Education, 2023). According to the American Academy of Community Colleges (2019) the demographics at community colleges better reflect the demographics of the U.S. population. Community colleges may also better serve nontraditional students as a significant number of students enrolled have dependents, are struggling against economic marginalization, and attend part-time (Hatch & Toner, 2020). Creating a path for students to begin their professional education at a community college may increase the accessibility of a career in physical therapy for nontraditional students. This research explored the characteristics of students enrolled in bridge programs, as well as the policies, practices, and environment of PTA-DPT bridge programs and the impact on student outcomes.

Various characteristics describe nontraditional students including age, financial independence, dependents, and race and ethnicity. Most DPT students do not have any of the characteristics of nontraditional students. The majority of DPT educational programs continue to deliver their curriculum in a traditional face-to-face, full-time, format which may be limiting access and support for many nontraditional students. Subsequent chapters in this research will provide a review of pertinent literature and describe the methods and results from one study exploring the characteristics of PTA-DPT bridge programs. The results support the need to increase accessibility and support for nontraditional students in physical therapy education.

Chapter II: Review of Literature

Introduction

The purpose of this study was to describe the characteristics of existing PTA-DPT bridge programs that may increase accessibility and support retention for nontraditional students. The following review of the literature will provide information on the history and current culture of the physical therapy profession, the educational needs of nontraditional students, the educational needs of students from groups that have been historically marginalized, the benefits of diversity in healthcare, and educational bridge programs. The Ecological Systems Theory, developed by Urie Bronfenbrenner (1979), will also be described and used to frame the results of the study.

The Physical Therapy Profession

History and Culture of Physical Therapy

The physical therapy profession informally began during World War I (WWI). Mary McMillian, considered the first physical therapist, and other women were called to help "reconstruct" wounded soldiers. These women were first referred to as reconstruction aides (Murphy, 1995; American Physical Therapy Association, 2020). Prior to WWI medical care for those that were injured, in pain, or born with a degenerative disease or physical disability consisted of using the basic modalities of heat, cold, water, light, exercise, and massage to decrease pain and suffering. Often, individuals with degenerative diseases or who were born with physical disabilities were either kept home or institutionalized to keep them "out of sight, out of mind" (Murphy, 1995, p. 40).

Initially, during WWI there were few interventions to offer injured soldiers. The large concentration of men who sustained an injury and experienced physical disability prompted McMillan and others to focus on increasing function versus solely managing pain (American

Physical Therapy Association, 2020). Many enlisted men thought to be in good physical condition prior to service were not. Over 60% of enlisted men were unable to march during their basic training due to severe issues with their feet (Murphy, 1995).

After WWI, McMillan parlayed the success she and the other reconstruction aides had increasing the function of wounded soldiers to civilians. McMillan recognized the need for the formation of a professional association and created the American Physical Therapy Association (APTA; Murphy, 1995). Development of the PT profession was also influenced by the poliomyelitis (polio) epidemic. Franklin D. Roosevelt, who was diagnosed with polio in 1921, was one of the physical therapy profession's biggest advocates. Roosevelt's physical function improved with rehabilitation which increased awareness of the role of physical therapy in improving overall function and quality of life (American Physical Therapy Association, 2020).

In 1927, students graduated from the first four-year bachelor of science program in physical therapy from New York University (American Physical Therapy Association, 2020). Since then education of physical therapists has evolved from a baccalaureate degree to a postbaccalaureate master's degree to a clinical doctorate. Currently, those interested in becoming a physical therapist must complete a four-year baccalaureate degree prior to their three-year DPT degree.

The role of the physical therapist assistant (PTA) was formally developed in the 1960s. As the education of physical therapists (PT) increased to a baccalaureate level, the number of PTs entering the field decreased (Watts, 1971). This change, combined with society's increased need for physical therapy services, prompted development of the PTA role. During the 1965 Mary McMillan lecture, APTA President Catherine Worthingham advocated for a new role to meet the rising demand for services. In 1967, the APTA's House of Delegates (HOD), a

representative body of physical therapists from throughout the country, passed the policy "Training and Utilization of the Physical Therapist Assistant," and the first PTAs subsequently graduated in 1969 (Clynch, 2017). The role of the PTA was not initially accepted by all members of the profession. From the beginning, many PTs expressed fear that PTAs would become the primary providers of service and take over much of the patient interaction that they enjoyed (Clynch, 2017).

Controversy exists and debate has ensued regarding participation of PTAs within the profession and the professional association, the APTA. In 1973, PTAs were granted "affiliate member" status within the APTA differentiating them from PT members (Clynch, 2017). The designation of "affiliate member" continued until 2005. The APTA, led by a national Board of Directors and the HOD, influenced the role of the PTA in practice and the level to which PTAs can participate in the association. To this day, PTAs are not eligible to serve as Chapter (State) or Section delegates which are voting positions in the HOD. Five elected PTAs are allowed to serve as non-voting delegates to represent the interest of PTAs while over 400 physical therapists are elected with voting power (Clynch, 2017). This membership structure creates barriers for PTAs to participate in the association and influence the future of the profession. Until 2015, the participation of PTAs within the association was further limited by an APTA policy that stated the PTAs' vote at the component or chapter association level only counted for half a vote, whereas PTs had full votes. In 2015 the HOD passed a motion that gave components (States) the option of allowing the PTAs a full vote (American Physical Therapy Association, 2015).

In any profession or organization, dissonance can exist between the expressly stated values of a profession or organization and the culture experienced by members. One reason for the dissonance is due to the hidden curriculum experienced by students during their education

and professional development. Students learn more from their informal education than didactic content. Education consists of a combination of formal curriculum and informal practices, behaviors, or expressed values, referred to as hidden curriculum (Hafferty, 1998). Hidden curriculum impacts the culture of a profession and is shaped by leaders, policies and procedures, codes of ethics, and hierarchy of power. In medical education, many students attributed the hidden curriculum as contributing to the hierarchy and power differential that exists in healthcare (Bandini et al., 2017). Doctor of physical therapy students identified an informal and hidden curriculum that shaped their development as professionals. Students learned habits and behaviors from their faculty such as interacting as a professional (Dutton & Sellheim, 2014). The hierarchical structure in physical therapy between DPTs and PTAs may be perpetuated by the hidden curriculum in DPT school.

Physical Therapy Education

Admission to a DPT program is competitive. During the 2020-2021 academic year there was an average of 384 applicants for 45 openings for each DPT program (Commission on Accreditation in Physical Therapy Education, 2023). Historically, most DPT programs relied heavily on cognitive assessments such as grade point average (GPA) from their undergraduate education and the graduate record exam (GRE) in their admissions decisions. Using the GRE to establish rankings for admission, however, decreased the racial and ethnic diversity of an incoming cohort of students (Wilson et al., 2019). As a result, a task group convened by the APTA was charged with addressing the lack of racial and ethnic diversity of DPT students. The group recommended a holistic application process that values desirable characteristics of a DPT such as leadership and grit, in addition to the cognitive assessments (Wise et al., 2017). Using a more holistic admissions process increased the number of underrepresented minority applicants

(Wilson et al., 2019). Despite the shift to holistic admission practices, the number of White DPT students remains disproportionate; 69% of the most recent DPT students were White compared to 59% of the U.S. population (Commission on Accreditation in Physical Therapy Education, 2023; United States Census Bureau, 2023).

Application to a PTA program is less competitive. No prior associate or undergraduate degree is required. Students take liberal arts and science courses in addition and often prior to their core PTA classes, but fewer than required for application to a DPT program. In 2021 PTA programs had an average of 50 applicants for 24 available spots (Commission on Accreditation in Physical Therapy Education, 2023). The racial demographics of PTA students better reflect the U.S. population compared to DPT students. Sixty-three percent of PTA students identified as White compared to 69.6% of DPT students (Commission on Accreditation in Physical Therapy Education, 2023).

The shared beliefs of a group influence the future endeavors that group pursues (Bandura, 2002). The existing culture, beliefs, and practices of the APTA and DPT education create a barrier to PTAs continuing their education to become DPTs. There is traditionally one accepted path to becoming a DPT: completing a baccalaureate degree immediately after high school and matriculating directly into a DPT program. This observation is supported by the fact that during the 2021-2022 DPT application cycle, 85% of all applicants were under the age of 25 (American Physical Therapy Association, 2023). Additionally, the educational bridge from PTA to DPT is uncommon and undervalued by the PT profession. A student from one of the two existing PTA-DPT educational bridge programs stated, "It is very seldom that they let a PTA into a traditional program; they tell you, you've chosen your path as a PTA and to forget about PT" (George & Dutton, 2019, p.158).

Educational Needs of Nontraditional Students

Nontraditional students are not new to higher education; they have been a part of the higher education landscape throughout history. Remenick (2019) conducted a historical literature review that identified four primary time periods throughout the history of higher education in the U.S. that influenced and increased the number of nontraditional students. From the mid-1800s to the mid-1900s, "normal schools" were developed to serve students other than men from affluent backgrounds. Normal schools were smaller, accommodated students' busy schedules outside of their coursework, and awarded credit for their work in society. The second major increase in nontraditional students was due to the GI Bill which was created to assist veterans in completing their degrees and eventually served as reparation for all veterans. In the 1960s there was an increase in federal financial aid and the development of more community colleges. Pell grants were developed and awarded to the student, not the institution. Many Pell grant recipients enrolled in community colleges as they were less expensive, allowed for part-time enrollment, and had flexible learning options. The most recent increase in nontraditional students came with the development of online learning options. Online learning was an option for many nontraditional students who had an interest and desire to pursue a degree but were unable to consistently be physically present on campus (Remenick, 2019).

Today, nontraditional learners are approximately 50% of the students enrolled in higher education, and this number is projected to grow (Cahalan et al., 2020; Rabourn et al., 2018). Nontraditional students are often described as having at least one of the following characteristics: independent financial status, 25 years old or older, at least one dependent, delayed enrollment to college, or part-time enrollment status (Glancey, 2018; Moody, 2019). Many institutions are attempting to increase the number of adult or nontraditional learners given the declining number

of traditional-age students (Glancey, 2018). Nontraditional students have unique educational needs and preferences compared to traditional students and face additional barriers in pursuing higher education, especially full-time education. Barriers include work and family responsibilities, lack of time, limited finances, and geographical considerations (Glancey, 2018; Rabourn et al., 2018).

Limited support exists for nontraditional students in higher education (Moore et al., 2020). Current policies, procedures, and practices in higher education do not favor nontraditional students (Rabourn et al., 2018). Nontraditional students are more likely than traditional students to take classes online, have part-time enrollment status, desire flexible course schedules and delivery methods, and have started their education at another institution (Chen et al., 2020; Rabourn et al., 2018). For nontraditional students, course schedules need to be convenient, and decreasing the length of a degree program is desirable (Dalporto & Tessler, 2020). Although nontraditional students are engaged academically, they interact less with others on campus. Collaboration with classmates may not be as critical or valued by nontraditional students because they are working, and collaboration occurs in the workplace (Rabourn et al., 2018).

Nontraditional students may face several unique obstacles to pursuing and completing a degree. Nontraditional students often experience inter-role conflict. They often struggle to balance their obligations and responsibilities as a parent, an employee, and a student. Many nontraditional students may experience social isolation due to the age difference between them and their traditional-aged peers. A lack of academic flexibility and faculty and staff who do not have the skills to appropriately advise nontraditional students is another obstacle. Nontraditional students may also lack the confidence to succeed which can have a negative impact on persistence and rates of graduation (Hittepole, 2019).

The Council for Adult and Experiential Learning developed the Adult Learners 360 tool that identified several strategies for recruiting adult learners and supporting them to graduation. Effective strategies included multiple start times in a semester, hybrid and online course options, and prior learning assessments which may save time and money for learners. Clear and easy transitions from a two to four-year institution were also important. The Council for Adult and Experiential Learning encouraged community or technical colleges to develop articulation agreements with four-year institutions (Glancey, 2018). Campus resources must be easily accessible and visible and faculty need to be educated about the unique needs of adult learners (Glancey, 2018).

In addition to the educational needs of nontraditional students, institutions need to consider support services. A study of nontraditional students from 13 public two- and four-year universities who accessed counseling services on campus stated that the stress of school plus the stress from work and family responsibilities increased mental health concerns (Moore et al., 2020). Nontraditional students are less likely to be White or male and more likely to be first generation students (Rabourn et al., 2018). There is a positive correlation between academic achievement and the educational level of a student's parents; therefore, first-generation students often need additional support for academic success (Cahalan et al., 2020).

There are several strategies that Hatch & Toner (2020) suggested to increase support, specifically for nontraditional students who have dependents, that may benefit all nontraditional students. Connecting with other nontraditional students assists in creating a sense of belonging. Building relationships with other nontraditional students to create a support system increases the likelihood that they will persist to graduation (Hatch & Toner, 2020). A cohort model can structurally provide support for nontraditional students (Dalporto & Tessler, 2020).

Nontraditional students need to be connected to support services on campus. Faculty and administrators also need to consider nontraditional student schedules for arranging meetings, determining the availability of support services, and scheduling classes (Hatch & Toner, 2020).

Nontraditional students were more likely to have served (or currently serve) in the military which may also increase stress (Moore et al., 2020). Additionally, nontraditional students reported increased stress related to finances, family, and/or cultural adjustment. Many nontraditional students also reported challenges with attention and focus and struggle to balance their education and personal life (Moore et al., 2020). Institutions should consider proactive strategies for supporting nontraditional students as waiting for them to access available services may be too late (Hatch & Toner, 2020). Community colleges have been successful in supporting nontraditional students. In 2020, 3.8 million students attending community college were parents and many of these institutions made curricular, programmatic, and support adjustments to meet the needs of nontraditional students (Hatch & Toner, 2020).

Further research is indicated to identify characteristics of supportive environments for nontraditional students (Rabourn et al., 2018). Strategies for decreasing the financial stress and improving the academic performance for nontraditional students are needed (Moore et al., 2020). Additionally, institutions should consider their strategies for recruiting nontraditional students and supporting them after graduation. Creative strategies such as peer recruiting and partnership with community organizations have been successful in recruiting nontraditional students to community colleges (Dalporto & Tessler, 2020).

Educational Needs of Students from Underrepresented or Historically Marginalized Groups

Students who are underrepresented in their respective fields may have additional educational needs or face significant barriers compared to students who are part of the majority (National Academies of Sciences, Engineering, and Medicine, 2021). Students who are underrepresented minorities (URM) are identified as such due to their race, ethnicity, or socioeconomic status (Moerchen et al., 2018). One significant challenge for URM students may be internalized bias or a lack of self-efficacy (Dalporto & Tessler, 2020). Self-efficacy is belief in one's ability to have control over their life, not just possessing skills but believing in their skills. Self-efficacy can be built through overcoming challenges, identifying social comparison of success by others who are similar, tending to their own physiological needs, and managing stress effectively (Wood & Bandura, 1989). Many URM students in healthcare report feelings of isolation, alienation, internalized bias, lack of confidence, and a constant awareness of their identity, which contributes to decreased self-efficacy (Dalporto & Tessler, 2020; Edgoose et al., 2019; Murray, 2015).

In addition to lower levels of self-efficacy, URM students face financial barriers to earning a degree, especially an advanced degree such as a DPT. In 2016, the median wealth for White families was 41 times higher than Black families and 22 times higher than Latino families. The rate of negative family wealth, owing more than one's assets, for Blacks was 37% and 33% for Latinos compared to 16% for Whites (Cahalan et al., 2020). Many URM students are eligible for Pell grants, awarded to students with significant financial need (Federal Student Aid office). The Integrated Postsecondary Education Data System (IPEDS) reported that full-time, first-time students who receive Pell grants are more likely to attend a two-year institution versus a four-

year institution. For four-year institutions, as the selectivity of an institution increases, the number of students in the lowest quartile of socioeconomic status and perhaps eligible for a Pell grant decreases (Cahalan et al., 2020).

Lack of knowledge about or exposure to the field of physical therapy may present an additional barrier for URM students (Edgoose et al., 2019). A study by Collins and Carr (2018) reported that very few eligible high school and undergraduate students who are URM had knowledge of or interest in the fields of physical and occupational therapy as a career choice. The authors suggested that both professions must improve their marketing strategies to URM students (Collins & Carr, 2018). Early exposure to a profession allows time for students to develop interest (Mason, 2020). Early exposure to physical therapy as a career choice may increase the number of URM interested in the field (Edgoose et al., 2019). For students interested in pursuing a DPT degree, many find the enrollment and application processes overwhelming, difficult to navigate, and varied from institution to institution (Dalporto & Tessler, 2020).

Several strategies may be effective in increasing URM student applicants to DPT programs. Cost is a factor for many URM students and impacts their educational decisions. In nursing, providing economic along with social and academic support were important strategies to enhance professional socialization (National Academies of Sciences, Engineers, and Medicine, 2021). Educational pipeline programs are effective in increasing the preparation of URM students and their likelihood for pursuing a health profession (Glazer et al., 2018).

Benefits of Diversity in Healthcare

Increasing the diversity of providers may increase racial and/or ethnic concordance or shared identity between provider and patient. Shared identity will improve access to and quality

of care and patient satisfaction. Ethnic or racial discordance between patient and provider may contribute to poorer communication and health outcomes for patients (Alizadeh & Chavan, 2016; Johnson Shen et al.; 2018, Kelly-Blake et al., 2018; Sullivan Commission, 2004). Cultural sensitivity in providers, as well as the overall health of the United States, may improve with increased diversity (Institute of Medicine, 2003). Effective and positive communication with patients leads to improved health outcomes (Johnson Shen et al., 2018).

Communication can be negatively impacted when a difference in cultural beliefs or the spoken language exists between patient and provider (Sullivan Commission, 2004). Positive communication may be measured by the quality of the commination, the extent of participatory decision-making, and the amount of information given and received. A systematic review published by Johnson Shen et al. (2018) reported that although Black patients reported poorer communication than White patients with a White provider, the authors could not conclusively support their hypothesis that communication is worse for Black patients. Despite this inconclusive hypothesis, patients may prefer to seek healthcare providers with similar cultural, ethnic, or racial backgrounds (Garces & Mickey-Pabello, 2015; Kelly-Blake et al., 2018).

In addition to the benefits of provider and patient concordance in practice, a diverse student body benefits all students entering a health profession (Garces & Mickey-Pabello, 2015; Institute of Medicine, 2003; Kelly-Blake et al., 2018; Saha el al., 2008; Thomas, 2014). Future physicians developed increased cultural sensitivity in an environment with racially and ethnically diverse students (Garces & Mickey-Pabello, 2015). Students, not just those entering healthcare, who are educated in diverse classrooms are better equipped to live, work, and contribute in a complex society with enhanced ability to consider a variety of perspectives (Gurin et al., 2002). The same authors explicitly stated that simply adding content to the curriculum on diversity was

not enough; it was the informal interactions between a diverse group of students that positively influenced educational outcomes. Interaction between diverse students enhanced the ability to perceive and navigate differences (Gurin et al., 2002).

Saha et al. (2008) reported on the perceived educational benefits of a racially and ethnically diverse classroom in medical school. In this study, medical school graduates self-assessed their level of preparation to work with patients from different racial or ethnic backgrounds. Specifically, they assessed their cultural competency, attitudes pertaining to equitable access to care, and the likelihood of practicing in an underserved community. White graduates from more racially and ethnically diverse medical schools rated themselves better prepared to work with patients from diverse populations compared to White graduates from medical schools with little diversity. Additionally, graduates from schools with diverse populations had an increased equity-oriented attitude regarding access to care. There was no difference between White graduates from a diverse versus non-diverse medical school on the likelihood of practicing in an underserved community (Saha et al., 2008).

Although there are benefits of a racially and ethnically diverse classroom, efforts to increase diversity are not effective unless White privilege and racism are addressed (National Academics of Sciences, Engineering, and Medicine, 2021). Currently, people of color in healthcare are most often in entry-level or lower-skilled positions (Snyder et al., 2018). The benefits of diversity are maximized, however, when diversity exists in top-level positions (Gomez & Bernet, 2019). Developing and maintaining an inclusive environment, providing ongoing support, and addressing any barriers to retention are needed to diversify all educational and degree levels in healthcare education (National Academies of Science, Engineering, and Medicine, 2021; Thomas, 2014). Diversifying the workforce and achieving health equity for patients will also

require acknowledging systemic racism in healthcare. Efforts must include reviewing policies and procedures that limit diversity of the workforce and analyzing the demographics of patients disproportionately affected by health disparities (Mason, 2020).

Educational Bridge Programs

PTAs earn an associate of applied science degree, and approximately 77% of all PTA programs are located in community colleges or other institutions that primarily award associate degrees (Commission on Accreditation in Physical Therapy Education, 2020). Community colleges decrease access gaps for diverse students by increasing the number of low-income, first-generation, and underserved individuals who pursue an education (Fox, 2016). The Sullivan Commission on Diversity in the Healthcare Workforce (2004) reported that two-year or associate degree programs are integral in preparing students for allied health careers (such as physical therapy) and improving their chance for successful matriculation at a four-year institution. Community colleges are a significant resource for recruiting minority students to a four-year institution and subsequently to a professional program. Educational bridge programs from two-year institutions are a strategy for increasing diversity in healthcare (Sullivan Commission, 2004).

The health professions of medicine, dentistry, and nursing have developed several strategies including mentorship, educational bridge or pipeline, and enhancement programs to increase workforce diversity (Moerchen et al., 2018). The goal of pipeline or bridge programs is to decrease the barriers or access gaps due to social determinants of health such as economic stability and educational access and quality (Katz et al., 2016). Pipeline or bridge programs in nursing allow nurses to continue their education or advance their degree in less time and

facilitate the transfer of credits from community colleges (National Academies of Sciences, Engineering, and Medicine, 2021).

Physical therapy education has not used bridge or pipeline programs in a systematic way which has limited career advancement opportunities for nontraditional students (George & Dutton, 2019; Moerchen et al., 2018). There are two established and one developing PTA to DPT bridge programs in the United States (George & Dutton, 2019). The current bridge programs were developed to assist PTAs to advance their education and career trajectory. Unlike traditional DPT programs, bridge programs use hybrid instruction. Coursework is predominantly online, and in-person lab activities occur on weekends allowing students to continue working as a PTA (George & Dutton, 2019). Students in one PTA-DPT bridge program expressed appreciation for the opportunity to build on their previous experience. Their motivation for advancing their education and earning a DPT degree through a bridge program included financial considerations, the curricular fit of the bridge program, flexibility in time and structure, and the perceived value of their previous experience as a PTA (George & Dutton, 2019).

Sources vary on the success of educational bridge or pipeline programs in healthcare education. A study by the John's Hopkins Initiative for Careers in Science and Medicine reported on the success of three levels of their pipeline programs in high school, undergraduate education, post-baccalaureate, and pre-doctoral education. The study found that 100% of participants graduated high school, 83% of those students entered a four-year institution, and 50% graduated. Conversely, only 14% of students from low-income backgrounds, who did not participate in the pipeline program, graduated from college (Crews et al., 2020). A review of the literature published between 2000 and 2015 on approaches to increasing the number of URM in medical education reported that 43% of articles cited that pipeline programs help students

develop educationally and professionally (Kelly-Blake et al., 2018). Despite the popularity of pipeline and bridge programs, Snyder et al. (2018) cited a lack of evidence on their effectiveness in isolation and raised concern about the long-term success of these programs in increasing workforce diversity. Additional considerations or potential drawbacks include participants in pipeline or bridge programs reporting a lack of confidence, feeling isolated, and constant awareness of their identity which contributed to feeling labeled or discredited (Edgoose et al., 2019). More research is needed on pipeline and bridge programs overall, but there is a specific gap in the literature pertaining to the effectiveness of educational bridge programs in physical therapy.

Theoretical Framework

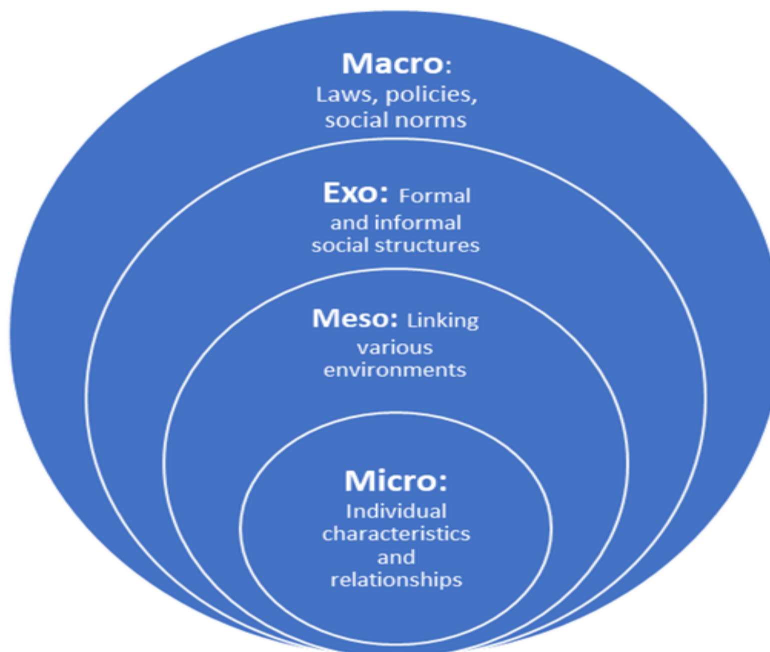
Pipeline or bridge programs provide additional support and enhance the skills of individuals pursuing an education or advanced degree. These programs are a viable strategy for increasing diversity of a given profession. Studying the characteristics of bridge programs in isolation, however, will have limited impact. It is imperative to also develop a better understanding of students' longitudinal trajectory and the contextual factors impacting a bridge program experience. Exploring the characteristics of PTA-DPT bridge programs must consider the individual and systemic factors that influence students pursuing the degree. A theory analyzing various aspects of a student's experience, including the environmental factors of bridge programs, will facilitate an understanding of what nontraditional students need to be supported in a PTA-DPT bridge program. In this study, Bronfenbrenner's (1989) Ecological Systems Theory provided a framework to explore the broader influences that impact a student's journey, in this case to become a DPT. The theory provided a framework for deeper

understanding regarding increasing accessibility and support for nontraditional students (Thompson et al., 2021).

Bronfenbrenner's work originally focused on child development and the impact of relationships at multiple levels to increase students' sense of belonging (El Zaatari & Maalouf, 2022). This theory has been adapted for this study to provide a framework for understanding current or potential students and how various systems and environments, including the bridge program itself, may impact them and their journey in pursuing a DPT degree. The Ecological Systems Theory is used to describe how PTA-DPT bridge students are contained within four systems. The microsystem describes the individual and their immediate environment, experiences, and relationships. The mesosystem describes the relationship between an individuals' various microsystems which influence their ability to participate in a broader system. The exosystem describes settings the student (or potential student) may not be directly involved with but that influence their opportunities. The macrosystem describes society including policies and cultural practices (Ozaki, 2020).

Figure 3

Bronfenbrenner's Ecological Systems Theory



Conclusion

The history of medical education has had a lasting impact on how DPTs are educated today. The history of the physical therapy profession has influenced current culture in the field and impacted how clinicians are currently educated. Having a diverse workforce is one strategy to improve health equity but physical therapy education, especially traditional DPT education, may not be meeting the needs of nontraditional students or students from historically marginalized communities. Using Bronfenbrenner's Ecological Systems Theory provided a framework for assessing all systems, not just the educational program, that influence a student's ability to access an education as a DPT.

Chapter III: Methodology

Introduction

The purpose of this qualitative comparative case study was to investigate the characteristics of PTA-DPT bridge programs that increase accessibility and support for nontraditional students. This chapter is divided into nine sections: Research Method and Design, Research Questions, Researcher's Positionality, Sample, Instrumentation and Protocols, Data Collection, Data Analysis, Limitations and Delimitations, and Ethical Considerations.

Research Method and Design

This study used a qualitative comparative case study design to explore the characteristics of multiple PTA-DPT bridge programs' efforts to increase accessibility and support for nontraditional students. A case study research design involved an inductive investigative strategy which allowed for a rich in-depth description of a single case (Creswell, 2014; Merriam & Tisdell, 2016; Patten & Newhart, 2018). The purpose of a case study design is to describe an individual unit of study as detailed and complete as possible with a specific focus on context (Patten & Newhart, 2018).

PTA-DPT bridge programs are nontraditional and unique; they are designed specifically to enable PTAs to build on their previous education and work experience while continuing employment as a PTA during their matriculation in a DPT program. Currently, three bridge programs exist in the United States; The University of Findlay in Ohio, University of Texas Medical Branch at Galveston, and Concordia University, Wisconsin. While there are three PTA-DPT bridge programs in the United States., there are over 260 traditional DPT programs (CAPTE, 2023). Two of the three bridge programs agreed to serve as a bounded case for this research. A comparative case study design of more than one bridge program enhanced the

validity and generalizability of the findings (Merriam & Tisdell, 2016). Data collection included interviews with faculty and administrators to gain their perspective on the inception of each program, current faculty, and current students. Additionally, data was gathered from program document analysis. Using multiple forms of data collection corroborated and strengthened the findings (Patten & Newhart, 2018).

This research was conducted through the lens of a constructivist philosophical worldview. Using a constructivist approach, individuals seek to understand their environments and develop subjective meanings regarding their experiences (Creswell, 2014). The purpose of research based in constructivism or interpretivism is to describe and interpret multiple realities that are bound by context (Merriam & Tisdell, 2016). A qualitative research approach allowed the researcher to understand the meaning individuals attribute to a particular problem or phenomenon (Creswell, 2014; Merriam & Tisdell, 2016). The intent of this study was to understand the PTA-DPT bridge program experience through the lens of stakeholders directly involved in the learning and teaching process, namely current students, faculty, and administrators. PTA-DPT bridge programs have not previously been studied in a systematic way, and qualitative research is particularly useful to describe a phenomenon not previously studied (Creswell, 2014).

Qualitative research is characterized by several features which include a focus on meaning and understanding of experiences, the researcher as the primary instrument of data collection and analysis, an inductive approach to data collection from multiple sources that contribute to theme development, and a rich description of the participants, activities, and context (Creswell, 2014; Merriam & Tisdell, 2016). In this study, the researcher was striving to understand the meaning that faculty or administrators who were involved in the inception of the

PTA-DPT bridge programs and current students and faculty attributed to their respective bridge program. The intent of this study was to explore how PTA-DPT bridge programs may serve to meet the need of increasing the diversity of the physical therapy profession.

Research Questions

Two research questions guided this qualitative, comparative case study:

RQ 1: How do participants describe environmental characteristics of PTA-DPT educational bridge programs that can increase accessibility for nontraditional students?

RQ 2: How do participants describe environmental characteristics of PTA-DPT educational bridge programs that can support retention for nontraditional students?

Researcher's Positionality

The researcher is the key instrument of data collection and analysis in qualitative research. Researchers must be transparent about their positionality, past experiences, and bias as well as how this may shape their interpretation of the data (Creswell, 2014). Reflexivity, or the role the researcher's experience and background have in shaping any interpretations, should be disclosed and monitored (Creswell, 2014). The researcher recognizes and acknowledges that many of her identities give her significant societal power and privilege that has shaped her worldview. The researcher is White, female, middle-class, married, and a mother of a young child. The researcher has experience as a traditional-aged college student earning an associate degree by the age of 22 and as a nontraditional student earning a baccalaureate and master's degree as a married, financially independent adult.

The researcher has been a PTA since 2001 and an educator in traditional DPT and PTA programs since 2005. In the researcher's experience, there has been a significant increase in the number of PTA students who state their rationale for enrolling in a PTA program is denial for

acceptance to a DPT program. Additionally, the researcher has anecdotally observed an increase in the number of students who matriculate into a traditional DPT program after completing their PTA degree. Although bachelor completion options are becoming more popular for PTAs, few fulfill the prerequisites which would serve as an educational ladder to DPT school. The researcher graduated from one such baccalaureate program.

As a PTA, the researcher has often felt disrespected and devalued by her perception of the current culture of the physical therapy profession. The researcher has been an active member of the APTA and participated in ongoing conversations and debates about the role and value of the PTA within the APTA.

Sample

Case study research design includes a comprehensive, in-depth analysis of a bounded unit of study by analyzing multiple sources of information or data. A comparative case study, or analysis of more than one case, enhanced the validity and generalizability of the findings (Merriam & Tisdell, 2016). Two levels of sampling were needed for this case study research design; the researcher first selected an individual bounded case and next identified whom to interview and what to collect or observe (Merriam & Tisdell, 2016). Two PTA-DPT bridge programs served as an individual case in this comparative case study.

Data collection from each PTA-DPT bridge program included interviews and analysis of program documents. Purposive sampling was used to select participants to interview. Purposively selecting a sample enabled the researcher to collect data from individuals who may provide the most relevant information and subsequently allowed the researcher to make inferences to describe the entire population (Merriam & Tisdell, 2016; Patten & Newhart, 2018; Roberts & Hyatt, 2019). A purposive sampling strategy identified individuals to interview who

have experience both as a physical therapy professional and a higher education administrator involved with their respective program's initial development. To identify these individuals, the researcher contacted the current PTA-DPT bridge program director and recruited possible participants. An in-depth, semi-structured interview with each individual allowed the researcher to collect data on the institutional and professional rationale for initiating the program and supports or barriers encountered (See Appendix A).

The researcher conducted interviews of current faculty. Purposive sampling was used to recruit participation from each PTA-DPT bridge program including the current program director, director of clinical education, and at least one additional non-administrative faculty member. The initial point of contact was the program director at each PTA-DPT bridge program. The participating institutions that offer the PTA-DPT bridge program also house a traditional DPT program. The researcher requested that the respective program director forward the request for participation in the study to current faculty who teach or have taught in both the traditional and bridge programs. The intent of the research was to highlight unique characteristics of the bridge program to increase accessibility and support for nontraditional students from diverse groups. This was best accomplished by collecting data from faculty who have experience teaching in both programs (See Appendix A)

Data was also collected from current students in PTA-DPT bridge programs. Third-year students were preferred as they have completed more of the required education and have the most experience in PTA-DPT bridge programs compared to first- or second-year students, (Merriam & Tisdell, 2016). A sample of third-year students were interviewed from one institution. The other institution only recently developed their PTA-DPT bridge program and their first cohort of students, included in the study, had only completed their first year.

Purposive sampling was used to recruit participants who were furthest along in their respective PTA-DPT bridge program and considered either nontraditional or underrepresented. Students were considered nontraditional if they possessed at least one of the following characteristics: independent financial status, 25 years old or older, at least one dependent, delayed enrollment to college, or part-time enrollment status (Glancey, 2018; Moody, 2019). Students who are underrepresented minorities (URM) were identified by their race, ethnicity, or socioeconomic status (Moerchen et al., 2018).

The researcher asked each program director to forward an email to students requesting their participation. Potential participants were asked to self-identify and contact the researcher if they met the description of either a nontraditional or underrepresented student. The researcher contacted and interviewed interested participants. The researcher then used snowball sampling to recruit additional student participants. Recruiting volunteers as a strategy may have created bias in sampling; however, this was minimized by interviewing all interested participants (Patten & Newhart, 2018). Student participants were offered a $25 Amazon gift card as an incentive for their participation. No students initially indicated interest in participating so the researcher increased the incentive to $50.

Instrumentation and Protocols

Qualitative research is characterized by occurring in the natural setting or site where participants experience a given phenomenon. The researcher is the key instrument of data collection for qualitative research collecting data from multiple sources and employing an indicative investigation strategy (Creswell, 2014). To provide a rich description of each PTA-DPT bridge program (case), several data collection strategies were used. The first data collection source was bridge program documents and artifacts such as institution, department, and program

mission, vision, and goals, admissions criteria, philosophy statements, curricular guides, and program and clinical education student handbook. Interviews were conducted next. The researcher was qualified to collect and analyze the data as a physical therapy educator with knowledge of both PTA and DPT curricular content and requirements.

A semi-structured interview protocol was developed with four to five questions that were posed to all participants with associated discussion prompts (See Appendix A). Semi-structured interviews enabled the researcher to thoughtfully create and test questions to avoid bias while allowing for deviation during the interview itself to collect the most meaningful and useful data (Patten & Newhart, 2018). Other than the standard questions asked of all participants, a predetermined script was not used to allow the researcher to listen for cues from participants that resulted in additional, unexpected information. All interviews occurred virtually, using Zoom.

Data Collection

Data collection in qualitative research typically includes multiple sources, and a case study design involves gathering data from various stakeholders to develop a holistic analysis of the case (Creswell, 2014; Merriam & Tisdell, 2016). What is considered data and how the data is collected is determined by the theoretical worldview or orientation of the researcher along with the purpose of the study (Merriam & Tisdell, 2016). This researcher chose data collection sites and participants that would best answer the research questions and although there is no specific number of required sites or participants, case study design typically includes four or five data collection sites, or cases (Creswell, 2014). This research study collected data from two PTA-DPT programs using interviews and program document analysis. The third existing PTA-DPT bridge program declined participation in the study.

The intent of interviews is to elicit the views and opinions of participants, and interviews are appropriate when the researcher is unable to observe participants' attitudes or perspectives or when the researcher is interested in past events (Creswell, 2014; Merriam & Tisdell, 2016). There are limitations in collecting data through interviews. The information or data provided is filtered through the perspective of each participant, the presence of the researcher may bias the data provided, the interview often does not occur in the natural setting of the phenomenon being researched, and the quality of the data collected is partially dependent on the ability of the participant to communicate articulately and effectively (Creswell, 2014).

One-on-one virtual interviews were conducted with four faculty or administrators who were involved with the development and inception of each PTA-DPT bridge program, two from each program. Three additional interviews included current faculty with experience in both a bridge and traditional DPT program. Seven current students were interviewed. The researcher holds a constructivist worldview and in addition to participants providing their individual perspective and experience, two of the interviews included two participants (versus one-on-one with the researcher) which allowed for inductive, socially constructed meaning about a phenomenon (Merriam & Tisdell, 2016)

A consent form was emailed to all participants prior to the interview. Participants were given an opportunity to ask any questions, and verbal consent was requested for participation. Prior to the interview or focus group, participants were emailed a fillable Google form requesting demographic data including race, ethnicity, gender, educational and professional background, parental education level, and socioeconomic status. Interviews occurred synchronously in virtual format using Zoom and each took approximately 30 minutes. Participants were asked to keep their camera on during the interview to allow for the researcher to identify any pertinent non-

verbal communication (Patten & Newhart, 2018). All Zoom sessions were recorded and stored in the cloud with a link housed on a password-protected computer. The recordings were uploaded to Otter.ai for transcription, and the researcher reviewed all session transcriptions and corrected errors. The researcher drafted several summary statements after each interview to capture themes from the interviews. The summary statements and complete transcripts were sent to participants to ensure accuracy. All participants either provided edits or clarification to the documents or approved what the researcher sent. Transcripts and summary statements were housed on the researcher's password-protected computer.

Prior to each interview the researcher disclosed their positionality and background to the participants (Patten & Newhart, 2018). Interviews included hypothetical, devil's advocate, ideal position, and interpretive questions. The researcher made every effort to avoid leading questions which may bias participants. Probes were used to follow up on or clarify a participant's response. Some discussion probes were developed prior to the interview and others in response to information shared (Merriam & Tisdell, 2016). After the first few interviews, the researcher sent several de-identified transcripts to a trusted mentor, skilled in qualitative research, to ensure bias was minimized with the researcher's questions and probes.

Interviews followed a semi-structured format. Semi-structured interviews include a mix of structured questions and unstructured prompts, allow for inclusion of all participants, and provide the researcher flexibility in the type and timing of questions (Merriam & Tisdell, 2016). Less structure was desirable in this qualitative study to respect the unique perspective that each participant brought and provided them the opportunity to describe the phenomenon in an individualized way (Merriam & Tisdell, 2016).

Data Analysis

Data analysis is the process of creating meaning by combining and interpreting the data to answer the research questions (Merriam & Tisdell, 2016). In qualitative research the processes of collecting and analyzing data occurs simultaneously (Creswell, 2014; Merriam & Tisdell, 2016). A case study research design produces a significant amount of data; management and ongoing analysis of the data was important (Merriam & Tisdell, 2016). During the process of data collection, the researcher documented comments throughout the process, tested out developing themes on participants, and continued to review the literature (Bodgan & Biklen, 2011, as cited in Merriam & Tisdell, 2016). Data was collected and analyzed until the point of saturation.

The researcher organized and read the collected data. The data was coded or assigned a word or phrase which allowed the data to be easily retrieved. Codes reflected the purpose of the study and theoretical framework and were based on words or phrases from current literature and unexpected or unusual characteristics of the data (Creswell, 2014; Merriam & Tisdell, 2016). The process of open coding occurred first and included developing initial categories. This was followed by axial coding which grouped the open codes and positioned the codes within the theoretical framework (Creswell, 2014; Merriam & Tisdell, 2016). Computer software assisted with the organization and retrieval of data (Creswell, 2014; Merriam & Tisdell, 2016). The researcher used NVivo to inductively code and organize the data collected.

Coding the data led to the development of two themes, each with several subthemes and sub-subthemes. The previously identified codes were listed in a separate document, and the researcher inductively created themes. Themes were identified within and across both cases. The researcher deductively sorted and assigned the data into theme buckets. Themes were named by

the researcher. The themes were exhaustive and mutually exclusive. All data deemed relevant by the researcher fit into a theme. During the process of data analysis, the researcher reflected on her biases and assessed how they may be affecting the analysis (Merriam & Tisdell, 2016).

Limitations and Delimitations

The intent of this research was to explore the characteristics of PTA-DPT bridge programs that increase accessibility and support for nontraditional students. There were limitations that needed to be disclosed. Currently, there are three PTA-DPT bridge programs in the United States The research was dependent on participation from all three programs. Prior to obtaining the Institutional Review Board's (IRB) approval, the researcher informally connected with the program directors from each of the three institutions to explain the project and gauge their willingness to participate. Program directors from two of the three programs expressed interest and willingness to participate pending appropriate IRB approval. The third program declined to participate in the project. In addition to IRB approval from the researcher's home institution, approval was also required from one of the participating institution's IRBs.

The researcher also intended to collect data during field observations of orientation or onboarding activities for incoming first-year students who began their respective PTA-DPT bridge programs in the fall of 2022. The field observations did not occur as one institution was not allowing outside guests on campus, and the researcher did not receive IRB approval from the other institution in time to observe the onboarding activities.

There were limitations to qualitative research and the various types of data collection that were used. The researcher's presence may have biased the responses of the participants in interviews (Creswell, 2014). A power differential exists between students and faculty as well as interviewer and interviewee. The researcher informed the student participants that their identity

and participation will not be shared with faculty. Faculty were aware that students had been given the opportunity to participate but were not informed which students participated. The interviews occurred virtually which presented additional limitations. Technical issues such as loss of connectivity did not occur but several interviews were periodically interrupted by family members or children of the participants. Although the researcher requested participants keep their cameras on, she may not have been able to observe all nonverbal communication or cues.

The researcher's positionality and bias were also a limitation of the study. The researcher has lived experience as a PTA clinician and a DPT and PTA educator. Sharing characteristics with the participants, such as work experience as an educator or as a PTA clinician, may have improved the ability of the researcher to connect with participants and enhance the level of comfort they felt in sharing their experience, but the researcher was also aware of the potential to bias participants.

Ethical Considerations

In any research study, it is important to anticipate and mitigate any potential ethical issues to protect the research participants and institutions involved in the study (Creswell, 2014). According to the Belmont Report, all research should adhere to the three foundational principles of beneficence or striving to do no harm, justice in treating participants equitably, and participant autonomy (Patten & Newhart, 2018). Ethical behavior of the researcher is imperative as they collect, analyze, and filter the data. Additionally, there is a direct link between the validity and reliability of the results of the study and the ethics of the researcher (Merriam & Tisdell, 2016). The researcher established steps throughout the research process to ensure ethical behavior and practices.

Creswell (2014) outlined ethical considerations for various points in the research process. Prior to data collection, the researcher applied for IRB approval from Bethel University. The researcher contacted the program director from each PTA-DPT bridge program to solicit institutional participation. The program director of any professional program often serves as the gatekeeper or point person for access to a program. The researcher encouraged the program director to consult with their faculty and their institutional IRB regarding participation in the study. IRB approval from one participating institution was needed in addition to approval from the researcher's home institution. The researcher referenced the Core Values and Code of Ethics of the APTA and several principles and values guided the research. The Code of Ethics directs physical therapy practitioners to respect the dignity and rights of all. Principle Seven called PTs and PTAs to promote practices that benefit patients and society as a whole, and Principle Eight stated that PTs and PTAs are to participate in activities that meet the needs of society (APTA, 2020). Several Core Values also guided the research including *Accountability* or engaging in behaviors that will positively affect society, *Duty,* influencing the health of society in a positive way, *Integrity* in maintaining high ethical standards, and *Social Responsibility* or meeting the needs for health and wellness of society (APTA, 2021).

The researcher clearly described the purpose of the study to all participants which was to explore the characteristics of PTA-DPT bridge programs that may increase the accessibility and support for nontraditional students. Additionally, the researcher outlined how this study would directly benefit the participants and their respective program. In addition to aligning with the APTA's Code of Ethics and Core Values, which benefits the professional practice of each participant, this study had the potential to offer positive advertising and increase the number of applicants to their respective program.

During data collection, the researcher minimized disruption for the participants. The researcher comprehensively reviewed each program's webpage for information and documents for review to avoid asking for data that is publicly available. The researcher generated a list of documents for analysis that were not publicly available and requested these from the program directors. The researcher recognized the power differential that exists between students, faculty, and the institution. To promote anonymity and participant safety, each institution was labeled and referred to as "Institution A" or "Institution B". Faculty and students were also assigned a pseudonym such as "Faculty 1". The list that links the pseudonyms with the actual name of the participant or institution was housed in a personal drive on the researcher's password-protected computer.

The researcher is the primary instrument in data collection and made every effort to remain neutral throughout the process of analyzing the data. The researcher acknowledges their bias and positionality and consulted with a trusted mentor throughout the process of analysis to promote neutrality. The researcher had the ethical responsibility to respect the privacy of participants and report all results, and the researcher did not selectively include or eliminate data that could bias the results (Creswell, 2014). Creswell (2014) stated that researchers have an ethical obligation to publicly share and disseminate their findings. The researcher plans to submit a manuscript summarizing their findings to *Physical Therapy Journal* or the *Journal of Physical Therapy Education* after graduation.

Conclusion

The purpose of this qualitative comparative case study was to investigate the characteristics of PTA-DPT bridge programs that increase accessibility and support for nontraditional students. This chapter described the following aspects of the research process:

Research Method and Design, Research Questions, Researcher’s Positionality, Sample, Instrumentation and Protocols, Data Collection, Data Analysis, Limitations and Delimitations, and Ethical Considerations.

Chapter IV: Results

Introduction

The purpose of this qualitative comparative case study was to understand the characteristics of two educational bridge programs, PTA to DPT, that can increase accessibility and support for nontraditional students. Case study research produces a significant amount of data from various sources (Merriam & Tisdell, 2016). Data for this comparative case study was collected from publicly displayed documents and artifacts from both bridge programs including department, program, and institution mission, vision, goals and admissions criteria. Data not available on a public website, such as program and clinical education student handbooks, were requested and analyzed. Semi-structured interviews were conducted using a video conferencing tool, Zoom, in either a one-on-one interview or small (two participant) focus groups. Transcripts and program documents were read several times, and the collected data was initially coded inductively and organized using the qualitative data analysis software, NVivo. The coded data was organized into two themes, each with several subthemes and sub-subthemes, that were consistent across both cases and addressed the two central research questions.

Description of Participants and Interview Protocol

Seven current or former faculty members who have experience teaching in both a PTA-DPT bridge and a traditional DPT program were interviewed. The researcher initially contacted and interviewed the current bridge program directors. Purposive sampling was then used to gather data from current and former faculty with a variety of roles and experiences. Forty-three percent (43%) of participants reported affiliation with Institution A and 57% of the participants reported affiliation with Institution B. Six of the seven faculty members also reported having administrative duties as either a current or former program director, program chair, or director of

clinical education. Four of the interviewees were involved with the inception of their respective bridge program. The years of service at their institution ranged from less than one year to 26 years with a mean of nine years of employment. Of the participants, 14.3% identified as male and 85.7% identified as female. Ages of the participants reported were 28.6% were between the ages of 25-35, 14.3% between 36-45, 42.9% between 56-65, and 14.3% between 66-75 years old. All of the faculty identified as White. After reviewing the transcripts of the seven faculty interviews, the researcher determined the point of data saturation was reached, and no additional attempts were made to recruit faculty participants.

Upon request, the bridge program directors emailed current students who were invited to contact the researcher if they were interested in participating. After the first interview with a student from each institution, snowball sampling was also used to recruit additional student participants. Seven current students enrolled in a bridge program were interviewed. Student affiliation by institution was 57.1% with Institution A and 42.8% with Institution B. Table 3 displays the demographic information of the students interviewed.

Table 3

Student Demographics N=7

Gender

Female: 71%

Male: 29%

Age (years)

25-35: 57%

36-45: 43%

Years worked as a PTA

1-5 years: 43%

6-10 years: 57%

Dependents

Yes: 43%

No: 57%

Race

White: 100%

Education Level of Parents / Guardians

High school diploma	7%
Apprenticeship	7%
Some college – no degree awarded	14%
Associate degree	14%
Baccalaureate degree	50%
Master degree	7%
Total percent	99%

All demographic data was reported in aggregate to maintain the confidentiality of the participants. It was believed that using a table to describe each individual participant, even with a pseudonym, would jeopardize the confidentiality of the participants.

All of the interviews were conducted using Zoom and ranged in time from 20 to 40 minutes. Ten of the interviews were one-on-one and two consisted of the researcher and two participants. Participants were sent the consent form prior to the interview and given the opportunity to ask questions of the researcher prior to the interview. All participants signed and

returned the consent form prior to beginning the interview. Participants had their cameras on during the entire interview and verbally consented to having the interview recorded. Each interview was recorded to the Cloud using Zoom and uploaded to and transcribed using Otter.ai. Each interview and transcript were reviewed in Otter.ai, and transcripts were edited as needed to ensure accuracy of the transcription. Following review of each transcript, the researcher generated a list of several summary statements to capture the main points of each interview. The summary statements were sent to the corresponding participant(s) to ensure the researcher was accurately capturing the intent and perspective of the interviewee. The transcript, in its entirety, was also sent to each participant for review. Each participant had the opportunity to review the transcript and summary statements, and all participants responded with edits that were implemented into the summary statement or indicated no changes were needed.

Data Analysis and Introduction to the Themes

The reviewed transcripts and program documents were uploaded to NVivo. Each transcript and document were reviewed in NVivo, and the researcher inductively coded the data resulting in 15 codes. From the 15 initial codes, two main themes, each with several subthemes and sub-subthemes, emerged that directly addressed the main research questions.

RQ 1: How do participants describe environmental characteristics of PTA-DPT educational bridge programs that can increase accessibility for nontraditional students?

RQ 2: How do participants describe environmental characteristics of PTA-DPT educational bridge programs that can support retention for nontraditional students?

Each theme, subtheme, and sub-subtheme were described and substantiated using rich description from participants.

Table 4

Themes, Subthemes, & Sub-subthemes

Theme	Subtheme	Sub-subtheme	Number of references
	Response to current trends and needs in the profession		10
Access	Nontraditional educational journey	PTA as entry point to profession	8
		DPT as professional advancement	17
	Financial accessibility		22
	Format of bridge program		27
	Challenges to accessibility by profession	Logistics	4
		Bias	15
Support	Departmental		10
	Faculty	Student perspective of faculty support	15
		Benefits of teaching students with prior experience	36
		Challenges teaching students with prior experience	29
	Support from cohort		13
	Support from family and colleagues		14
	Support from student's prior experience as PTA		17

Theme #1: Access

Two main themes, access and support, emerged from the data and directly addressed the research questions. The theme of access included data that addressed research question one; the characteristics of bridge programs that can increase accessibility for nontraditional students.

Students and faculty provided data that were categorized into five subthemes which included bridge programs as a response to current trends and needs in physical therapy, a description of students' nontraditional educational journey, financial considerations, format of the bridge program, and challenges impacting accessibility

Subtheme #1: Response to Current Trends and Needs in Physical Therapy

Both of the PTA-DPT bridge programs studied were developed to address the healthcare needs of the local communities. One contributing factor for the development of one bridge program was a lack of physical therapists in the local community:

> This program…was having difficulty recruiting physical therapists and occupational therapists, and they were interested in increasing the number of healthcare providers in the local community. So, they (the institution) had a discussion with the community about what the needs were. (Faculty #4)

In addition to meeting the healthcare needs of the local community, bridge programs also addressed the educational needs of PTAs within the profession, especially in response to the global pandemic and cuts to Medicare reimbursement for services provided by PTAs:

> There was a lot of interest (from PTA students), even from prospective students, wanting the pathway to further their education. And I would say that, certainly with Medicare reimbursement, that was, that was a driving force. And then even COVID now has changed a lot of the job opportunities and essentially, you know, what the job market looks like for PTAs. So, I think a lot of it was just industry based. (Faculty #2)

Many PTAs were concerned about the sustainability of the role of the PTA. Instead of leaving the profession, bridge programs may offer a path to remain in physical therapy: "The market looked like it was not real good for PTAs with some of the Medicare reimbursement cuts, so we

thought that would be a way to keep people in the profession instead of leaving, going somewhere else" (Faculty #1). Students also identified advancing their professional development by enrolling in a bridge program as a strategy to combat burnout:

> With the staffing issues and burnout in the health care industry right now, it feels like they really shouldn't be limiting people if PTAs want to better themselves, if they're feeling burnt out. They want a different change. They want to take that next step. But there are few programs to do that. It's not really helping people succeed in the health care industry. It's almost deterring them from it when we're already having a hard time keeping people. (Student #3)

Educational bridge programs are, by design, intended to increase accessibility and points of access to a profession. Bridge programs are also cited as one of the top two strategies to increase the diversity in a profession (Glazer et al., 2018; Kelly-Blake et al.,2018; Wise et al., 2017). Physical therapy is one of the least racially diverse healthcare professions and to appropriately meet the needs of society, the profession must diversify (Salsberg et al., 2021):

> That's a huge goal for the APTA, to increase diversity. And so, I feel like for those who are able to continue working, that's a huge part because I talked to other PTs who had gone through to their traditional programs, and they talked about how they had no time to work. School was your life. You couldn't do anything outside of it. And so, I just knew Oh, that's not going to work. That's not what I want to do. (Student #5)

Faculty who teach in bridge programs commented there is more diversity in the bridge programs than their traditional programs: "I will say that our weekend program, because we pulled from across the country is definitely more diverse than our traditional program, because we pull from outside our geographic area" (Faculty #4). Another faculty member commented:

> Yes, in terms of ethnicity, there's much more diversity with these students. And the other thing, when we talk about diversity, I think, understanding these students have families, these students might be taking care of a mother that's sick, they may be sick themselves. There's just a lot of personal differences. You know, some live in a city some live out, in like an area where I live [in the country] (Faculty #5)

One popular trend and strategy for increasing accessibility to DPT school, in a traditional format, is a three-plus-three program to accelerate matriculation into a program. Students can complete their first year of DPT school while finishing their last year of undergraduate work. This may not be the most effective strategy to increase the diversity of the profession, though:

> The opposite is true of our three plus three programs. So, they're great, right? You're lopping off a whole year. That's wonderful. You have to know as an incoming first year student and be completely focused on everything you need to take and get done in those three years to be able to do that. I think that's very hard for many of our students. And I do think the students who know that are students who have a lot of social capital, they have a lot of people helping them through the process. They're not first generation, they're not students from minoritized groups, they're students who have parents who are college educated and know how to work the system. Right? And so, having other options that students can pursue, I think can help diversify profession but I think it's just one way I don't think it can be the only way. (Faculty #4)

Bridge programs were initially developed to meet healthcare needs of their local communities. In addition to meeting community needs, the landscape of the profession is changing, and bridge programs have provided many PTAs access to sustain and develop in the field.

Subtheme #2: Nontraditional Educational Journey

Given the majority of DPT students are under the age of 25, it can be assumed most students enroll into a traditional DPT program immediately or soon after earning a baccalaureate degree (George & Dutton, 2019). The educational journey for students enrolled in a PTA-DPT bridge program does not follow this traditional trajectory. The bridge students each described their rationale for initially pursuing a PTA degree and working as a PTA prior to pursuing a degree as a DPT. Two sub-subthemes emerged from the data: PTA as an entry point into the profession and pursuing a DPT degree as professional advancement.

Sub-subtheme #1: PTA as an Entry Point to the Profession.

All seven of the bridge students interviewed reflected on their educational journey and decision to first enroll in a PTA program. The rationale varied from being denied acceptance into a DPT program to uncertainty in career choice after high school to a career change. Two of the seven students cited denied acceptance into a DPT program as the impetus for pursuing a degree as a PTA. According to Student #3:

> I applied to PT schools, but I did not get in. It was right when it [entry level degree requirements] was switching to a doctorate. So, it was really, really competitive. And so instead of waiting and trying to apply again, I went the PTA route, because I knew that I wanted to be in the PT field.

Similarly, Student #4 reported an initial desire to pursue a DPT degree but did not get accepted to their desired program. Additionally, their prerequisites for admission were on the verge of expiring:

> At my undergrad, they had a pretty amazing PT program. So, I kind of went the pre-PT track, got all my, you know, requirements and everything. And then I applied to PT

school and didn't get in. And my classes were expiring at the time, which now they don't apparently. So, I applied to the PTA program, and got in.

Even though two of the students were initially denied acceptance into a traditional DPT program, the majority cited other reasons for first becoming a PTA.

Five of the seven students intentionally chose becoming a PTA as their entry point to the profession. Two students reported they were uncertain of their career path after high school: “It started when I was in my senior year of high school, I had no idea what I wanted to do” (Student #5). Student #7 also described their uncertainty:

> Eventually I went through the exercise science program. And so, I got my bachelor's thinking that I might want to do like corporate fitness or working with athletes from a strength training standpoint. I started doing that for about six months and realized that probably wasn't the thing I wanted to do. So, my friend had suggested going to PTA school because I could get my degree in 18 months and start working.

By the time these students decided to pursue a career in physical therapy, they were interested in starting work as quickly as possible which made a PTA degree more appealing.

Three students had previous careers prior to entering the field and were also interested in joining the profession as quickly as possible:

> I started out in construction, I was a carpenter for about 10 years. And then the economy kind of fell apart. So, I got laid off. My wife's an occupational therapist (OT). And I had been around like OTs and PTs before, so I had talked to some of them about what they thought about going back to school to be an assistant. And they said, it'd probably be a good path. Kind of same thing, as [Student 5] I was trying to find a shorter thing to just get back into the job force. (Student #6)

Student #2 also had a desire to enter the profession as soon as possible and continue working while they pursued their degree as PTA:

> I was a high school Spanish teacher. And then I finished the first year of that, and was like, not going to do this the rest of my life so. So, um, I had actually thought about becoming a PT prior to that, but I didn't want to be in school forever, you know, like, at some point, you just want independence and to be able to support yourself. So, knowing that, I went back to like our tech college just to start the program to become a PTA while I was still a teacher, and then when I had to start full time, I left teaching.

Regardless of the rationale, becoming a PTA was a viable strategy for these students to pursue a career in physical therapy.

Sub-subtheme #2: DPT as Professional Advancement.

The data presented rationale for why the students interviewed chose to advance their career and pursue a DPT degree. Lack of job security and a desire to remain in the profession of physical therapy was reported as a contributing factor for some. Faculty in both programs cited this as a concern for many of their students:

> Probably…four or five years ago, you know, things started to change financially for PTAs. I've had some outpatient clinics not hire on any PTAs, only PTs. And so that seemed to increase our number of applicants, you know, because financially, they [PTAs] were worried about losing their job and not being happy not having a job, you know, in the future. (Faculty #7)

Another faculty member reported, "I asked the current bridge students during one weekend, why were they doing it? Most of them said because of the job market, they were worried that long term viability of PTA" (Faculty #1).

Although none of the students interviewed cited financial gain as a motivator for pursuing a DPT degree, one faculty member identified this as possible rationale:

> And then there are some of course, that simply want to increase their salary, you know, that they talked about that this [DPT] would be a great jump in their salary and, and maybe down the road, they can start their own private practice and not have to worry about, you know, about that capability. (Faculty #7)

Physical therapists tend to have higher salaries than PTAs, but the students themselves did not cite this as rationale for pursuing a DPT degree.

All seven of the students interviewed indicated the primary motivation for pursuing a degree as a DPT was for their own professional development and satisfaction:

> It was never really financial gain, it was more, this is what I want to do. And I want to do it the best that I possibly could. And so, I mean, don't get me wrong, I loved my time as a PTA, … but for me, it was more of just, this is what I want to do for the rest of my life. I want to do it the best I possibly could. And so professionally, it just made sense to go back to my DPT. (Student #7)

Several students also commented that pursuing a DPT degree was the only option to significantly advance their careers: “It was like I had met my maximum potential as a PTA and I was ready to move on” (Student #6). Student #4 concurred, stating, “there's kind of a glass ceiling with PTA” (Student #4).

For many potential students, especially from diverse groups, the path to becoming a DPT may not be linear. There are several reasons, as cited by participants, becoming a PTA as the entry point to the profession of physical therapy was an appropriate option.

Subtheme #3: Financial Considerations

One of the unique features of PTA-DPT bridge programs is the requirement that students maintain some level of work as a PTA during their didactic coursework. One of the significant benefits of this requirement is that it provides a source of income while in school. One faculty member commented:

> They got their PTA, they can work, they can make money. So financially, it's helpful for them to be able to take this route so that they can they can pay for college while they're working…So if there were more PTA to DPT programs that were really just built into allow these people to still have a job that gives them that financial freedom and comfort. (Faculty #6)

In addition to students having the ability to work which impacts financial accessibility of the bridge program, the institutions attempted to increase accessibility by decreasing costs for students:

> We did try to do a few things that would support students like we had some housing on campus and students could stay in over weekends, we tried to connect them with people in the community, for housing kinds of things. We did some arrangements of local hotels and things like that - students could sort of negotiate a discounted rate. (Faculty #4)

Students, in addition to faculty, also commented on the financial accessibility of bridge programs. Six of the seven students provided data highlighting the importance of having the ability to work during the program. In addition to the financial benefits of working, maintaining insurance for themselves and their families was a significant factor contributing to the overall accessibility of the program:

> And right now, for me, at this stage in life, the bridge program allows me to work. I

> mean, I have a family to support, I carry our insurance. So, it's one of those things where you got to make sacrifices. (Student #1)

Student #2 also cited insurance as a significant factor: “Part of the draw was being able to keep my job because we use my job for insurance, health insurance for our family.” For some students, the ability to work as a PTA was a deciding factor in pursuing a bridge versus traditional DPT program:

> And I wanted to do the bridge program, just so that I could have somewhat of a family life but also still make some money through the schooling. So, I went with the bridge program versus going back to traditional PT school. (Student #7)

All of the students interviewed were considered nontraditional students based on their age, financial independence, or having one or more dependents. Financial accessibility, or the ability to maintain some level of income or insurance coverage, influenced their decision to enroll in a bridge program.

Despite efforts to increase financial accessibility, faculty and students recognized that affordability of the program remains a challenge. Regardless if students enroll in a bridge or traditional DPT program, the cost of education is expensive. All of the current bridge programs are located in private institutions which have higher tuition than public institutions. The cost is a challenge for current and potential students:

> I was talking to one of my classmates, and she was saying the three programs that are bridge programs are all private universities, there aren't really any public institutions, which is a huge monetary constraint for a lot of people that don't have, you know, the ability to sustain themselves or things like that. So that could really be hurting a lot of PTAs that want to make this commitment. (Student #3)

Faculty also recognized the financial burden for their students:

> Finances, you know, it is a private institution. And it is expensive, much more expensive than a state institution. And then, since they are flying in, they're flying into a relatively small airport, or they go to a larger airport, and they have to rent a car. Or they can, if there is a student that's from that area, they can kind of like, connect together, and then that person can drive the student, you know, back to the school. So, finances are huge, you know. (Faculty #7)

The cost of a bridge program is not significantly less (if at all) than a traditional program so these students may bear more of a financial burden than traditional students if they are traveling to attend classes in addition to the cost of tuition.

Most students enrolled in bridge programs are nontraditional; they are financially independent, may be married, and/or have dependents under the age of 18. In addition to their full-time coursework, the students must maintain work as a PTA while in the didactic portion of the bridge program. Their work as a PTA may help financially but takes time away from their coursework or personal lives:

> Financially, if I can work a little less, I would, but doesn't always make sense to do that. And I have to keep a certain status in order to keep insurance. So that kind of dictates how much I'm working, versus what the program recommends. Like our program only recommends 10 hours a week for working, but I'm at 32. (Student #1)

Although students are able to work during their didactic coursework, they are most likely unable to work during the clinical education portion of the curriculum.

> I found it frustrating that for eight months, we can't really work at all during our clinicals because that's full time. So financially, that's a big hardship as well. And I mean, it makes

> sense with how they do all three of them in a row. And I get that for work purposes, because it would be so chaotic for us to go back and forth, hey, we can work now, hey, we have a clinical. So just doing them all at the end, but this is a huge financial hardship for a lot of us. (Student #5)

Paying for education and supporting oneself and a family, if needed, is a significant consideration and challenge for students in a bridge program and may limit the number of students who can pursue this route to becoming a DPT.

Subtheme #4: Format of Bridge Programs

The format of the curriculum in bridge programs is designed to be accessible to students who may be working, have families, or not located in physical proximity to the campus. According to Institution B's website:

> While other programs may require you to move in order to be in close proximity to campus, you can complete Findlay's program from anywhere in the country, with six visits to campus in the fall, and 12 visits between January and June.

Students also commented on the accessibility of the bridge program's format:

> The ability to have a bridge program where you're not having to be there as often [in person], and doing more things online, you don't have to move somewhere, like if I were to apply to a different school and, you know, have to uproot my whole family and go somewhere else [it] would be very inconvenient. So, I like the flexibility of the bridge program of making it more adaptable to people's lifestyles. (Student #3)

The hybrid design of the curriculum has increased the accessibility for many students. Students are able to continue work and maintain some stability for their families.

Forty-three percent of the students interviewed reported having dependents under the age

of 18. Several students commented that the format of the bridge program was designed to be accessible for student parents. One student commented, "I don't know if I would have pursued the DPT if I had to do the traditional [program] and I don't know, to be honest, if it would have worked for my family to do it that way" (Student #7). The faculty at bridge programs recognize that many of their students are parents and have families. Faculty #1 commented, "The bridge programs are typically a little bit more flexible in terms of they [the students] can do distance learning, and then that way basically be present if they have to hang out with a baby or an infant child."

A significant component of a DPT program is clinical education. Students must complete a minimum of 30 weeks of full-time clinical education in a variety of settings. Both programs enroll students who live throughout the country, and faculty involved with clinical education make every effort to place students in clinical sites located near their home which increases accessibility. Institution B's website states, "Clinical affiliations can be completed in any state in which we can obtain a contract. We have clinicals set up all over the country, but if there is not one available within a reasonable driving distance of your home, we will work with you to set up new clinical affiliations near you."

In addition to an accessible and flexible curriculum, students commented that faculty play a role in the overall accessibility of the program:

> And then the faculty has been really flexible with, we do discussions, and they always make sure that our discussions are at times when we're not working. So, it's usually evenings. They make all of our exams at times that work for everybody, and they're super flexible and understanding that we all have different schedules and that we're, we're working. (Student #3)

Bridge programs, by design, were developed to increase accessibility for nontraditional students, in particular. Although much of the content in the PTA-DPT bridge programs is delivered in an asynchronous format, faculty make every attempt to schedule synchronous sessions and exams as well as clinical experiences at a time or location that is convenient for students which contributes to the accessibility.

Students who choose to enroll in a bridge program are making a significant investment to pursue their goal of becoming a DPT. Despite a more accessible curricular format, this investment may come with several challenges. Students and faculty commented on the amount of time required for coursework, the associated travel to attend on-campus class session, working as a PTA, and maintaining family or other personal responsibilities which was a significant challenge. Faculty acknowledged this challenge and made efforts to prepare students for the time commitment. One faculty stated:

> It's been a goal of ours in our marketing to be as transparent as possible and saying this is a full-time program, even though it's hybrid or might be considered online, it doesn't mean that it's part time. So that time management is a key piece if you have to dedicate 30 to 40 hours a week of schooling, even though you're not physically in a classroom for that amount of time. (Faculty #2)

Faculty that teach in bridge programs recognize the demands on students' time outside of the program requirements:

> They're adults, and they have families usually, in most cases, they have a spouse or kids or aging parents or something like that. So that life gets in the way, a lot of times with our weekend students in particular…so, that (continuing work as a PTA) is a benefit that we require but sometimes that's a drawback as well because some of our students need to

> work full time for insurance benefits for their family. So, they work full time and are a full time DPT student in a hybrid type of format. (Faculty #5)

Although the faculty recognize the demands on students' time, some flexibility is still required from students. Institution A's student handbook addresses the need for students to maintain some level of flexibility:

> The Bridge PTA to DPT Program may require students to participate occasionally in activities and learning experiences which are scheduled outside published class meeting days and times. These experiences will be announced as far in advance as possible to allow students ample time to attend. We recommend that all students notify those who may be affected (e.g. employers) in advance. Attendance at such activities is required as part of the professional curriculum.

Despite efforts from faculty and the institution to make the bridge program as accessible and flexible as possible, students are still encouraged to discuss the need for occasional flexibility in their professional schedules with employers and how committing to the bridge program may impact their personal life with family and friends.

Students commented on the challenge of time management during their time in the program. One student expressed frustration with faculty response time given the many other demands on the student's time:

> I'm not so sure that they take into consideration like what other courses and the other expectations from other classes are. So, a lot of times, it just feels really heavy… And I understand that and syllabus states that you'll respond within one or two business days and stuff. But like, sometimes that's not fast enough, knowing that we are working in that we can only some, you know, some people work more than others. But having just like

> that window of time where you're like, I really just need this clarified, which tends to be why asking other classmates rather than, you know, emailing and waiting and waiting and waiting for a response. (Student #4)

Instead of waiting for faculty to respond, students may reach out to other classmates in their cohort for clarification.

Bridge programs are designed to be accelerated and cut down on the overall time it takes to complete a program. This format may fit with the overall preference of adult learners but may cause additional stress on students matriculated in the program:

> I feel like we're doing an exact replica of the traditional program. It's just accelerated, like a lot of our classes, they'll tell us, normally we teach the traditional students this in 14 weeks, and you're getting it in seven. And it's like, Oh, great. So, it's kind of like, they're expecting more from us. (Student #3)

Data from other students also indicated that although some courses are delivered in an accelerated format, the amount of content is similar to what is presented in a traditional program. Student #6 commented:

> I wish they [faculty] would look maybe more into seeing if there is a way to streamline the bridge program a little bit more. I felt that a lot of things were, you know, review, and then the bridge between PTA and DPT could have perhaps been a little bit more condensed…I just felt like a lot of the program stuff was more of a review, and kind of a rehashing of things we already knew, versus you know, learning things that we didn't know from PTA to DPT.

Despite the characteristics that increase accessibility and support for students and the positive characteristics of students in bridge programs, there are still challenges experienced by faculty

and students that may limit access for some students.

Subtheme #5: Challenges Impacting Accessibility

There are many aspects and characteristics of PTA-DPT bridge programs that were designed to increase accessibility. Bridge programs exist within the culture and current practices of the physical therapy profession, however, which have presented several challenges that have impacted and limited the overall accessibility of the programs. These challenges include logistical challenges and bias within the profession.

Sub-subtheme #1: Logistical Challenges.

Physical therapy education is accredited by the Commission for Accreditation in Physical Therapy Education (CAPTE). The process of starting and maintaining a bridge program requires ongoing communication with and approval from CAPTE which presented a challenge for several faculty. One faculty member reflected on the significant amount of work involved with obtaining initial accreditation for the bridge program:

> Just dealing with CAPTE trying to figure out if it would be better to do a separate program, separate accreditation, or folded in with our current accreditation? I think the, you know, the AASC (Application for Approval for Substantive Change), I mean, the paperwork for that felt like we're going through another accreditation report, you know, developing a [bridge] program was pretty extensive. (Faculty #1)

There are currently only three bridge programs in the United States as compared to nearly 250 traditional programs. Most, if not all, of the CAPTE requirements for educating DPT students are the same regardless if the program is traditional (accessible for students with no prior experience in the field), or a bridge program which is specifically designed for PTAs who do have knowledge and experience in the physical therapy field. One faculty commented on the challenge

these consistent CAPTE standards presented for their program: “Our biggest obstacle was CAPTE and how or whether they agreed that we could or didn't agree that we could meet the standards, the way we're doing it” (Faculty #4). There is little, if any, modification to the bridge DPT curriculum standards for students with previous experience in the field.

One of the standards required by CAPTE is a minimum number of clinical education hours for students regardless if they are in a DPT bridge or traditional program. The number of required clinical hours may be more than students with previous clinical experience need to be successful. According to Faculty #5, “We were at 26 weeks, total clinical education, and CAPTE came in and said every program has to be 30 weeks…that was a non-negotiable component.” Students also expressed frustration with the standard requirement for clinical education:

> When we first started the program, we had a hiccup with when we could finish our clinicals and when we can take our licensure exam. They had been doing three eight-week rotations, but CAPTE had required them to change that to 3, 10-week [clinical rotations] because that's what traditional PT students were doing. And so even with whatever data we had collected, we couldn't prove the fact that (3) eight-weeks was enough for us. (Student #1)

In addition to tension between the CAPTE accreditation requirements and the specific needs of the bridge programs, faculty reported that CAPTE standards may be stifling innovation and growth of bridge programs:

> I kind of wish there was some flexibility with accreditation to experiment a little bit more, and not to have to have everything in like, almost like in signing your blood to it. But be able to say okay, this is our idea. We'd like to experiment. This is how we're going to get feedback how we're going to evaluate going on, and go from there because there

> are things like once you get it, oh, it'd be nice to try that. Maybe there's ways to decrease the length of time for PTAs; instead of three (years) or make it a little bit quicker for them. (Faculty #1)

Faculty and administrators may desire to increase the accessibility of bridge programs and capitalize more on students' previous knowledge and experience but this may be limited by current CAPTE policies, procedures, and practices.

In addition to challenges faculty experienced aligning the bridge curriculum to CAPTE standards, some faculty were also challenged by a different teaching pedagogy. Most traditional DPT programs, including the traditional programs at both institutions studied, are delivered primarily face-to-face, Monday through Friday. Bridge programs are delivered in a hybrid model; most of the content is delivered asynchronously online with occasional (once or twice a month) face-to-face weekend lab sessions. This format can be challenging for faculty who were educated or have previous experience teaching in a traditional program:

> I think just adapting the course to distance learning in our model is probably another challenge. Like we have to take, let's say, a 16-week course and get that down to seven or eight weeks. And then we have like one to two on campus weekends, figuring out what's going to take place when and how do we change the sequencing? So, I would say that's the largest challenge, logistically. (Faculty #3)

Faculty #3 also reflected on her lack of knowledge of the educational preparation of PTAs: "My level of familiarity or lack thereof, with PTA curriculum, would be one of the challenges that I currently face as new faculty member." The level of experience and knowledge that students bring to the bridge program is certainly an asset but can present challenges for faculty and administrators to appropriately build off of that knowledge and skill.

Sub-subtheme #2: Bias.

Bridge programs are an underutilized strategy for educating future DPTs. This may be due to the culture of the physical therapy profession. Several faculty and students commented on the implicit or explicit biases that exist, limiting acceptance and growth of these programs. During initial development, one program encountered a lot of resistance from members of the profession:

> To get the [bridge] program off the ground, I think the other piece, I hope this is changing, but at the time, there were two things happening and this is still true now where there was a lot of resistance to new programs. We had a proliferation of PT programs, we didn't need more, there wasn't room for them, they weren't of the same quality…and there were some people who did not, were not supportive of the idea of the physical therapist assistant pursuing to become a PT that somehow that was, they were out of their, I don't know how to describe it, that they didn't, I don't feel this way, but the people felt that if you wanted to be PT, you should go to a regular PT program, you shouldn't do it this way. This (bridge program) was somehow lesser or lower quality, or they wouldn't be as good of a physical therapist. I mean, it was just really frustrating, the kinds of perceptions and arrogance on the part of physical therapists, quite frankly. (Faculty #4)

Another faculty member commented on the process of initially obtaining clinical sites for bridge students:

> Oh, boy, how should I say this? Initially, it was very, very difficult. And, you know, I'll be truthful about it. It was very difficult. I had some places you know, I would call to say, hey, we're starting this new concept, you know, would you like to sign on with us? There were quite a few that were very negative about the concept. I had individuals that would

> say things like, why would you want to start a program with a wannabe PT? (Faculty #7)

Students also commented on their perception of how the profession values bridge programs:

> I feel like the APTA kind of, not frowns upon, but it kind of pushes PTA programs to the backburner. And I think they would rather see you go back and do the traditional route versus this bridge program, I think you can even see like, I still think there's only two weekend programs in the entire country. And so, I mean, I would think if the APTA (American Physical Therapy Association) was caring about having more clinicians, I think there would be more weekend programs that you see pop up. (Student #7)

Student #3 reflected on their previous experience applying to a traditional DPT program and how traditional programs may be perpetuating a lack of diversity: “It felt like when I was applying for PT school, at the very beginning, it felt like I was constantly getting all these doors slammed in my face, because I felt like they wanted kind of a cookie cutter type of person.”

To increase the diversity of the physical therapy profession, using bridge programs as a strategy to increase accessibility and support for students from diverse groups, the profession must address the culture and implicit or explicit biases:

> I still think that we still have some I don't know what under unrecognized or bias in our profession that we don't fully address in terms of thinking about how we would provide laddering opportunities for physical therapist assistants and really fully including them in the profession. And that part is disappointing. I mean, I think it's better but it's not as better as it should be. (Faculty #4)

Theme #2: Support

A supportive environment is important for nontraditional students to successfully matriculate through a PTA-DPT bridge program. Data from participants directly addressed the

second research question to identify the characteristics of bridge programs that can increase support and retention for nontraditional students. Five subthemes emerged from the data including support from the department, faculty, the cohort model, family and colleagues, and the support students experience from their prior experience as a PTA.

Subtheme #1: Departmental Support

Departmental support ranged from policies and procedures to efforts that aid students in finding affordable housing during their on-campus weekends. One faculty commented:

> We do have a lot of support, at least at the program level, for helping students through it. So, myself being their academic advisor and meeting with them very regularly, creating an internal retention spreadsheet that all faculty are using, that allows me to reach out to a student very promptly if they are performing poorly, on even an assignment or they missed an assignment or there's a professionalism concern, I'm able to be alerted to that and communicate with that student right away… So again, that academic piece just to try to be on top of things early and often. (Faculty #2)

Each bridge program also has various strategies to support the non-academic needs of students in the program. Institution B provided information on their website to aid students in finding affordable housing while they are on campus:

> Students typically use one of three options. There are local hotels in town that provide a student discount. There is one in particular that provides a weekend student discount. Students will often find classmates to share a room to reduce the cost of accommodations. The second option would be our on-campus "Welcome Houses," which are available to any student or guest of the university. They are shared, "hostel" style homes with shared bedrooms, restrooms, kitchens, and common areas. The current cost is

$20 per night.

Information posted on the bridge programs' websites and their policies and procedures are designed to support students who have needs that are different from students in a traditional DPT program.

Some of the support previously mentioned, such as finding affordable housing, is unique to the bridge programs. Another consideration is many students enrolled in a bridge program are parents or may become parents while matriculated. Institution A has a specific policy in their student handbook providing information pertaining to pregnancy during the program: "Students who are pregnant will work with their faculty advisor, professors and Physical Therapy Program Director to develop any accommodations needed to complete and/or make up course work."

Even though policies, procedures, and practices exist to support the bridge students, one participant commented that individuals in the traditional, primarily face-to-face format may receive more support than students in the bridge program:

> I think there's way more support in a traditional program. Some things have come up, like, on tests, where it's like, if I had a little more clarification, if I was sitting in the room with the instructor, you know, maybe being able to have a little more clarification on things rather than like just do on your computer and, you know, nobody else. So, I would think that there's more of a tangible support maybe in a traditional program than what we get. (Student #4)

Subtheme #2: Faculty

Student participants cited faculty as a source of support during their time in their respective PTA-DPT bridge program. Additionally, faculty participants provided data on the benefits of working with bridge students who have prior experience as PTAs that enhanced their

ability to support PTA-DPT bridge students as well as the challenges associated with working with this group which may require additional support.

Sub-subtheme #1: Student Perspective on Support from Faculty.

Support from faculty was an important factor in ensuring the success of students in a bridge program. According to Institution A's Student Handbook, "Faculty make every attempt to schedule office hours during times when students are available. All faculty are willing to make appointments outside of posted office hours if the times listed are not convenient for students." Incoming students at Institution A also receive a welcome letter, once accepted, that promotes a culture of support. The letter states, "We are so excited to support you in your educational journey and look forward to growing together."

There is congruence between the level of faculty support advertised and the experience of students. Six of the seven students commented on the importance and specifics of faculty support. Student #1 commented:

> They've [faculty] been really great. They're always willing to set up office hours. I mean, we have weird hours in the bridge program, because we're all working. So most of us aren't available during the day during their normal, like business hours or office hours that they have. So, a lot of them [faculty] are very willing to work around our schedule, if we need it…they all definitely want us to succeed. They're all proud of us.

In addition to faculty flexibility and support, there are additional resources to support students' learning:

> They'll [faculty] always pull outside of their own perspective to offer us additional information. And then additionally, they're always putting into their weekly course cases, most of the instructors have put in YouTube tutorials or links to Khan Academy videos,

> or whatever it could be. These aren't required. But these will definitely help you if you look at that. So, they put a lot of extra resources in outside of our textbook and outside of the course material to help us. (Student #2)

Whether it was flexibility with their time or providing additional material outside of traditional lecture notes, faculty in bridge programs were a significant source of support for students.

Several students expressed appreciation for the personal sacrifices many of their faculty members made to support them during their time in the bridge program. Student #6 reflected:

> It was more meaningful because these are people that have part time jobs as well. And some of them drove, you know, two, three hours to campus. But they would take the time to spend time outside of office hours in class time to help you understand a certain concept or help you if you are struggling. And so, for me, it just kind of meant more because, like I said, these are people [faculty] that need to drive three hours to home, they're just there for the weekend, they have jobs Monday through Thursday. So, for them to take time out of their, you know, in a sense, free time, just was more meaningful.

In addition to many of the students traveling to attend on-campus class sessions, several faculty also lived out of the area and commuted: "I remember one of our faculty who retired, he would travel in from Pennsylvania. So, he would drive like five, six hours, and he stayed at the same hotel as us. And so, it's like, they have that same sort of time that they're spending traveling, coming to teach." (Student #4). Faculty in the bridge programs not only offered tangible supports such as additional learning resources and flexible office hours but have successfully created a culture of support by modeling their own commitment to the program.

Sub-subtheme #2: Faculty Perspective: Benefits of Teaching Students with Prior Experience.

Based on the data collected, working with students that have a prior level of content knowledge and experience in the field of physical therapy has been rewarding for faculty teaching in bridge programs and enhanced their ability to support students. Faculty from both institutions commented on the positive aspects of working with bridge students: “We have awesome students…they've been very flexible in their thinking and understanding, willing to give feedback…they've been professional, respectful” (Faculty #2). Faculty #7, from a different institution, stated, “They're amazing, I teach them in their second year. And you can really see that progress. And their confidence levels go up, which is really exciting.” Students in bridge programs are pursuing a personal goal or advancing their professional careers; they are typically extremely invested in their education:

> Obviously, you're not going to this program, unless you're super motivated, you're really clear about what you're doing and why you're doing it. And you're really interested in learning more. So, it's a great student to have in class, and they do really learn and integrate [course concepts]. (Faculty #4)

This level of commitment and motivation has positively impacted faculty teaching these students. Four of the seven faculty members commented on the level of participation of bridge students:

> The students have been a breath of fresh air. And professionally, just because they do come prepared, they participate. They know what questions to ask. So that's been really helpful. Especially when, after we've had like, a rough week with the traditional students. Like, why do you ask those questions? Why do you have those issues? And then we have

> our Zoom office hours or whatever with the bridge students, and it's like, oh, this is why we teach. (Faculty #3)

The depth of questions that the bridge students ask demonstrated a deeper level of thinking and learning that faculty appreciate: "The type of questions that they [students] ask and the type of discussions that you can have, are so rich, so rich, it's amazing. I love it. I mean…it's just amazing what they bring [knowledge and experience] to the table" (Faculty #5). Faculty #6 commented that the questions posed in class and the resulting discussions benefit the entire cohort of students: "I think the conversations we had to have in class, and their ability to ask really, really good questions, and have really thorough discussions is a huge advantage to the entire classes learning." All faculty interviewed have taught in both traditional and bridge programs. Compared to the traditional students, bridge students participate more in class and ask deeper level questions. This benefits not only the individual student, but the entire class.

Students in bridge programs may have higher and deeper levels of participation because of their prior learning and experiences.

> They're fabulous students, they were a joy to have in class…so, if you think about learning theory, and you think about how we learn new concepts, we hang those concepts on our own experiences, right? So, if I come into class, and I'm learning about a neurological [case]... or talking about spasticity to students, the PTA students have all seen that. They've all felt that [tone], they know what I'm talking about, and they can ask really good questions and really integrate new learning into what they've seen clinically. That, I mean, you can't put a price on that, right? That's huge in terms of learning. And that's why I think the weekend program worked, they [students] were able to build learning off of direct experiences that they had. And integrate new learning new

concepts, expand on what they already knew. (Faculty #4)

Students with prior knowledge and experience in the field of physical therapy can appropriately build on prior knowledge and assimilate new or similar content in a deeper way.

Sub-subtheme #3: Faculty Perspective: Challenges Associated with Working with Students with Prior Experience.

All current and former faculty that were interviewed had experience teaching in both a traditional and bridge DPT program. Although many have worked with PTAs during their clinical practice, none of the faculty had prior experience working as a PTA themselves. Teaching students who have experience as PTAs in a bridge DPT program presented several challenges for faculty that included logistical issues and challenges working with students who have previous experience in the field of physical therapy.

All students in PTA-DPT bridge programs have previous education and work experience as a PTA. The work experience of the students interviewed ranged from one to 10 years in the field. Faculty commented that because of this prior experience and knowledge, students in the bridge programs had a deeper level of reflection and questioning during class than traditional students which some reported as challenging:

> Sometimes faculty who are either new or have only taught a traditional program, if they move over to teaching in the weekend program, the bridge program, sometimes they, they're a little bit challenged by that, because of the depth of knowledge and the kinds of questions that our students ask…you would see markedly different (questions) if you teach the same lecture or the same content in the traditional program versus the weekend. It almost is like you feel more challenged by those students. When it's not always the case, they're not trying to challenge you. They're just trying to understand it more, versus

> the traditional student who might just say, Okay, I got to study this and figure it out…there's been faculty who started teaching in the weekend approach program and couldn't continue. It just was too stressful for them. (Faculty #4)

Faculty #7 also commented on the in-depth questions that students in the bridge program ask and also provided strategies for success:

> I find that with all these questions, you know, as long as you're truthful and honest with them, and say, Hey, I might not, I can't answer that right now, I'll get right back to you, then there's no problem. You know, it's the person that tries to pretend they know an answer that the bridge student might get upset with them, you know, so it's important to, to really be truthful with giving the best information you possibly can give.

Reflecting on prior knowledge can enhance student learning and improve educational outcomes but faculty may need preparation or coaching to effectively engage students and navigate classroom discussions.

Prior knowledge and experience as a PTA can enhance the learning of students in bridge programs but may also manifest as resistance to learning material. Students may have the perception they already know certain content or that some content is extraneous and not important to their future work:

> Occasionally knowing a lot is a barrier, right? Because you think, or you have always worked in outpatient orthopedics and you think that's the best place ever. And maybe you have resistance to learning in other areas, or you're not interested, or you're not as engaged, or you think you already know everything. And so, I think back to what makes an ideal student, they have to have that open-mind. You know, I'm interested in learning, I want to build on what I already know, not coming in from, I already practice like a PT,

so there's not much for me to learn. (Faculty #4)

Students in bridge programs may have a sense of over-confidence in their knowledge and skills that can impede their learning:

> They come in [to the program] a lot of times with kind of erroneous beliefs of maybe what the practice is in their clinic. And so, when we challenge them to think deeper or have to think on their own, it sometimes challenges what they're doing. And that can be hard for some students who don't take criticism or feedback well, because usually, they're coming in pretty confident. And so, I think one of the things we have to focus on is teaching them [students] to be good clinical reasoners and good consumers of research and evidence and learn really, how evidence comes into play with patient specific needs, and with their past experience. And so, having some students who come in very confident, have a harder time changing their current belief system. (Faculty #6)

Over-confidence or students selectively choosing what they deem important can be a challenge for faculty to navigate.

An additional challenge that faculty reported was managing the dissonance between the habits and practices students learned in the clinic and the content in the bridge curriculum; students may challenge what is being taught and how it is presented:

> Sometimes they'll [students] come in, and they'll have a certain way of doing something, and might be something as basic as a transfer of a patient that they had been doing. And we [faculty] may need to update, you know, how their body mechanics are, or how close they're getting to the patient, you know, that kind of thing. So, some of their handling skills might be tweaked. But again, these are really outliers, of how we, we need to work with them…it's, it's not coming with someone who that's a clean slate, you know, it's

> coming with someone who may need a few corrections. And it's just, it's just important for the instructor to have that understanding and to help with tweaking them so that they can go to a higher level. (Faculty #7)

Students in the bridge program may also underestimate the rigor of the content. Although they have skills as a PTA, there are additional skills that are required as a DPT and some students may have a false sense of confidence they already possess these skills: “They were extraordinary PTAs and have gotten lots of feedback. Some of them come in believing that all they have to do is just get the initials, but they know everything they need to know already” (Faculty #5).

PTA-DPT bridge programs are still rare, with only three in the country. This novel approach to educational laddering in physical therapy, although designed to increase accessibility and support for students, has presented challenges for faculty and administrators involved in the coordination, planning, and teaching aspects of the curriculum.

Subtheme #3: The Cohort Model

Students in bridge programs make significant sacrifices to pursue their dream of becoming a DPT. Many students travel, some great distances, to attend classes, some have young children and families, and all of the students are still working as a PTA in addition to taking classes. Given all of the personal sacrifices that bridge students make, one of the greatest sources of support is their classmates. One student commented, “The biggest source of support right now has been the other students” (Student #2). Student #5 elaborated on the support they received from classmates:

> No one else understands what you're going through besides your cohort and all of that travel and all of that time. So, I feel like we really bonded really quickly over all of that. We’re always talking to each other…and that was a huge encouragement to all of us.

> Yeah, we talked to our families about what we're doing and friends, but they just totally don't get it. They don't know, like the stress of what we're going through.

Student #6 also appreciated having others who were making similar sacrifices:

> I'd say that was the biggest part for me was the cohort. I had a couple of classmates that would be on some of the same flights as me. So, we had a lot to be able to share with that and kind of commiserate about the, even just the time zone changes and you know, getting stuck at an airport or flights being canceled, like all of that just really adds up and just having someone going through that with you. And understanding and having that sounding board was super beneficial for me.

Pursuing this degree requires financial sacrifice and perhaps more important is the time they sacrifice for themselves and with loved ones to study, travel, and attend classes. Having classmates who were making similar sacrifices was a great source of support.

All students in bridge programs are PTAs which provided a unique source of support. Student #3 commented, "We were all PTAs so we all know, kind of the experiences that we've had and how those can affect how we succeed as PT students." Becoming a DPT had special significance for PTAs in the bridge program: "We've wanted this, we tried really hard, we were finally getting this opportunity to be a DPT and we're gonna run with it and help each other through the way." (Student #3)

Students come in to bridge programs with experience in a variety of clinical settings. This variety of experiences allowed students to support each other when learning different content as observed by several faculty members:

> They [students] do find great value in being face to face with each other, working on what they need to work on. Because remember, this is a great diverse group. And so, the

> ones that are a little stronger in ortho kind of help those that are you know, maybe not as strong in that area, and those that are stronger in the neuro kind of help, you know, the ortho ones with moving forward in that area. So, there is value in them physically being with each other, and being a good cohort group plus, you know, they all understand what it means to leave their families, come to another state, and devote all this time to learning this material. And so, they're a support group for each other. (Faculty #7)

Faculty #6 also noted the support that the cohort model, with all students having previous experience as PTAs, offered:

> They [students] tend to use all of their expertise in different settings, and act as a team and help each other. And there's usually that kind of a community feel to the cohorts like we're in this together, there's not like the level of competition you sometimes see in undergrad [education], it's more of like, let's help each other out attitude.

Learning alongside a group of students who all have experience working as a PTA and are making similar sacrifices to pursue a common goal was one of the biggest sources of support for students.

Subtheme #4: Family and Colleagues

Committing to a full-time DPT program while still working as a PTA is a significant commitment for students enrolled in bridge programs. The financial and time investment can impact the personal and professional lives of students. Having the support of family and colleagues was important to many of the students, making their educational journey easier:

> I have had fabulous support. I am married, I have a husband. And I have a two-year-old. So, life is busy. My husband helps just emotionally pepping me up when I'm feeling so stressed out. The beginning of the semester is always stressful. So, he always reminds me

> that you're always stressed the first week, and then things get better and you find your groove whatever…My parents are…very supportive emotionally, always telling me that, keep going and keep doing what you're doing and all that. So as far as family goes, I've felt extremely supported throughout the whole process, which is helpful. (Student #1)

Having the support of colleagues and employers was also important for bridge students. Student #7 commented, “The person who hired me as a PTA has definitely been a huge mentor for me.” Another student commented, “My coworkers were always really encouraging and super excited for me to go and get my DPT” (Student #5). In addition to the emotional support from colleagues, some students also needed logistic support to alter their work schedule to accommodate their educational demands:

> When I started the DPT portion, I was able to drop a day of work, so I was able to change my status. And it was super easy. They were super understanding and she [boss] was super willing to work with me. So that was really nice. They're really good. I mean, I give her [boss] the days that I have to take off for school and she's totally fine. (Student #1)

Students reported receiving support from their respective institutions, faculty, family, and colleagues that promoted their success in the program. However, the most significant source of support was learning alongside students with similar professional and life experiences. Students with similar backgrounds and experiences is a unique aspect of bridge programs.

Subtheme #5: Support from Prior Experience as a PTA

Physical therapy education consists of cognitive, psychomotor, and affective domain skills. Although the scope of practice for a DPT differs from the work of a PTA, students in the bridge program already possess many of the skills in each domain of learning. They have a base of knowledge upon which to scaffold higher level skills and advanced content. One benefit of

this prior knowledge is less stress during exams. Students in both DPT and PTA programs demonstrate psychomotor skills in hands-on practical exams. These exams are often stressful for the student but one student commented these exams were much less stressful in their DPT bridge program because of their previous experience and knowledge:

> I think confidence is a big thing. You know, coming into practicals, you're still nervous, and you still want to do well, but it's like, you know, how to talk to people, you know, how to kind of feel those awkward silences, and, you know, just having the experience of working with people already, and practicing what we're learning, so it's more applicable, and I can be like, Oh, I know. That's why that, you know, this happens, or, you know, I've seen this in whatever patient and being able to, like, really fill in the gaps versus when, you know, not working with people before. Just not being awkward or, like, you know, how to introduce yourself, and just kind of the basics of, like, health care, basically. (Student #4)

Student confidence and foundational knowledge made the transition to clinical education easier: "So, I think it's just, you're able to hit the ground running, you're seeing patients pretty much you know, that first week versus a student from the traditional program who doesn't have that interaction with patients" (Student #7). As the level of student stress and the incidence of mental health issues with students continues to rise, less stress, due to prior exposure and experience, is a clear benefit of bridge programs.

Students were asked to reflect on the path of first earning a degree as a PTA, prior to pursuing a DPT degree. One hundred percent of students indicated this path enhanced their learning and positively affected their future as a DPT:

> We have been professionals, a lot of us five years or more. I had one year, but even that I

> felt like was such a good stepping stone for going into our clinicals. We went into our clinical so much more confident. So, I feel like that really took us to the next level. Because we're not a brand-new student. We're not learning how to talk to people, we know how to handle all of that. We have a lot of background knowledge. And so, I think that really helps us excel further as PTs because we're not focused on those little nuances that maybe a brand-new PT student would. We can kind of work towards that higher-level stuff and be pushed and challenged more as well. (Student #5)

According to Student #3:

> I'm grateful that I did PTA first because like I said, it makes me feel like I know how to talk to people. I know how to work with patients. I know what I'm getting into versus being an undergrad going straight into grad school and not really having any experience and knowing. You know, having that clinical experience I think is going to be huge when I'm out in the clinic again, it's not going to be as overwhelming. It's just okay, these are the puzzle pieces I need to fit that, you know, get me to that next step. And so, I'll be able to focus more on those [new] things versus just like the entire thing of starting from scratch of how do I even talk to somebody.

Communicating effectively with patients is an important skill for any healthcare provider, and students in bridge programs already have that skill-set. As one student mentioned, this allows them to focus on learning the higher-level skills needed to become a DPT.

Students not only found value building on their previous education and experience, but they also appreciated the opportunity to take the skills they learned in class and apply them in the clinic as they work as a PTA:

> I'm grateful that I did PTA first because like I said, it makes me feel like I know how to

> talk to people. I know how to work with patients. I know what I'm getting into versus being an undergrad going straight into grad school and not really having any experience and knowing. You know, having that clinical experience I think is going to be huge when I'm out in the clinic again, it's not going to be as overwhelming. It's just okay, these are the puzzle pieces I need to fit that, you know, get me to that next step. And so, I'll be able to focus more on those [new] things versus just like the entire thing of starting from scratch of how do I even talk to somebody.

The attributes and previous experiences students in bridge programs bring to the classroom benefits their individual learning, enhances the learning of classmates, and creates a challenging, yet enjoyable working culture for faculty.

Conclusion

Data collected and analyzed from over 280 minutes of interviews and several pages of program artifacts and documents provided rich data describing the characteristics of PTA-DPT bridge programs. The theme of access was supported by several subthemes including a description of students' nontraditional educational journey, bridge programs as a responsive strategy to current trends and needs in physical therapy, financial considerations, the format of the bridge program, and challenges that impact accessibility. The second theme of support was substantiated with data describing support from the department, faculty, their cohort, family and colleagues, and their prior experience as PTAs. Development of additional bridge programs could be leveraged to diversify the profession of physical therapy as they increase accessibility and support for nontraditional students.

Chapter V: Discussion

Introduction and Overview

The purpose of this qualitative comparative case study of two PTA-DPT bridge programs was to explore characteristics that can increase accessibility and support for nontraditional students. Most, if not all, students enrolled in PTA-DPT bridge programs fit the definition of a nontraditional student. Nontraditional students are often described as having at least one of the following characteristics: independent financial status, 25 years old or older, at least one dependent, or delayed enrollment to college (Glancey, 2018; Moody, 2019). Students may also be considered nontraditional based on their race and gender if they are in fields, such as physical therapy, where they are underrepresented (Dalporto & Tessler, 2020; National Center for Eduational Statistics, n.d.).

Data for this study was collected from current and former faculty members, many of whom also served in various administrative roles, students currently enrolled in bridge programs, and program documents and artifacts. The data was analyzed and two key themes, access and support, emerged that directly addressed the initial research questions.

RQ 1: How do participants describe environmental characteristics of PTA-DPT educational bridge programs that can increase accessibility for nontraditional students?

RQ 2: How do participants describe environmental characteristics of PTA-DPT educational bridge programs that can support retention for nontraditional students?

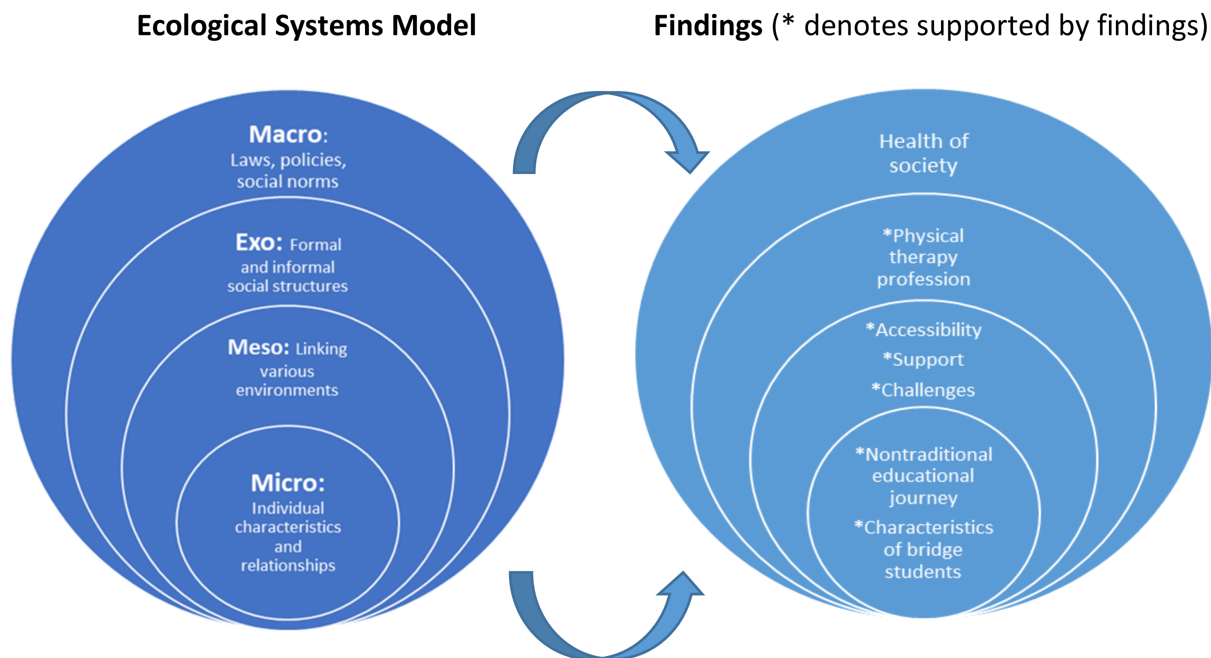
The Ecological Systems Model (1979) suggested that the environment one grew up or developed in influences every aspect of one's life. This model was originally used to describe how social environments affect a child's development but will be used to describe and position bridge students within the many contexts of their lives that influenced their journey of pursuing a

DPT degree. Although the initial research questions for this study focused solely on characteristics of bridge programs, the Ecological Systems Model suggested that all contexts, experiences, and relationships are important and worthy of consideration. Any attempt to develop students' skills in isolation without an understanding of context or prior experience will have limited success (Thompson et al., 2021).

The data collected provided a broader understanding of the many influences, including characteristics, experiences, and relationships of students within various social systems, to analyze how bridge programs meet (or do not meet) their needs. The findings and themes from this study are framed within the Ecological Systems Model (see Figure 4) and summarized to provide a comprehensive description of how the characteristics of bridge programs can increase accessibility and support for nontraditional students. In addition to summarizing the findings of the study within the context of the Ecological Systems Model, the results will be used to describe implications and offer recommendations for capitalizing on the strengths of bridge programs which are meeting the needs of nontraditional students to increase racial and ethnic diversity in physical therapy.

Figure 4

Theoretical Model and Findings



Conclusions

Findings from this study were organized into two themes of access and support which directly address the initial research questions. The findings can be positioned within the Ecological Systems Model for a comprehensive analysis of the various systems and factors that impact how PTA-DPT bridge programs increase accessibility and support for nontraditional students.

Theme #1: Access

There was significant data from participants that addressed the first research question: Describe the characteristics of PTA-DPT bridge programs that increase accessibility for nontraditional students. The findings that address research question one are described and framed using the Ecological Systems Model.

Microsystem: The Student—Nontraditional Educational Journey.

The microsystem included student characteristics and experiences that, in this context, have shaped an individual student's journey of pursuing a DPT degree. It included their immediate environments, experiences, and relationships or systems that the individual interacted with on a regular basis (Ozaki et al., 2020)

The students interviewed for this study first became PTAs prior to enrolling in a PTA-DPT bridge program for a variety of reasons; two students intended to initially pursue a DPT degree but were not accepted into a traditional program, two reported uncertainty of their career path, and three had previous careers before pursuing a career in physical therapy. These students were all able to enter the profession as a PTA and begin a career in physical therapy in less time. One student commented, "I could get my degree in 18 months and start working" (Student #7).

Once working as PTAs, students reported increased knowledge of the field which led to a desire to continue their education. Many of the students interviewed wanted more independence and autonomy in their work: "I felt like I needed more. I wanted to be independent" (Student #3). Most students, however, reported that continuing their education as a DPT was professional development and a strategy to improve their skills: "I want to do it the best I possibly could" (Student #7). Student # 6 reported they, "met my maximum potential as a PTA and was ready to move on." A few students cited job security as their rationale for pursuing a DPT degree: "There were a lot of layoffs [of PTAs]…I wanted to be more marketable and control my own future" (Student #4).

Regardless of the rationale for initially entering the field as a PTA and eventually pursuing a DPT degree, all students interviewed are considered nontraditional based on their age, independent financial status, or dependents. Many policies and practices in higher education do

not support the needs of nontraditional students (Rabourn et al., 2018). Nontraditional students are more likely to prefer online (or hybrid) courses and flexible schedules (Chen et al., 2020; Rabourn et al., 2018). Unlike traditional DPT programs which are primarily face-to-face with rigid course schedules, their bridge program effectively met the needs of these nontraditional students.

The flexible course schedule and delivery method in bridge programs allowed nontraditional students to continue working, support the needs of a family, and have flexibility in their geographic proximity to campus. In addition to students being catagorized as nontraditional based on their age, dependents, or independent financial status, students may be described as nontraditional based on their race and gender if they are preparing for fields where their identities are underrepresented, as is the case in physical therapy (National Center for Educational Statistics, n.d.). Even though 100% of participants identified as White, they are all nontraditional, and it is reasonable to assume there is some consistency between the needs of all nontraditional students. The flexibility of the curriculum may also meet the needs of students from underrepresented racial or ethnic groups. A recent study focused on overcoming challenges to increasing diversity in higher education reported many Black Americans do not finish their undergraduate degrees because of their need to join the workforce to help support a family (Green & Bedeau, 2020). Bridge programs offer a pathway for students to complete a degree as a PTA within two to three years, begin work to support their financial needs, and continue working while completing a baccalaureate degree and eventually a DPT degree.

Mesosystem: Accessibility of Bridge Programs.

The mesosystem describes interactions between an individual’s various microsystems which influences their ability to participate, in this case, in a bridge program (Ozaki et al., 2020).

The findings that described bridge students' experiences and relationships within their microsystem directly impacted the experiences and relationships they have within the mesosystem, or bridge program. Data described several characteristics of bridge programs that increase accessibility, as well as challenges experienced by faculty and students that may limit access.

Several aspects of bridge programs increase accessibility for students. The design of bridge programs allows students to continue work as a PTA which increases the financial accessibility of the program. Most nontraditional students, including all of the student participants for this study, are financially independent. They need to maintain some level of financial support for themselves, and often families, while enrolled in school: "The bridge program allows me to work, I have a family to support" (Student #5). The programs are also more accessibile for many students since much of the content is delivered synchronously or asynchronously online: "I like the flexibility of the bridge program, making it more adaptable to people's lifestyle" (Student #3). Nontraditional students tend to prefer taking classes online and having flexible course schedules and delivery methods (Chen et al., 2020; Dalporto & Tessler, 2020; Rabourn et al., 2018).

Having the ability to live anywhere in the country during their time in the program increases accessibility, but the time associated with travel to campus was a challenge. One faculty member commented on the time commitment for students, "[Many students] had to leave on a Thursday or Friday and be there all weekend, come back and then go back to work…it's not an easy way to go through school" (Faculty #4). Faculty #2 also commented on the challenges associated with travel, "We have had some situations where flights have been cancelled…during an ice storm, somebody was driving and couldn't get here on time because the roads were shut

down." Interestingly, none of the students interviewed cited travel as a significant challenge.

Students reported financial concerns as a significant challenge during their time in the bridge program. Balancing work and school can be challenging: "Financially, if I could work a little less, I would, but it doesn't always make sense to do that" (Student #1). Although they are able to continue work as a PTA during their didactic coursework, they are unable to work during the 30+ weeks of full-time clinical education. One student commented, "I found it frustrating that for eight months, we can't really work at all during our clinicals because that's full time" (Student #5). Both of the bridge programs studied are located in private institutions which, on average, have significantly higher tuition than programs located in public institutions adding to the financial challenge for students.

The pathway of entering the field as a PTA and eventually matriculating into a DPT program increases accessibility for nontraditional students. A significant number of PTA programs are located in community colleges. Community colleges provide increased access to nontraditional students primarily due to the decreased cost of education and the flexibility to maintain work while pursuing an education (Fox, H. L., & Illinois University, O. of C. C. R. and L., 2016). Although PTA education is rigorous, most programs are not considered full-time and students are able to work while they are in the program. Having community colleges, or other two-year institutions, serve as an entry point into the physical therapy profession can increase the accessibility of a career in physical therapy by decreasing access gaps.

Exosystem: Challenges Impacting Accessibility–Physical Therapy Profession.

Individual students and PTA-DPT bridge programs exist within the context of the physical therapy profession. The exosystem can be considered the link between various settings and relationships (Ozaki et al., 2020). For the purpose of this study, the exosystem described the

profession of physical therapy and relationships between individuals' various microsystems and the bridge program at the mesosystem level. The culture of physical therapy education and the profession has had an effect on bridge students' experience in intangible ways.

Bridge programs are novel in physical therapy education, and faculty participants reported challenges associated with the logistics of developing or teaching in a bridge program while also maintaining teaching responsibilities in their institution's traditional DPT program. One faculty commented, "Just the craziness of figuring out okay, number one, logistics of length of my course arrangement and my course, and then what am I doing this weekend" (Faculty #3). CAPTE, which accredits all DPT and PTA programs, was another significant challenge. Faculty #4 commented on the many "hoops to jump through" for initial accreditation of the bridge program, and Faculty #1 reported feeling overwhelmed with the amount of paperwork associated with development: "[Initial program development] felt like we were going through another accreditation report…developing a program was pretty extensive." Program development is challenging but developing a bridge program, which is rare in physical therapy education, presented extra challenges for faculty.

The bridge programs included in this study were developed in response to needs of their communities. The local community where Institution B is located was experiencing difficulty in recruiting and employing enough physical therapists to meet the needs of patients. Developing a niche program, such as the PTA-DPT bridge aligned with goals and strategic initiatives of the institutuion (Faculty #4). Institution A also consulted with local healthcare facilities to determine a need for physical therapists. They worked with, "a vice president of a rehab for a large healthcare organization and a couple of private practice owners…hoping to get more PTAs into PT" (Faculty #1).

There was an identified need to increase the number of physical therapists in their respective communities, and both bridge programs studied met that need. Despite the need for more PTs and the increased diversity of students who enrolled in bridge programs compared to traditional programs, the culture of physical therapy may not support the development of additional bridge programs. Students reported not feeling valued as PTAs, even though they were now pursuing a DPT degree. One student commented, “They kind of value PTAs less than they should” (Student #7). Student #7 also commented that “they would rather see you go back and do the traditional route versus the bridge program.”

There is dissonance between the stated values and initiatives of the physical therapy professional association, which identified “Inclusion” as a core value of the profession, and the hidden curriculum of physical therapy education, especially DPT education (American Physical Therapy Association, 2021). Hidden curriculum can be used to describe the intangible culture of a profession and is shaped by leaders in the field, policies and procedures, and the hierarchy of who has power (Bandini et al., 2017). Hierarchy exists in physical therapy; the structure and admissions practices of traditional DPT programs resemble admissions practices outlined in the Flexner report of 1910 which shaped the landscape of medical education by limiting who has access by implementing more rigorous standards for admission. Even though there is little to no correlation between grade point average and scores on the graduate requisite exam (GRE) with academic success if accepted to DPT school, especially for students from diverse groups, these admissions practices remain (Nuciforo, 2015).

Theme #2: Support

There was also significant data collected from participants that addressed the second research question: Describe the characteristics of PTA-DPT bridge programs that support

retention for nontraditional students. The findings that address research question two are also desribed and framed using the Ecological Systems Model.

Microsystem: Support from Students' Prior Experience.

Significant findings emerged which described the characteristics and previous experience of students that provided support in PTA-DPT bridge programs. These students entered the program with a base of knowledge from their PTA education and previous experience working in the field. They were able to build from previous learning and work experiences to deepen their understanding of and engagement with content presented in their DPT coursework. Faculty in this study commented that compared to students in a traditional DPT program, students in bridge programs have higher levels of initiative, focus, and participation in class: "They are totally focused, they want to learn all they can…and they bring so many more questions" (Faculty #7).

One contributing factor to the higher level of engagement is students in PTA-DPT bridge programs have a base of professional knowledge and, perhaps more importantly, have been previously socialized into the physical therapy profession. Supporting students' professional socialization is a strategy to help students from nontraditional backgrounds, especially underrepresented groups or students, who are either educationally or economically challenged to succeed in medical careers (Crews et al., 2020; National Academics of Sciences, Engineering, and Medicine, 2021).

One of the most significant strengths of students enrolled in bridge programs is their previous learning and experience as a PTA. This experience can present dissonance, however, between their previous experience and the content presented in the bridge program which can be a challenge for faculty. One faculty member commented, "They come in a lot of times with, kind of, erroneous beliefs of what the practice is in their clinic" (Faculty #6). Although rare, faculty

reported that some students may have over-confidence in their current skills and underestimate the rigor of DPT education: "Some of them come in believing that all they have to do is just get the initials, they know everything they need to know already" (Faculty #5). Students in bridge programs may need to develop skills to navigate dissonance between their experience and content presented in the bridge program.

Faculty reported some students may have overconfidence in the skills and knowledge they possess entering the bridge program. Conversely, students reported the redundancy of some content taught in the bridge program that was previously covered in their PTA education was a challenge. One student commented,

> I wish they would look maybe more into seeing if there is a way to streamline the bridge program a little bit more. I felt that a lot of things were review…I felt that a lot of things were rehashing things we already knew versus learning things that we didn't know from PTA. (Student #7)

According to another student they need to, "just fine-tune our higher skills…we're a little bit bored, we've been clinicians" (Student #5). It is difficult to discern from the data if the content that is taught and the depth to which it is taught is determined by the faculty, CAPTE standards, or most likely, a combination of both.

Mesosystem: Departmental, Faculty, and Cohort Support.

There is limited support for nontraditional students in higher education, in general (Moore et al., 2020). Nontraditional students are more likely to be first generation students and may need additional support for academic success (Cahalan et al., 2020; Rabourn et al., 2018). Community colleges have been more successful in supporting nontraditional students by making curricular and programmatic adjustments (Hatch & Toner, 2020). Bridge programs were

designed using many of the adjustments similar to community colleges such as flexible course delivery and schedules which offer support for students.

Nontraditional students are engaged academically but may require less interaction with classmates or faculty on campus (Rabourn et al., 2018). The interaction with classmates or faculty is most effective for nontraditional students if they are able to integrate their work and life experiences into their learning and if instruction is tailored to their previous experiences (Stevens, 2014). PTA-DPT bridge programs require much less on-campus, face-to-face time than traditional DPT programs. The time they do spend on campus with faculty and classmates is sufficient for students to integrate what they are learning in their coursework with their previous experience. Even with significantly less time on campus, the students interviewed stated the flexible curriculum design of the bridge program was meeting their educational needs, and they were able to effectively build off their prior learning and experiences.

Student participants in this study reported they received support from a variety of sources including the department, faculty, their cohort of fellow students, family and colleagues, and their previous education and experience as a PTA. Departmental support included assistance proactively helping students with time management strategies as well as frequent and ongoing communication and support, especially for students struggling academically. One student commented they received support, "from management [departmental] all the way down to a teacher…they are all about our success and helping us in any way possible. They also set us up with a mentor that can help you through those first two years" (Student #7).

Students reported that faculty in bridge programs are extremely supportive; they are flexible with their hours and willing to help students navigate the system and problem-solve. One student commented, "The staff are very flexible…and then, (the director) is really good at

coordinating. If they are at the end of their known resources, (the director) will reach out and look further" (Student #2).

Student participants cited support from their fellow classmates, who matriculate through the program as a cohort, as one of the biggest supports. One student commented, "Having that sounding board was super beneficial for me…sharing, this is what I'm feeling, and [they would respond] I'm feeling that, too. I thought I was the only one" (Student #6). A cohort model was cited as a strategy for promoting equity in higher education (Dalporto & Tessler, 2020). The support of classmates that are experiencing a similar challenge may enhance students' self-efficacy, or belief in one's ability to have control of their life. Self-efficacy can be built by comparing one's success to others who are in similar situations and with social persuasion (Wood & Bandura, 1989). One student commented on the collective drive of their cohort: "We've wanted this, we tried really hard, we are finally getting this opportunity (Student #3). The collaboration of students in the bridge program was cited by most participants as the biggest source of support during the bridge program.

Implications

Based on the results of this study, PTA-DPT bridge programs have characteristics that increase accessibility and support for nontraditional students. Even though 100% of the participants identified as White, they were all nontraditional. There is potential the findings could also benefit students who are not White and considered nontraditional given their underrepresentation in the field. Individuals interested in a career in physical therapy have a variety of previous educational and life experiences and may choose to become a PTA as their entry-point into the profession. For many graduates, work as a PTA is fulfilling, and their educational path ends there. For others, pursuing a DPT degree is a strategy for enhancing their

professional development and satisfaction. Students that enroll in bridge programs are typically considered nontraditional and may have unique needs compared to students enrolled in traditional programs. Traditional DPT programs may not meet these unique needs and make pursuing a DPT degree unattainable. Bridge programs, however, have increased the accessibility of a DPT education and provide additional support for nontraditional students.

The racial and ethnic diversity of society is increasing, but the current healthcare workforce, especially in physical therapy, does not match the demographics of society (Agency for Healthcare Research and Quality, 2019; Salsberg et al., 2021). The lack of racial and ethnic diversity of providers is a contributing factor in current healthcare disparities and inequity based on race (Kelly-Blake, et al., 2018; Moerchen et al., 2018). Bridge programs, which provide educational and career support for nontraditional students, including underrepresented minorities, are one strategy for improving diversity of healthcare providers (Glazer et al., 2018; Kelly-Blake et al., 2018; Wise et al., 2017).

The racial and ethnic diversity of students in the bridge programs studied is greater than in traditional DPT programs, better matching the demographics of society. The race and ethnicity of all DPT students is reported, in aggregate, by CAPTE. CAPTE does not publish the race and ethnicity of students at an individual institution. According to the 2021 DPT student statistics reported by CAPTE, 70% of all DPT students identify as White (Commission on Accreditation in Physical Therapy Education, 2023). According to faculty, who also have administrative roles, from both PTA-DPT bridge programs included in this study, 60% of their students identify as White (Faculty #2 & Faculty #5). Although all student participants were nontraditional, the sample was not representative of the racial and ethnic diversity of the program, as all participants identified as White.

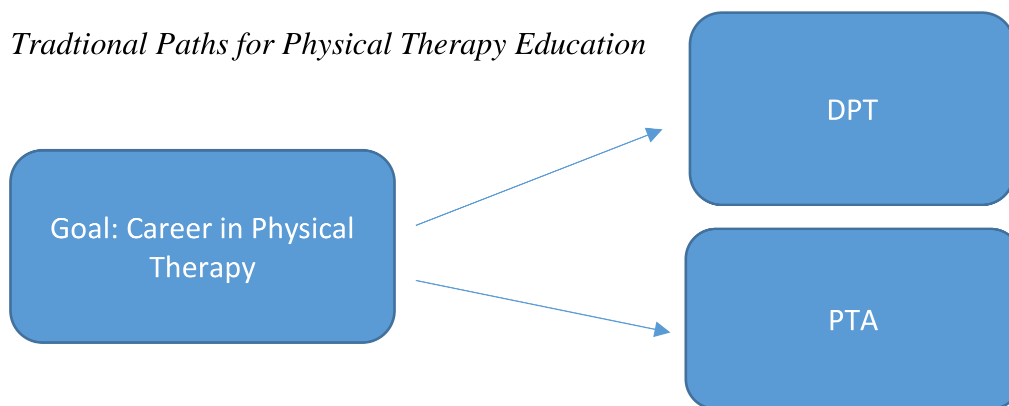
There is a deep and multifaceted mistrust of medical research and academic institutions from individuals who are not White which may have contributed to the underrepresentation of non-White participants (Otado et al., 2015; Scharff, et al., 2010). This mistrust stems from several past unethical and harmful research studies conducted on non-White participants, the most common example being the Tuskegee Syphilis Study (Otado et al., 2015; Scharff, et al., 2010). Considering nontraditional students are less likely to be White than traditional students, there is an opportunity to capitalize on the characteristics of bridge programs that meet the needs of nontraditional students to also meet the needs of students from underrepresented groups, thus increasing the racial and ethnic diversity of the profession (Rabourn et al., 2018).

A New Path

The current norm in physical therapy education is students choose work either as a PTA or DPT and pursue that educational path.

Figure 5

Tradtional Paths for Physical Therapy Education

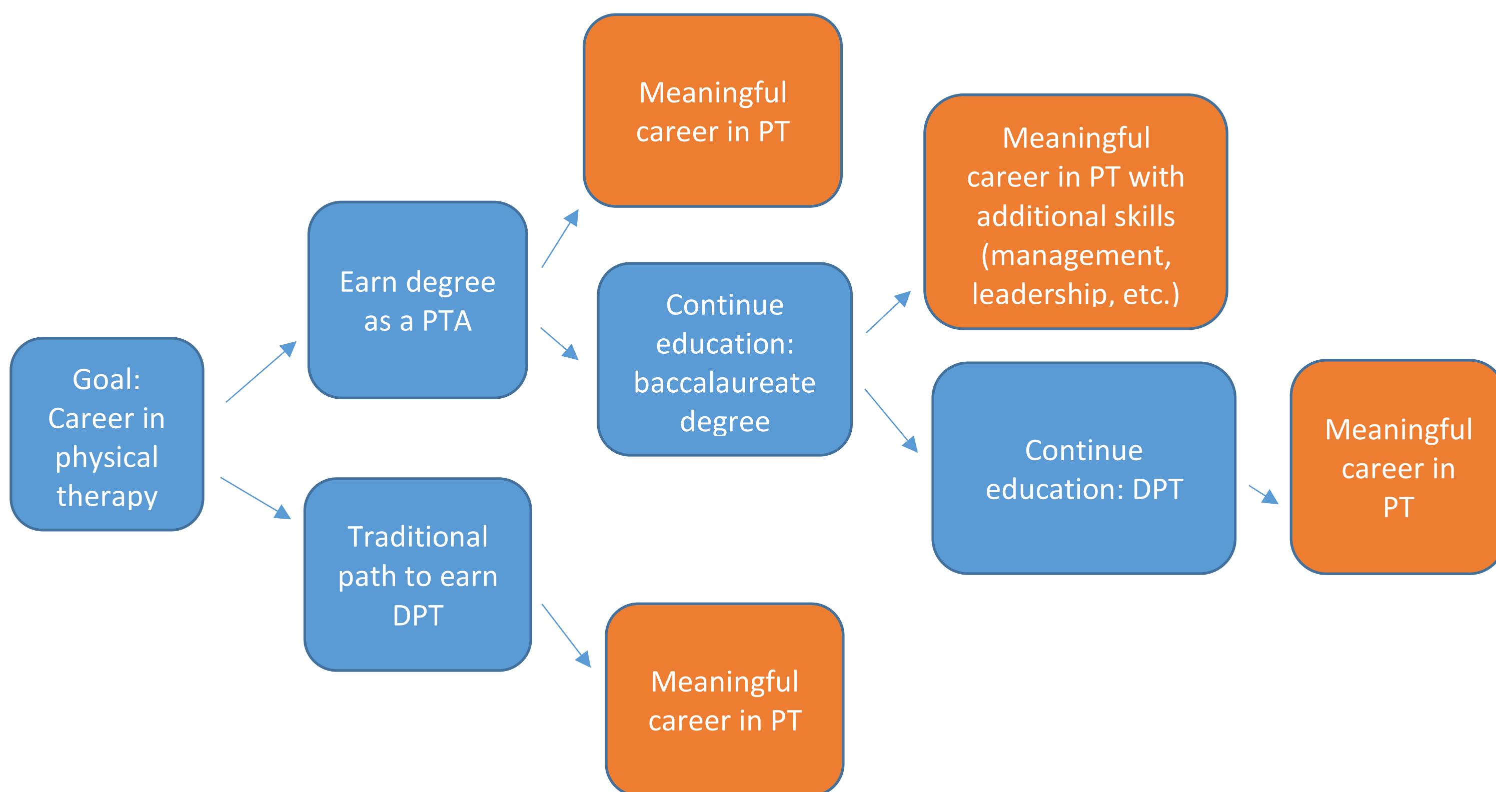


If students enter the field as a PTA, the professional educational journey typically ends. Many PTAs never consider returning to school to become a DPT due to the financial and time commitments of traditional DPT programs, previously described. PTA-DPT bridge programs are rare and designed as degree completion programs targeting potential students that are PTAs

already working in the field. There is an opportunity to rethink options and pathways for students pursuing a career in physical therapy. Using the curricular model and design of bridge programs as a viable option for DPT education, physical therapy educators could create supportive pathways allowing students several options for entering the field and ongoing professional development.

Figure 6

Conceptual Model for Additional Pathways



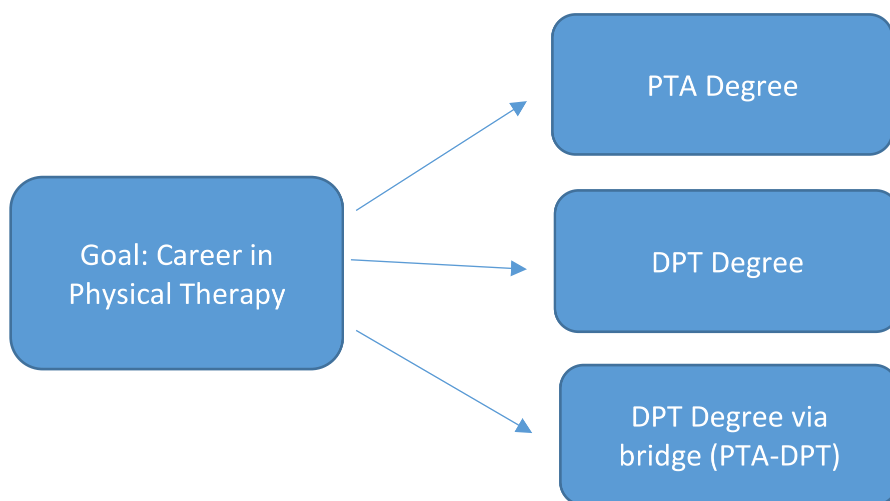
One challenge to developing clear pathways or laddering opportunities in physical therapy is few institutions house both a PTA and DPT program. PTA programs are typically housed in two-year institutions or community colleges and DPT programs in four-year institutions. There is minimal communication or collaboration between the two programs, and physical therapy education has not systematically used bridge programs as a strategy to increase

diversity (George & Dutton, 2019; Moerchen et al., 2018). Not only do community colleges or other two-year institutions adequately prepare students for a career in allied health (such as physical therapy) they are a resource for recruiting nontraditional students to four-year institutions (Sullivan Commission, 2004).

An innovative strategy would be to market the PTA-DPT bridge pathway to students interested in physical therapy as a third option in addition to the seemingly binary pathways of choosing either to pursue a PTA or DPT degree.

Figure 7

New Options for Physical Therapy Educaiton



Bridge programs are not widely known or advertised in the profession, especially to individuals who do not live in close proximity to a bridge program. Many PTAs interested in pursuing a DPT degree become aware of the bridge program either by word-of-mouth or by chance, depending on their professional network. Promoting the educational bridge of PTA-DPT education would make this more covert path overt to potential students, especially nontraditional students.

Supportive and Collaborative Learning Environment

A potential drawback of bridge programs, in general, is that students enrolled in bridge or pipeline programs have reported feeling isolated and made constantly aware of their identity (Edgoose et al., 2019). Since all students in PTA-DPT bridge programs have the shared experience of work as a PTA, regardless of their individual paths, the risk of isolation is less. Cohort models can support nontraditional students who have similar experiences (Dalporto & Tessler, 2020). One student reported, "We all have a similar background, we were all PTAs…we banded together pretty quickly…I think it's just we're all in the same boat…help each other through the way" (Student #3). In addition to all working as PTAs, many of the students in the bridge program have families and are balancing work, school, and young children: "My classmates have been on Zoom with me as my daughter, like, projectile vomited in the background…so we see a lot more of each other, like home life that you wouldn't see with a traditional program" (Student #2). Unlike the competition that may exist amongst students in a traditional DPT program with high and competative admissions criteria, students in bridge programs reported collaboration and support.

Admission to a traditional DPT program is competitive. In 2021, there was an average of 384 applicants (266 qualified applicants) to each DPT program. The average number of students each program admits is 45 students (Commission on Accreditation in Physical Therapy Education, 2023). Although many DPT programs are transitioning to more holistic admissions practices, many still rely on merit-based criteria. Students in traditional DPT programs typically have high grade point averages and scores on standardized tests. These high scores were required to earn a spot in a DPT program. PTA programs, however, have an average of 50 applicants (34 qualified) and admit 24 students, on average (Commission on Accreditation in Physical Therapy

Education, 2023). There is more competition for admission to traditional DPT versus PTA programs. Admission to a PTA-DPT bridge program is less competitive compared to a traditional program. Admissions data for bridge programs is reported by CAPTE in aggregate with all DPT programs. Based on data provided by study participants, there is less competition for admission to a bridge versus traditional DPT program. One of the bridge programs included in this study is a new bridge program and has only accepted two cohorts which are not yet at capacity. The other program, an established program, accepts 36 students per cohort and averages 70 applicants per year (Faculty #6).

A Responsive Strategy for Trends in Society and Higher Education

Traditional DPT program recruitment strategies often include presenting at career fairs or engaging with students in high school. This stategy may not be effective, however, for increasing the number of nontraditional students which can improve the diversity of physical therapy providers. Students with racial and ethnic identifies that are underrepresented in the field of physical therapy are considered nontraditional, and typical recruitment strategies have not been effective in increasing the diversity of students and providers based on race and ethnicity (Dalporto & Tessler, 2020; National Center for Educational Statistics, n.d.).

High school students from underrepresented racial and ethnic groups often face financial barriers to earning an advanced degree, such as a DPT. The median wealth for students from Black and Latino families, for example, is significantly less than for White families. White families have 41 times higher median wealth than Black families and 22 times higher than Latino families (Cahalan et al., 2020). Earning an advanced degree is expensive; the average cost of DPT education is $69,000 at public institutions and $120,000 at private institutions (Commission on Accreditation in Physical Therapy Education, 2023). These fees do not include the cost of a

baccalaureate degree which is required prior to earning a DPT degree. The cost of DPT education may prohibit or deter many students from underrepresented groups from pursuing a career in physical therapy. Recruiting students from diverse groups in high school to a traditional DPT program may not be effective due to the income and wealth disparities that exist based on race. Current recruitment efforts are offering something (a DPT education) to potential students that many, for financial reasons, just cannot have.

Many nontraditional and underrepresented students are eligible for Pell grants based on their socioeconomic status and significant financial need (Federal Student Aid office). Students who receive Pell grants are more likely to attend a two-year versus a four-year institution (National Center for Education Statistics). Most PTA programs are located in two-year institutions. It is reasonable to assume that entering the field as a PTA first may be more financially achievable for many nontraditional students. Recruiting students to become a DPT via a PTA to DPT pathway may be much more effective in increasing the diversity of the profession. One benefit of PTA-DPT bridge programs is students have the ability to continue working as a PTA earning, on average, $29.20 per hour, to maintain some level of income and/or health insurance (U.S. Bureau of Labor Statistics, 2021). Data collected from both students and faculty for this study indicated the cost of eduction and the need to financially support oneself and a family were significant challenges in pursuing a DPT degree.

Once they earn a degree as a PTA, students interested in pursuing additional education have options that would allow them to maintain a source of income while taking classes. For students that desire a baccalaureate degree, many four-year institutions offer online or hybrid learning opportunities to complete a degree which allows students to maintain employment. Unlike a traditional DPT program which may limit the ability of students to continue work, PTA-

DPT bridge programs are designed to support the learners' ability to maintain work as a PTA.

Given the racial diversity of society will continue to increase and the number of traditional-aged college students is projected to decrease, bridge programs may be a strategy to increase the diversity of the profession, and maintain a solid workforce, overall. Nontraditional learners, who tend to prefer flexible learning options such as an online or hybrid format, are approximately 50% of the students enrolled in higher education and that number is projected to grow as the number of traditional college-aged students in society is decreasing (Cahalan et al., 2020; Rabourn et al., 2018). Given nearly all DPT programs are currently delivered in a traditional format, DPT education has not only been unsuccessful in increasing the diversity of providers but has also, arguably, not appropriately planned for current trends in higher education.

A Lasting Legacy

Nontraditional students do not lack talent, ability, or potential to be excellent physical therapy clinicians. Nontraditional students, in general, have been excluded from various opportunities in higher education based on systemic racism and a history of unequal access to resources (Dalporto & Tessler, 2020). Throughout the history of higher education in the United States, nontraditional students have presented with unique education and support needs but many institutions have failed to meet these needs (Remenick, 2019). Not only do faculty need to have an understanding of and appreciation for the lived experiences of nontraditional students, but institutions need to embrace more flexible policies and practices and offer resources specific for nontraditional students (Remenick, 2019). Nontraditional students who have dependents, for example, often need assistance accessing affordable childcare (Glancey, 2018; Hatch & Toner, 2020; Wood, 2023). Nontraditional students who are first-generation often benefit from the support of a cohort of peers who have similar needs and experiences (Dalporto & Tessler, 2020).

Students who are veterans may need additional support transitioning from their time of service to higher education (Wood, 2023).

Nontraditional students who identify as a race or ethnicity that is underrepresented in their given field of study also have specific needs that have often been overlooked. It is imperative to address race as a social construct and not a biological reality. Due to the history of systemic racism in our society, an individual's race impacts their social, educational, and political reality (Adelman, 2003). It is the responsibility of leaders in the field of physical therapy, and physical therapy education in particular, to consider the unique needs of nontraditional students and to account for systemic racism and the barriers that exist for students from underrepresented groups that may not exist for students from the dominant group.

Historically, higher education was not intended to be accessible for everyone, only a wealthy few (Anderberg, 2014; Thelin, 2018). Although access has improved, higher education in the current form and in today's society "does not increase social mobility but reinforces existing barriers" (The Economist, 2015, p. 2). If leaders in physical therapy intend to improve the diversity of the workforce as a strategy to improve health equity, it is important to acknowledge systemic racism that is pervasive in our society and the resultant disparities. In the United States, White families have significantly more accumulated wealth than non-White families (Rodriguez, 2017). In addition to White families having higher net worth or accumulated wealth, on average, White neighborhoods have access to more resources such as quality education which prepares students for success in higher education.

There is inequity in the educational preparation of non-White children. Minority students are more likely to be located in urban or rural areas that are economically disadvantaged. Many four-year institutions favor students who have taken advanced placement (AP) classes which

may not be available for students attending lower-income high schools (Rosenberg, 2016). DPT programs may prefer to recruit students from highly acclaimed universities or base admissions decisions on GPA or scores from standardized tests. The education level and wealth of an applicant's parents are strong predictors of performance on standardized exams, which have been historically used in DPT admissions decisions and may disadvantage many non-White students (Sacks, 2001; Smith, 2011). Some DPT programs are attempting to combat the disparity in educational preparation of applicants by transitioning from merit-based criteria to holistic admission practices. Even with the transition to holistic admissions, the income level of parents is predictive of success while in college and graduation rates. Students who are first generation, in particular, need additional support to matriculate through to graduation; changing admission practices is not enough (Dynarski, 2016).

To actually increase racial and ethnic diversity of providers in the physical therapy profession and work towards health equity, it is important to account for racism and address the past and current social, educational, and political barriers that exist for students who are not White. Achieving health equity will require acknowledging systemic racism in healthcare by critically analyzing the demographics of the workforce and patients who are disproportionately affected by disparities and reviewing current policies, procedures, and practices that are barriers to increasing the diversity of the workforce (Mason, 2020). Physical therapy educators have the potential to either perpetuate racism by not addressing the legacy of systemic racism which has shaped the culture of higher education or dismantle racism which starts with acknowledging the power and privilege of White faculty and students. The current structure of most traditional DPT programs may disadvantage non-White individuals. Bridge programs may be one strategy for

addressing barriers and increasing the racial and ethnic diversity of the physical therapy workforce.

Conclusion

This study used a qualitative comparative case study design to explore the characteristics of two PTA-DPT bridge programs' efforts to increase accessibility and support for nontraditional students. The case study design was used to describe two individual units of study, the bridge programs, as detailed and complete as possible with a specific focus on context (Patten & Newhart, 2018). Two primary themes emerged from the findings: access and support. Several subthemes and sub-subthemes were described and framed using the Ecological Systems Model. The bridge programs themselves have certain characteristics, including the format of the program that increase accessibility and the support students receive from faculty, but these characteristics alone were not able to fully address the research questions without considering various other systems that impact a student's ability to pursue a degree as a DPT.

Several subthemes, including a student's educational journey and support from previous work experience as a PTA, were described as part of the microsystem or the direct environment and experiences affecting a student. Other subthemes including the format of the bridge programs, financial considerations, and support from the department, faculty, cohort, and family and colleagues were framed as the mesosystem or characteristics of the bridge programs, themselves. The exosystem, or profession of physical therapy, which provided context was described including the impact of existing biases and challenges to proliferation of additional bridge programs.

PTA-DPT educational bridge programs have characteristics that increase accessibility and support for nontraditional students. The most significant measures of success in DPT

education include graduation and licensure pass rates. Program outcomes are only available for one of the two programs included in this study (see Table 5) as one was only recently developed and has not yet graduated a cohort of students.

Table 5

Program Outcomes

	Accreditation Requirements (CAPTE)	Bridge Program Outcomes	Traditional DPT Program Outcomes
Ultimate Licensure Pass Rate	85%	95%	97%
Graduation Rate	80%	100%	94.6%
Employment Rate	90%	Not reported	100%

Note. Information gathered from Commission on Accreditation in Physical Therapy Education (2020) and University of Findlay (n.d.).

Both the bridge and traditional DPT programs at established institutions included in this study reported outcomes well above the CAPTE minimum standards required for ongoing accreditation. There is little difference between the licensure pass rates of the bridge versus traditional DPT students, and graduation rates for the bridge program are higher than the traditional program. These outcomes indicate that both the institution's bridge and traditional DPT program are adequately preparing students to pass the licensure exam and that the bridge program may increase support for students given their higher graduation rate.

It is unclear why employment rates were not reported for the bridge program. Implications from this study described the need for a shift in the culture of physical therapy education and profession, as a whole, to embrace and promote a new educational path which includes the bridge from PTA to DPT. In order for a cultural shift, however, the lasting legacy from the history of higher education, including medical education, must be acknowledged and

addressed. Bridge programs not only serve as a strategy for diversifying the physical therapy profession but align with current trends in society and higher education.

Recommendations for Further Research

This study was designed to identify the characteristics of PTA-DPT bridge programs that increase accessibility and support for nontraditional students. All of the student participants were considered nontraditional but 100% identified as White. The first recommendation for future research is to replicate the study and recruit students who do not identify as White for participation. It would also be important to partner with a fellow researcher who does not identify as White. The researcher recognizes her power and privilege as a White female and her limited ability to accurately capture the lived experience of non-White students. Although connections were made between the needs of nontraditional students and students from underrepresented groups, it should be noted that the generalizability of the findings are limited. The perspectives of non-White students were not captured in this study and the results were filtered through the lens of the researcher, who is White.

A second recommendation would be to compare the experiences of PTAs who further their education by enrolling in a PTA-DPT bridge program and PTAs who enroll in a traditional DPT program. A study comparing the educational experiences of PTAs who enroll in a bridge versus traditional DPT program may provide additional information on the characteristics of bridge programs that do (or do not) increase accessibility and support.

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Appendix A: Standard Interview and Focus Group Protocol Questions

Administrators or Faculty Involved in the Inception of the PTA-DPT Bridge Program

1. Please describe how your institution made the decision to start a PTA-DPT bridge program.

2. What were the challenges you encountered developing the program?

3. What specific core components make your program unique?

4. Who is an ideal candidate or what specific skillset would be ideal for your program? Do you directly market your program to these ideal candidates?

5. What would be the greatest hurdle a student would have to overcome to enter a bridge program? Are there contingencies or supports built in to help them overcome these hurdles?

Third-Year PTA Students

1. Describe your educational/personal journey for becoming a PTA

2. How much family support (emotional, mental, and/or financial) did you have in making your decision to become a DPT?

3. Why did you choose a PTA-DPT bridge program versus a traditional DPT program?

4. What or who has supported your success while in the bridge program?

5. Some people might say that all physical therapists should go through a traditional DPT program, not a bridge program. What would you say to them?

Current Faculty

1. What benefits or challenges do you encounter working with DPT students who were previously PTAs?

2. Please describe differences between students in the PTA-DPT bridge program and students who matriculate through the traditional DPT curriculum?

3. Describe the type of student who may be interested in your program or who chooses to advance their education through a pipeline or bridge program.

4. What supports are in place to assist students in matriculating through the program?