

The Association Between Program Characteristics and Enrollment in  
Postprofessional Doctorate Programs in Physical Therapy

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## ABSTRACT

For nearly three decades, there has been a shortage of doctoral-trained faculty and researchers in physical therapy and currently only a small number of programs offer an advanced doctoral degree in the field. Little is known about factors related to program choice for students in these programs. This study examined the following research problem: Are program characteristics/factors associated with enrollment (program choice) in advanced doctoral degree programs in physical therapy? The purpose of this quantitative, non-experimental survey study was to determine which program characteristics, if any, were associated with enrollment. The findings from this study may be valuable to administrators for the recruitment of students, which is necessary to increase the number of doctoral-trained faculty. An author-developed, self-administered questionnaire was used to collect data from the 36 active programs in the United States as identified by the American Physical Therapy Association, and was distributed for completion to the directors of these programs. The Pearson and Spearman correlation coefficients were used to determine if program factors measured on the interval and ordinal scales respectively were correlated with enrollment. Alumni enrollment was found to have a positive relationship ( $p < .05$ ) with the number of financial aid awards given,  $r(16) = .59$ ,  $p = .01$ , while international student enrollment had a positive relationship,  $r(17) = .52$ ,  $p = .02$  with the number of specializations offered. Fisher's exact test and Fisher's exact test extended were used to determine if enrollment was independent of factors measured on the nominal scale. Full-time enrollment was found not to be

independent of delivery format,  $\chi^2(6, N = 19) = 28.85, p = .003$ , as was international student enrollment,  $\chi^2(3, N = 19) = 10.11, p = .01$ . Program administrators are encouraged to consider the relationship between enrollment and financial aid. Also, programs with frequent campus visit requirements are encouraged to focus their recruitment efforts locally. More data are needed to better understand program selection for this population. Those therapists that are most likely to enter academia need to be identified. Attitude surveys with prospective students and qualitative studies with current and past students are recommended.

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## CHAPTER 1: INTRODUCTION

Since 1985, the American Physical Therapy Association (APTA) has recognized a shortage of physical therapy faculty and researchers educated at the postprofessional advanced doctorate level (American Physical Therapy Association [APTA], 1985). As a result of the recent change in entry-level physical therapist education from a professional master's degree to a professional clinical doctorate degree, the need for more doctoral-trained faculty is likely to increase (Brueilly, Williamson, & Morris, 2007). Unfortunately, there are only 36 active advanced (academic and research) doctorate programs in physical therapy in the United States (U.S.) and some of these programs are not easily accessible to clinicians who wish to pursue a degree while continuing to work in their current positions (APTA, 2005).

The purpose of this research study was to measure the association between program characteristics/factors and enrollment in advanced doctorate programs (Ph.D., D.Sc./Sc.D., D.H.S.) in physical therapy. The findings from this study may assist administrators in program development and student recruitment, which may, in turn, help to increase the number of doctoral-level faculty and researchers in the field of physical therapy.

This chapter will begin with a presentation of the background of the research problem that was addressed in this study and will be followed by a discussion of both the research problem and the purpose of the study. An overview of the theoretical framework will be provided, after which the research questions and hypotheses will be presented. The nature and significance of the

study will then be discussed and key terms will be defined. Finally, a summary of key points will be provided.

### *Background*

Physical therapy, briefly defined as “the treatment of disorders with physical agents and methods...to assist in habilitating or rehabilitating patients and in restoring function after an illness or injury,” (Mosby’s Dictionary of Medicine, Nursing, & Health Professions, 2006, p. 1460) was founded in the U.S. during the early part of the 20th century when World War I and the polio epidemics of 1894 and 1916 left scores of people with long term disabilities (Moffat, 1996; Murphy, 1995). The first formal training programs, which were 3 months in length, targeted female students with previous training in physical education or nursing (Nieland, 2003). World War II, the Social Security Act of 1965, the polio epidemics of the 1950s, the Korean and Vietnam Wars, new advances in medicine (e.g., total joint replacements and heart transplants), as well as increased longevity spurred the continuing need for physical therapists through the end of the century (Moffat; Murphy).

Like the field of physical therapy, physical therapy education has changed dramatically over the past ninety years. According to the *2005 Fact Sheet* (Commission on Accreditation in Physical Therapy Education [CAPTE], 2005), the typical physical therapist education program is a four-plus-three program. This means that applicants must have a 4-year undergraduate degree prior to matriculating into the physical therapy program. After admission, which follows a competitive selection process, students spend an average of 3 years in the

professional program.

Currently, 196 of the 211 entry-level physical therapist education programs offer the Doctor of Physical Therapy (DPT) degree—a clinical doctorate degree—as the first professional degree (CAPTE, 2009). The Commission on Accreditation in Physical Therapy Education (2006a) has reported that all but one of the remaining master's degree programs have indicated plans to transition to the DPT by 2010, a move that supports the current APTA Vision Sentence:

By 2020, physical therapy will be provided by physical therapists who are doctors of physical therapy, recognized by consumers and other health care professionals as the practitioners of choice to whom consumers have direct access for the diagnosis of, interventions for, and prevention of impairments, functional limitations, and disabilities related to movement, function, and health. (APTA, 2000, p.1)

Historically, many physical therapist education programs have emphasized the clinical competence of faculty over the need for faculty to have a doctorate degree, to perform research, or to publish (Lehmann, McTernan, & Friedman, 1986). This trend has, to some degree, contributed to the lack of doctoral-level faculty and researchers in the field, a problem first addressed by the APTA in 1985 (Elder & Nick, 1995). Since that time, the CAPTE has increased the expected qualifications for faculty. A non-scientific review of vacancy notices conducted by the author in 2006 revealed that an earned postprofessional advanced doctorate degree was the minimum qualification for

nearly all advertised positions.

One long-standing problem that practicing physical therapists who wish to pursue an advanced doctorate degree have faced is finding an appropriate program that is convenient and which allows the practitioner to continue working in a current position (Lehmann, et al., 1986). Such constraints have led many therapists to pursue advanced doctorate degrees in fields such as education, public health, and business administration in lieu of degrees in the clinical sciences like physical therapy, rehabilitation science, and health science (Ball, Rosenberg, & Gandy, 2002; Lehmann, et al.).

Recent advances in technology and the resulting changes in education delivery methods, including the use of the Internet, now allow programs in the clinical sciences the option to offer at least a portion of their curricula in a format that is more convenient for working clinicians (Ball, et al., 2002; Lehmann, et al., 1986). This characteristic and others may be important factors in program selection and enrollment for students in advanced doctorate programs in physical therapy. Although numerous researchers have studied factors related to program choice in graduate programs (Kallio, 1995; Melaney, 1987; Olson & King, 1985; Olson, 1992; Webb, 1993), in doctoral programs in higher education administration (Poock & Love, 2001; Talbot, Maier, & Rushlau, 1996), in medical schools (Cleave-Hogg, McLean, & Cappe, 1994), and in entry-level physical therapy programs (Ancrum-Small, Hagan, Kalbach, Smith-Wagner, & Shepard, 2000; Johanson, 2004, 2007; Moore, Beitman, Rajan, et al., 2003; Wilcox, Weber, & Andrew, 2005), little is known about program choice factors for

students in postprofessional advanced doctorate programs in physical therapy or other rehabilitation sciences.

### *Problem Statement*

With the change in entry-level physical therapist education from a professional master's degree to a professional clinical doctorate, the long-standing shortage of doctoral-trained faculty, faculty vacancy rates, and the aging professoriate, more doctoral-trained faculty are needed in physical therapy education (Brueilly, et al., 2007; CAPTE, 2005; Elder & Nick, 1995). Current and future needs for physical therapy faculty are primarily in the basic and clinical sciences (Ball, et al., 2002). Common areas of study for an advanced doctorate degree in the clinical sciences include physical therapy, rehabilitation science, movement science, and health science. Unfortunately, there are only 36 active postprofessional advanced doctorate programs in physical therapy located in the U.S. (APTA, 2008), making it difficult for many practicing clinicians to pursue an advanced doctorate degree while continuing to work (Lehmann, et al., 1986). In addition, little is known about program selection factors for students in these programs. These issues prompted the following research problem, which was examined in this study: Are program characteristics/factors associated with enrollment in advanced doctorate programs in physical therapy?

### *Purpose*

The purpose of this quantitative, non-experimental survey study was to determine if program characteristics/factors were associated with enrollment. The author-developed questionnaire was administered to the program directors of all

36 active postprofessional advanced doctorate programs in physical therapy located in the U.S. as identified by the APTA (2008), utilizing the Tailored Design Method (Dillman, 2007).

The dependent variables were total enrollment, full-time enrollment, part-time enrollment, alumni enrollment, and international enrollment. Independent variables were divided into two categories: cost characteristics and program/institution characteristics. Cost variables included explicit cost (tuition), financial aid awards, and annual stipend amount for graduate, teaching, and research assistants. Program/institution characteristics included institutional funding/support, Carnegie classification, accreditation status, delivery format, program length, reputation of the affiliated entry-level physical therapist education program, type of degree awarded, graduation rate, discipline of study, number of specialization areas, number of application requirements beyond the graduate school application, and primary recruitment method.

Program length, measured in semester hours, was a confounding variable (Ary, Jacobs, & Razavieh, 2002), because the variable was used to determine explicit cost, which was calculated by multiplying the number of semester credit hours by the cost of tuition per credit hour. Part-time enrollment and full-time enrollment were also confounding variables as these variables were summed to calculate total enrollment. Mediating variables (Baron & Kenny, 1986) that were not measured because they were beyond the scope of this dissertation were the following: interactions between students and program representatives including faculty, staff, students, and alumni; student debt; influence of family, friends,

colleagues, and employers; campus environment; economic climate; and socioeconomic factors such as income, marital status, parenthood status, employment status, and age.

### *Theoretical Framework*

For nearly 25 years, researchers have studied factors that are believed to influence graduate program selectivity (Kallio, 1995; Melaney, 1987; Olson & King, 1985; Olson, 1992; Webb, 1993). Historically, the factors reported as having the greatest influence on graduate students' initial consideration of a program or institution have been location, cost/finances, reputation, and personal contact with faculty (Olson & King, 1985; Olson, 1992). The factors reported as having the greatest influence on a graduate students' final decision to enroll in a specific program or at a specific institution have included location, cost, financial aid, reputation, positive interaction with faculty, and personal factors such as spouse, family, and work-related concerns (Kallio, 1995; Melaney, 1987; Olson, 1992; Olson & King, 1985; Webb, 1993).

Like graduate students, doctoral students in higher education administration have also been found to be strongly influenced by location, cost, reputation, and positive interaction with faculty and staff (Talbot, et al., 1996; Pooch & Love, 2001). In addition, flexibility was determined to be a very important factor for these students when choosing a doctoral program (Pooch & Love).

As reported by Pooch & Love (2001), flexibility, along with convenience, time commitment, and program length are factors that have emerged in the

contemporary literature (Detwiel, Baird, Jensen, & Threlkeld, 1999; Lombardo, States, Godwin, & Libera, 2001) as having a strong influence on enrollment.

Potential transitional-doctorate of physical therapy (t-DPT) students were reported to also be most greatly influenced by cost and financial aid, as well as convenience and flexibility (Detwiel, et al.; Lombardo, et al.). For these working professionals, time commitment and program length were also important factors in deciding whether or not to enroll in a t-DPT degree program (Detwiel, et al.; Lombardo, et al.).

Unfortunately, the current literature provides very limited information regarding program choice factors for advanced (academic and research) doctoral students. The information that has been reported (Poock & Love, 2001; Talbot et al., 1996) has been specific to students in higher education administration and cannot be generalized to doctoral students in the rehabilitation and health sciences, including physical therapy.

### *Research Questions and Hypotheses*

Over the past twenty years, entry-level physical therapist education has made the transition from the baccalaureate degree to the master's degree, and finally to the clinical doctorate degree. Throughout this same period of time, there has continued to be a lack of doctoral-trained faculty and researchers in the field. To determine if program characteristics/factors are associated with enrollment in advanced doctoral program in physical therapy, data regarding program and institution characteristics, cost, and enrollment were collected. These data were then analyzed to determine if there was an association between program

characteristics/factors and the number of students enrolled.

The research questions that addressed the stated research problem were:

(a) Does a relationship exist between enrollment in postprofessional advanced doctoral programs in physical therapy and explicit cost, financial aid, stipend amount, program length, reputation of the affiliated entry-level physical therapist education program, graduation rate, number of specializations offered, or number of application requirements beyond the graduate school application; and (b) Is enrollment independent of Carnegie classification, type of institutional funding/support, accreditation status, delivery format, type of degree awarded, degree discipline, or primary recruitment method?

The hypotheses to be tested were taken from the research questions.

The null hypotheses ( $H_0$ ) and alternative hypotheses ( $H_a$ ) for question (a) were presented using the Pearson product moment correlation coefficient and the Spearman rank order correlation coefficient, depending on the normality of the data and the scale of measurement for the variables being tested. The  $H_0$  and  $H_a$  for question (b) were presented using the Fisher's exact test and Fisher's exact test extended for independent variables measured on the nominal scale.

$H_0$ : There is no correlation between explicit cost and enrollment in postprofessional advanced doctorate programs in physical therapy.

$H_a$ : There is a correlation between explicit cost and enrollment in postprofessional advanced doctorate programs in physical therapy.

$H_0$ : There is no correlation between financial aid and enrollment in postprofessional advanced doctorate programs in physical therapy.

$H_a$ : There is a correlation between financial aid and enrollment in postprofessional advanced doctorate programs in physical therapy.

$H_o$ : There is no correlation between the annual stipend amount and enrollment in postprofessional advanced doctorate programs in physical therapy.

$H_a$ : There is a correlation between the annual stipend amount and enrollment in postprofessional advanced doctorate programs in physical therapy.

$H_o$ : There is no correlation between program length and enrollment in postprofessional advanced doctorate programs in physical therapy.

$H_a$ : There is a correlation between program length and enrollment in postprofessional advanced doctorate programs in physical therapy.

$H_o$ : There is no correlation between the reputation of the affiliated entry-level programs and enrollment in postprofessional advanced doctorate programs in physical therapy.

$H_a$ : There is a correlation between the reputation of the affiliated entry-level programs and enrollment in postprofessional advanced doctorate programs in physical therapy.

$H_o$ : There is no correlation between graduation rate and enrollment in postprofessional advanced doctorate programs in physical therapy.

$H_a$ : There is a correlation between graduation rate and enrollment in postprofessional advanced doctorate programs in physical therapy.

$H_o$ : There is no correlation between the number of specializations offered and enrollment in postprofessional advanced doctorate programs in physical therapy.

$H_a$ : There is a correlation between the number of specializations offered and enrollment in postprofessional advanced doctorate programs in physical therapy.

$H_o$ : There is no correlation between the number of application requirements beyond the graduate school application and enrollment in postprofessional advanced doctorate programs in physical therapy.

$H_a$ : There is a correlation between the number of application requirements beyond the graduate school application and enrollment in postprofessional advanced doctorate programs in physical therapy.

$H_o$ : Enrollment in postprofessional advanced doctorate programs in physical therapy is independent of Carnegie classification.

$H_a$ : Enrollment in postprofessional advanced doctorate programs in physical therapy is not independent of Carnegie classification.

$H_o$ : Enrollment in postprofessional advanced doctorate programs in physical therapy is independent of accreditation status.

$H_a$ : Enrollment in postprofessional advanced doctorate programs in physical therapy is not independent of accreditation status.

$H_o$ : Enrollment in postprofessional advanced doctorate programs in physical therapy is independent of delivery format.

$H_a$ : Enrollment in postprofessional advanced doctorate programs in physical therapy is not independent of delivery format.

$H_o$ : Enrollment in postprofessional advanced doctorate programs in physical therapy is independent of the type of doctoral degree offered.

$H_a$ : Enrollment in postprofessional advanced doctorate programs in physical therapy is not independent of the type of doctoral degree offered.

$H_o$ : Enrollment in postprofessional advanced doctorate programs in physical therapy is independent of degree discipline.

$H_a$ : Enrollment in postprofessional advanced doctorate programs in physical therapy is not independent of degree discipline.

$H_o$ : Enrollment in postprofessional advanced doctorate programs in physical therapy is independent of primary recruitment method.

$H_a$ : Enrollment in postprofessional advanced doctorate programs in physical therapy is not independent of primary recruitment method.

$H_o$ : Enrollment in postprofessional advanced doctorate programs in physical therapy is independent of type of institutional funding/support.

H<sub>a</sub>: Enrollment in postprofessional advanced doctorate programs in physical therapy is not independent of type of institutional funding/support.

### *Nature of the Study*

This dissertation study was a quantitative, non-experimental, survey research study. An author-developed questionnaire was used to collect data and was administered using the Tailored Design Method (Dillman, 2007). Questions were developed based on previous research (Ancrum-Small et al., 2000; Burgess et al., 2004; Detwiler et al., 1999; Lombardo et al., 2001; Montgomery & Powell, 2006; Mohr, Ingram, Hayes, & Du, 2005; Poock & Love, 2001; Talbot et al., 1996; Thomas et al., 2003) and the *2007-2008 Fact Sheet for Physical Therapy Education Programs* (CAPTE, 2008), and were written and organized based on the recommendations of Dillman (2007).

Data were collected for the following dependent variables: total enrollment, full-time enrollment, part-time enrollment, alumni enrollment, and international student enrollment. Independent variables included explicit cost (tuition), financial aid, annual stipend, institutional funding/support, Carnegie classification, accreditation status, delivery format, program length, reputation of the affiliated entry-level physical therapist education program, type of degree awarded, graduation rate, discipline of study, number of application requirements beyond the graduate school application, number of specialization areas, and recruitment methods.

Fisher's exact test and Fisher's exact test extended were used to

determine if total enrollment, full-time enrollment, part-time enrollment, alumni enrollment, and international student enrollment were associated with the independent variables (program characteristics/factors) measured on the nominal scale (Norusis, 2004). The Pearson product-moment correlation coefficient and Spearman rank order correlation coefficient were used to determine if relationships existed between enrollment (total, full-time, part-time, alumni, and international) and the independent variables (program characteristics) measured on the ordinal and interval scales (Gall, Gall, & Borg, 2007).

### *Significance of the Study*

This study of the association between program characteristics/factors and enrollment in postprofessional advanced doctoral degree programs was important for several reasons. First, the data collected provides potential students and other interested parties with a description of the “typical” postprofessional doctoral program. Currently, the CAPTE (2005) provides a description of the typical entry-level physical therapy program, but neither the CAPTE nor the APTA has provided descriptive information, other than contact information, for the postprofessional advanced doctoral programs since 2001 (APTA, 2001).

Second, determining the association between program characteristics and enrollment may provide physical therapist education program administrators with useful information for evaluating and modifying current programs, as well as for developing new programs. For example, if a distance format was found to be associated with enrollment and explicit cost was found to have either a negative

relationship, a small positive relationship, or no relationship with enrollment, university officials may decide to increase tuition in order to pay for the development and implementation of more distance learning components into the curriculum.

Third, the results of this study may provide program administrators with important information about student recruitment. Finally, the creation of programs that are more convenient for practicing physical therapists and academicians may result in increased enrollments and, in time, a reduction in the shortage of doctoral-level physical therapy faculty and researchers.

### *Definitions*

To further clarify the topic of study, several key terms were defined.

*Accreditation status.* An accredited program was defined as a postprofessional advanced doctorate program in physical therapy or a closely related field that was accredited by one of the following regional accrediting agencies at the time data were collected: the Middle State Association of Colleges and Schools, the New England Association of Schools and Colleges, the North Central Association of Colleges and Schools, the Northwest Commission on Colleges and Universities, the Southern Association of Colleges and Schools, or the Western Association of Schools and Colleges (U.S. Department of Education [ED], 2006).

*Alumni enrollment* was defined as the number of students currently officially registered on the roll (U.S. Department of Education [ED], n.d.b) of each institution's postprofessional advanced doctorate program in physical therapy

who were alumni of the institution.

*Application requirements* were operationally defined as the number of items required, in addition to the standard graduate school application, for each program's application process (R. Mabey, personal communication, August 26, 2008).

*Carnegie classification* was defined as the classification system that categorizes institutions of higher education in the U.S. For the purpose of this study, the six classification categories that were utilized were the following: (a) research university/very high research activity, (b) research university/high research activity, (c) doctoral/research university, (d) special focus institution/health, (e) special focus institution/medical, and (f) graduate instructional programs (The Carnegie Foundation for the Advancement of Teaching, 2007).

*Discipline of study* was operationally defined as a specific "branch of knowledge or of teaching" (Webster's II, New Riverside University Dictionary, 1984, p. 383), and included physical therapy, rehabilitation science, movement science, health science, and "other (please specify)."

*Explicit cost* was defined as the total cost of tuition, measured in U.S. dollars, of pursuing a degree (Montgomery & Powell, 2006).

*Financial aid* was defined as monetary awards given to students to assist with meeting educational expenses (ED, n.d.c). Award types included cultural diversity waivers, endowments, scholarships, graduate assistantships, fellowships, grants (ED), and "other (please specify)."

*Full-time enrollment* was defined as the number of students currently, officially registered on the roll (ED, n.d.b) of each institution's postprofessional advanced doctorate program in physical therapy on a full-time basis.

*Graduation rate* was defined as "the percentage of students in a given cohort graduating within a specified period of time" (Boston College, 2007, p. 1).

*International student enrollment* was defined as the number of students currently, officially registered on the roll (ED, n.d.b) of each institution's postprofessional advanced doctorate program in physical therapy that were not U.S. citizens at the time of enrollment.

*Institutional funding/support* was defined as either private or public based on the following definitions. *Private institutions* were all institutions "controlled by a private individual(s) or by a nongovernmental agency, usually supported primarily by means other than public funds, and operated by other than publicly elected or appointed officials" (ED, n.d.a, p. 1) and which have been categorized as private by the National Center for Educational Statistics (n.d.c). Private institutions included both private not-for-profit and private for-profit institutions. *Public institutions* were those institutions "whose programs and activities are operated by publicly elected or appointed school officials and which are supported primarily by public funds" (ED, n.d.a, p.1) and which have been categorized as public by the National Center for Educational Statistics (ED, n.d.c).

*Non-accredited programs* were defined as postprofessional advanced doctoral programs in physical therapy that were not accredited by one of the

regional accrediting agencies recognized by the U.S. Department of Education (2006) at the time of data collection.

*Part-time enrollment* was defined as the number of students currently, officially registered on the roll (ED, n.d.b) of each institution's postprofessional advanced doctorate program in physical therapy on a part-time basis.

*Postprofessional advanced doctorate physical therapy programs* were defined as academic programs for licensed physical therapists that culminate in the awarding of an advanced academic or research doctorate degree, above and beyond the entry-level or t-DPT degree, in physical therapy or a closely related discipline (APTA, 2005, January).

*Program delivery format* was defined as the framework in which coursework was offered and included seven subcategories, six of which were defined by and organized by the APTA. The APTA's six subcategories of program format included the following:

- (a) the majority of courses are offered by distance, (b) program is offered in full-time day format, (c) program is offered in full-time evening format, (d) program is offered in weekend format, (e) program is offered in part-time day format, and (f) program is offered in part-time evening format. (APTA, n.d.a, p.1)

The seventh subcategory was programs offered in more than one format.

*Program length* was defined as the total number of semester hours required to complete the doctoral degree program and the total number of weeks that a student was officially enrolled in the program (CAPTE, 2005).

*Recruitment methods* were defined as practices used by programs to recruit potential students, and fell into three categories: traditional, electronic, and personnel (Burgess, 2004). *Traditional recruitment strategies* included brochures, college day/night programs, college campus visit days, outdoor advertising, participation in professional meetings at the state and national level, print media advertising, printed view books, printed catalogs, and solicited and unsolicited mail outs; *electronic recruitment strategies* included CD-ROM, chat rooms, department and institutional World Wide Web pages, electronic mail, downloadable online applications, electronic catalogs, electronic newsletters, Internet advertising, online application submission, radio and television advertising, telecounseling, virtual tours, and videos/DVD; *personnel recruitment strategies* included faculty, professional recruiters, current students, and alumni (Burgess, 2004).

*Reputation of the affiliated physical therapy program* was defined as the most recent (2009) ranking of the entry-level physical therapist education program affiliated with each postprofessional advanced doctorate program as published by *U.S. News & World Report* (Johanson, 2004; Mohr, et al., 2005).

*Specialty areas* were defined as the number of areas of focused study that included but were not limited to geriatrics, orthopedics, pediatrics, neuroscience, sports, and cardiopulmonary rehabilitation (APTA, 1997).

*Total enrollment* was defined as the total number of students who were currently, officially registered on the roll (ED, n.d.b) of each institution's postprofessional advanced doctorate program in physical therapy.

*Transitional-Doctor of Physical Therapy programs* were defined as structured academic programs that enable “US-licensed physical therapists to attain degree parity with therapists who hold the professional (entry-level) DPT by filling in any gaps between their professional baccalaureate or master’s degree PT education and the current professional DPT degree education” (APTA, n.d.b, p.1).

*Type of doctoral degree awarded* was defined as the specific postprofessional advanced doctorate degree awarded by the institution and included Doctor of Philosophy, Doctor of Science, and Doctor of Health Science.

### *Summary*

Physical therapy education has changed dramatically over the past century, as have the necessary qualifications for faculty in physical therapist education programs. Unfortunately, there is a long-standing shortage of doctoral-level faculty and researchers in the field (APTA, 1985; Elder & Nick, 1995) and only a small number of postprofessional doctoral programs offering advanced academic or research degrees in physical therapy or closely related fields (APTA, 2005). In this quantitative, non-experimental, survey study, data were collected by use of an author-created questionnaire and analyzed to determine which program characteristics/factors were associated with enrollment in these programs. The findings of this study have the potential to influence the delivery of postprofessional education in physical therapy, thus positively affecting the number of doctoral-level faculty and researchers in the field of physical therapy.

## CHAPTER 2: LITERATURE REVIEW

### *Introduction*

The purpose of this chapter is to provide background information regarding physical therapy education programs and faculty, as well as the selection of education programs by graduate students, doctoral students in higher education administration, medical students, entry-level physical therapy students, and potential t-DPT students. In addition, the need to conduct research specific to postprofessional doctoral programs in physical therapy will be discussed and an explanation of how such a research study fits into the existing body of knowledge will be provided.

The strategy utilized for the literature review was a search focused on graduate and doctoral program choice in higher education and business as well as medical and health care education program, including entry-level physical therapy programs and t-DPT of physical therapy programs. The most utilized sources were peer-reviewed journals in education, business, and health care.

### *Historical Overview of Physical Therapy Education*

The birth of physical therapy in the United States occurred in the early 20th century when World War I and the polio epidemic of 1916 left large numbers of people with chronic physical disabilities (Murphy, 1995; Dreeben, 2007). The U.S. Army began the first formal educational training program for physical therapists (then called reconstruction aides) at Walter Reed General Hospital in 1917 (Murphy). Fourteen additional “War Emergency Training Centers” opened the following year, with seven of the fourteen being housed in civilian institutions

(Murphy). These early programs were short in duration, averaging 3 months, and targeted unmarried, female students who had previously completed training in nursing or physical education (Dreeben).

Certificate programs, many of which required a baccalaureate degree for admission, were developed by several institutions of higher education in the 1930s and were regularly operated in cooperation with hospitals (Dreeben, 2007). In the 1940s, the military increased admissions standards for its training programs to include a baccalaureate degree and increased program length to 6 months (Dreeben; Murphy, 1995). During the 1940s and 1950s, the need for physical therapists and for these short-term certification programs was further perpetuated by World War II, the Korean War, the continued polio epidemics, and the passage of the Social Security Act of 1965, which resulted in the enactment of the Medicare and Medicaid programs (Dreeben; Murphy).

The first 4-year baccalaureate degree program in physical therapy was established at New York University in 1927 but it was not until the 1950s that baccalaureate programs became more common place (Murphy, 1995). In 1960, the APTA House of Delegates (HOD) mandated that baccalaureate degree programs would replace all certificate programs as the minimum standard for physical therapy professional education (Echternach, 2003).

During the 1960s and 1970s, the need for physical therapists continued to rise due, in part, to the return of injured soldiers from the Vietnam War, new advances in medicine such as total joint replacements and heart transplants, and increased longevity (Moffat, 1996). Most physical therapy education programs

during this time continued to offer baccalaureate degrees while a much smaller number offered graduate degrees (Echternach, 2003). During the 1970s there was discussion about increasing the standards of physical therapy education and making another transition, this time to a postbaccalaureate degree called an entry-level master's of physical therapy (Murphy, 1995). In 1979, the APTA House of Delegates (1979) passed the 1990 Mandate, a resolution stating that all entry-level physical therapy education programs would offer, at a minimum, a professional postbaccalaureate degree by the year 1990.

During the 1980s and 1990s, the demand for physical therapists continued to grow. This increased demand was met by developing more education programs, many at the baccalaureate level (Echternach, 2003). Despite the efforts of the APTA, little progress was made toward making the entry-level master's of physical therapy degree the minimum standard in physical therapy education (Echternach), and the 1990 Mandate was withdrawn in 1989. It was not until 2002 that the entry-level baccalaureate degree was completely phased out and replaced by the entry-level master's degree (APTA, 2003).

Physical therapy education has continued to evolve in the 21st century. Like the professions of optometry, podiatry, pharmacy, and law before it, physical therapy is currently in the process of making the transition to the entry-level doctoral degree (DPT) as the first professional degree for physical therapists (APTA, Board of Directors, 2000). The APTA's current vision statement calls for all accredited physical therapy education programs to offer the DPT as the minimum entry-level professional degree by the year 2020 (APTA, HOD, 2000).

In September 2006, 163 programs offered the entry-level DPT. Another “21 programs have the stated intent to be conferring the DPT before 2010 [and] 22 programs have the stated intention to convert but do not yet have a specific timeline” (CAPTE, 2006a, p. 17). As this statement from CAPTE shows, progress toward Vision 2020 has continued and as of April 2009, 196 of the 211 entry-level programs offered the entry-level DPT (CAPTE, 2009).

In conjunction with this change, many programs have developed t-DPT programs, which allow practicing clinicians who have previously earned an entry-level bachelor’s or master’s degree in physical therapy the opportunity to acquire the DPT without returning to school on a full-time basis. Currently, there are 74 t-DPT programs (APTA, 2007). Sixteen of these programs are offered on-site, while 17 programs are offered in a distance learning format and the remaining 41 programs are offered using a combination of onsite instruction and distance education. The typical t-DPT program can be described as follows: (a) cost for an in-state student to complete the program averages \$10,562 and for an out-of-state program averages \$12,939; (b) the vast majority (56%) of programs do not offer scholarships or financial aid for students; (c) the length of the program varies significantly depending on a student’s entry-level physical therapy degree, alumni-status, and highest degree earned; (d) the typical number of required courses is eight; and (e) the typical number of required credits is 30 (APTA).

“Overall, 17,004 physical therapists have been or are currently enrolled in t-DPT programs” (APTA, 2007, p. 1). While this demonstrates the desire of many physical therapists to continue their education, one key point to remember is that

the “DPT alone...does not constitute sufficient qualification for physical therapy faculty” (CAPTE, 2006b, p. E-7). The DPT is an entry-level clinical doctorate and is the first professional degree signifying preparation and the ability to practice as a physical therapist. The DPT does not signify postprofessional training in research or clinical practice, both of which are common required qualifications for physical therapy educators.

As physical therapy education has changed, the academic credentials of program faculty have changed as well. Faculty candidates have historically been individuals who have worked as clinicians for many years and who have earned a postprofessional or advanced master’s degree above and beyond the first professional physical therapy degree (Lehmann, et al., 1986). The demonstration of clinical competence has long been a primary qualification for faculty and unlike their peers in many other academic areas, physical therapy faculty have not consistently been required to earn a doctoral degree, to pursue research, or to publish (Lehmann, et al.).

This, in part, has resulted in a lack of doctoral-level faculty and researchers in physical therapy education programs, a problem that was first addressed by the APTA in 1985 in a document titled *The Plan to Address Faculty Shortages in Physical Therapy Education* (as cited in Elder & Nick, 1995). Along with the APTA, the CAPTE has played a major role in changing the face of physical therapy faculty by increasing the expected qualifications of those individuals, including the added requirement of demonstrating a record of scholarly activity (CAPTE, 2006c; Nieland, 2003).

Although it is not necessary to hold a doctoral degree in order to demonstrate a record of scholarly activity, holding one does suggest that the individual has some research skills and can meet the standards set forth by CAPTE (Brueilly, Williamson, & Morris, 2007). In addition, core faculty members who enter academia with a doctorate degree may find it easier to meet the institution's requirements for tenure and promotion as compared to those who must develop their research skills while fulfilling their duties in the areas of teaching, service, and scholarship (Angell, 1986; Brueilly, et al.).

Although CAPTE does not specify that core faculty must hold a terminal (advanced) doctoral degree, the accrediting body does require faculty to meet other standards. To begin, core faculty must demonstrate "contemporary expertise in assigned teaching areas" (CAPTE, 2006c, p. B-9). Expertise may be demonstrated by the following: (a) educational pursuits such as formal academic work, residency, and continuing education; (b) scholarship, including presentations and publications; and (c) consultation and service to teaching areas (CAPTE). This requirement suggests that having earned an advanced doctorate degree may be an inherent expectation of the CAPTE (Brueilly, et al., 2007).

One long-standing problem that physical therapy faculty have faced in the past, and that faculty candidates continue to face today, is finding a terminal or postprofessional doctoral degree program that is closely related to the field of physical therapy, that is conveniently located, and that can be completed while continuing to work (Lehmann, et al., 1985). For this reason, nontraditional

programs may be very appealing for physical therapists hoping to pursue a career in education.

In 2005, only 47% of core faculty in CAPTE-accredited, entry-level physical therapy programs had an earned doctorate degree, while 18% were currently enrolled in a doctoral program (CAPTE, 2005). As of the 2007-2008 academic year, the percentage of core faculty having earned a terminal doctoral degree had increased to 51%, while the percentage of core faculty members enrolled in doctoral programs dropped to 14% (CAPTE, 2008). Lack of an increase in the percentage of faculty pursuing a terminal doctorate may be a concern considering the aging professoriate in physical therapy education.

Common areas of doctoral study for physical therapists who are interested in teaching include the basic sciences, clinical sciences, education, public health, and business administration (Ball, et al., 2002). Ball, et al. found that distance-earned doctoral degrees in education, public health, and business administration were viewed positively by physical therapy program directors, while similar degrees in the basic and clinical sciences were not. The study also reported that 75% of the current and expected human resource needs for physical therapy programs were for faculty with doctoral training in the basic and clinical sciences.

Increased qualifications for faculty are reflected in current faculty vacancy notices, the vast majority of which require an applicant to have earned a terminal academic or clinical doctorate degree and an established research record (APTA, 2006). The DPT, which is a clinical doctorate, is considered the first professional degree and does not signify the postprofessional training in research

or clinical practice that is desired in physical therapy education program faculty (CAPTE, 2006c, p. E-7).

The first postprofessional education program in physical therapy was founded at Stanford University in the mid-1940s (APTA, 1997). Over the next three decades, additional programs including both masters and doctoral degree programs were established at Boston University, New York University, Texas Woman's University, and the University of Southern California. By the late 1990s, there were 22 programs offering terminal postprofessional doctoral degrees, and by 2001 that number had grown to 32 (APTA, 2001).

At the time this study was initiated, the APTA web site listed 85 postprofessional graduate education programs (APTA, 2008). Thirty-nine of those programs (Appendix A) were located in the U.S. and offered a terminal doctoral degree in physical therapy or a closely related field such as rehabilitation science, health science, or movement science. The remaining programs were either located in Canada (six programs) or offered only a master's degree or t-DPT. The number of programs offering a terminal doctorate degree is small in comparison to the 211 entry-level physical therapy programs, especially considering total current vacancies (143), the core faculty turnover rate of 6-13% from 2002 to 2007 (CAPTE, 2008), and the level of student interest (59%) in pursuing full-time faculty positions at some point in their professional careers (MacKinnon & Leighton, 2002).

The increasing number of entry-level DPT and t-DPT programs has resulted in another 69 projected faculty vacancies (CAPTE, 2008). With only

1,896 full-time core faculty members nationwide, 212 current and projected vacancies equals nearly an 11% vacancy rate, a problem which may be compounded not only by the growing number of programs but also by the fact that 44% of core faculty are currently 50 years of age or older (CAPTE).

Fortunately, with advances in the delivery of distance education, many postprofessional degree programs now have the option to offer at least a portion of their curricula in a distance learning format. This would allow programs to “cross university and state lines” (Schmoll & Moses, 2002), something that one would expect to make programs more accessible and more convenient for practicing clinicians who are interested in pursuing a career in physical therapy education.

#### *Graduate Program Selection*

Several researchers have studied program selection by graduate, doctoral, and postbaccalaureate professional students. Olson and King (1985) conducted an exploratory study of the factors that influence college choice by graduate students by surveying domestic graduate students at a large mid-Western public university. The purpose of the study was to develop a model of college choice that would assist university officials with recruiting and marketing strategies (Olson & King).

Olson and King (1985) found that geographic location, personal contact with faculty, department reputation, and educational cost were the factors that most greatly influenced students' initial consideration of institutions. Positive interaction with faculty, personal reasons (children, employment, marriage, and

size of community), and alumni status were the factors found to have the greatest impact on students' ultimate decision to enroll at the university.

Amount of assistantship stipend, influence of undergraduate advisor, cost of education, and previous attendance as an undergraduate varied significantly among colleges within the university during the students' initial consideration of different institutions. The students' final decision to enroll at the university also varied significantly between departments due to the following factors: participants' employment in the community, speed of acceptance, and alumni status.

In a second study of graduate students, Melaney (1987) surveyed newly enrolled students at a large public research university in the mid-West in an effort to better understand "1) why students decided to pursue graduate studies, 2) how they found out about the institution they selected, and 3) why they applied to that institution" (p. 248). Melaney's findings, which were related to this study, were as follows: a) full-time students were more likely than part-time students to pursue graduate studies because their field of expertise required an advanced degree; b) the primary sources of information regarding an institution's graduate school programs were department brochures, recommendations by undergraduate professors, undergraduate attendance at the university, and alumni; c) academic reputation, finances, and location of the institution were the primary reasons that students applied to the institution; d) older students were more likely to apply because of location or because they had friends at the institution; e) part-time students were more concerned about location than full-

time students; and f) full-time students were more concerned about reputation and finances than part-time students.

In a third study of graduate students, Olson (1992) surveyed a random sample of graduate students at a large, public university in the mid-West, and compared the importance of different factors related to graduate school choice based on age and ethnicity. Olson also studied how these factors changed over time, from the student's initial consideration of the institution to the student's decision to attend the institution.

“With respect to the students' initial consideration of the university, respondents ranked the following items as being most important: (1) geographic location, (2) cost of education, (3) reputation of faculty and academic program, (4) personal contact with faculty, and (5) recommendation of significant others” (Olson, 1992, p. 204). The most important factors in the students' decisions to enroll at the university, in order of importance, were “personal contact and positive interaction with university personnel” (Olson, p. 204), reputation, and cost.

The most important factors related to initial consideration of the institution for international students were cost, faculty reputation, and the recommendation of a significant other (Olson, 1992). Cost was the most important factor for enrollment. In addition, 40% of international students cited speed of acceptance as an important factor in their final decision to attend the institution.

Minority students reported cost, geographic location, and program reputation as the most important factors in initial consideration of the university

(Olson, 1992). Positive interaction with university personnel during the decision making process, reputation, cost, and university consortium affiliation were the most important factors influencing the minority students' final decision to attend the university.

The most important factors influencing initial consideration of the university for White students were geographic location, reputation, and cost (Olson, 1992). Personal contact with faculty and recommendations from a significant other were also found to be important. White students reported that the primary factors influencing their decision to attend the university were positive interaction with university personnel, reputation, cost, perceived marketability of a graduate degree from the university, and university consortium affiliation.

When comparing age groups, Olson (1992) found that cost was the most important factor initially for students under the age of 30 while geographic location was the most important factor initially for students over the age of 30. The most important factors in the students' ultimate decision to attend the university were positive interaction with university personnel and reputation for both age groups. The below 30 age group also cited cost as an important factor in the decision-making process while the over 30 age group cited the university's consortium affiliation as an important factor in their decision-making processes.

Webb (1993) studied the criteria that graduate students in business use to select programs, surveying students who were randomly selected from graduate business programs at seven colleges and universities in northeastern Ohio. Webb reported the following findings that were relevant to this study: (a)

academic reputation, accreditation, proximity to home or work, and cost were important fixed characteristics; (b) evening classes, program offered, program completion time, and faculty contact were important program and faculty related factors; (c) the potential marketability of the degree was the lone important marketing factor; and (d) the institution's reputation in the community was the final factor in the decision to attend a specific college or university. Findings also indicated that students attending small private colleges found location, program completion time, and the availability of part-time programs to be more important than did students who chose to attend either the large public or the large private institution. Proximity to home or work was more important to students who had chosen to attend the large private institution, as were placement, reputation, potential marketability of the degree, and catalogs and brochures. Students who chose to attend the large public institution found the school's reputation in the community to be more important than their peers who had chosen to enroll in any of the private schools.

Kallio (1995) examined factors that influenced graduate program choice for students at a major public research university in the Great Lakes region. The author collected data from admissions records and from surveys administered to all students accepted to graduate programs at the institution, including those who did not decide to enroll. The response rate was 38% with a higher return rate from those students who decided to enroll at the university, alumni, residents of the state, and those over 30 years of age.

In her 1993 doctoral dissertation (as cited by Kallio 1995), the author

studied students' decisions based on academic ability, age, alumni status, campus visits, financial aid, geographic location, program quality, residency status, spouse's job or education plans, and the ability of students to continue working in their current jobs. The author reported that students over the age of 30 were more greatly influenced by geographic location and for this reason, considered fewer institutions. Those over 30 were also found to place less importance on the social opportunities available on campus but were more greatly influenced by their spouses and work-related concerns.

Kallio (1995) also reported that the most influential factors in choosing a graduate program, in order of importance, were the following: academic environment, financial aid, work-related considerations, residency status, social aspects of the campus, and spouse's education or job plans.

#### *Doctoral Program Selection in Higher Education Administration*

Talbot, et al. (1996) and Pooch and Love (2001) studied doctoral program selection in higher education administration. Talbot, et al. surveyed potential students who had voluntarily chosen to attend presentations on doctoral education at two national conferences. In addition to providing demographic information, potential students were asked to rank factors and informational items that would influence their decisions to select a doctoral program.

Based on response frequencies, the authors identified reputation, cost, location, flexibility, type of degree offered, and program philosophy as the most important factors influencing doctoral program selection. Despite the limitations of this study, Talbot et al. (1996) "took an important step towards understanding

factors influencing the program choice of doctoral students in a specific discipline” (Poock & Love, 2001, p. 205).

Several of the limitations of the Talbot et al. (1996) study were addressed by Poock and Love (2001), who surveyed a nationwide random sample of current doctoral students in higher education administration. Poock and Love randomly selected 24 programs and distributed questionnaires via mail to all students in those programs who had matriculated within the same 12-month time period (Poock & Love, 2001). The response rate was 46% (180/390) which, as with many of the studies discussed so far, is considered low based on the recommendations of Wiersma and Jurs (2005), who recommended a minimum response rate of 70% for professionals, and Babbie (1990), who indicated that a minimum response rate of at least 50% was necessary for analysis.

Poock and Love (2001) reported that positive interaction with faculty, friendliness of faculty and staff, program flexibility, ability to continue working, and the reputation of the institution were the most important factors that contributed to students' decisions of which program to attend.

Poock and Love (2001) reported that females considered academic accreditation and program difficulty to be more important than males did when choosing an institution. The authors also found that availability of evening classes, flexibility of program requirements, location close to home, and the ability to continue working in a current job were more important to part-time students than to full-time students. Cost, amount of assistantship stipend, friendliness of department faculty and staff, opportunity for assistantships, and

job responsibilities of assistantships were found to be more important to full-time students than to part-time students.

Poock and Love (2001) also reported differences between racial groups and between age groups. African American students were found to be more strongly influenced by academic accreditation, sensitivity to the needs and interests of minorities and women, opportunities for internships, and the presence of relatives living in the area than were White students or "other students of color." Geographic location, sensitivity to the needs of minorities and females, opportunities for financial support, breadth of course offerings, campus visits, input from alumni, significant other's education plans, cost of living, affordability of off-campus housing, and the presence of friends and relatives living in the area were more important factors for students of color (non-White, non-African American) than for White students or for African American students.

Poock and Love (2001) also reported that students over the age of 40 found a location close to home, availability of evening classes, and availability of part-time study to be more important than did students under the age of 40. Students less than 30 years of age were more greatly influenced by opportunities for assistantships, input from colleagues or current professionals, input from parents and family, and job responsibilities of assistantships than were students over the age of 30.

The primary difference between these two studies was that Poock and Love (2001) surveyed a nationwide random sample of matriculated doctoral students while Talbot et al. (1996) surveyed a convenience sample of potential

doctoral students who were in attendance at a national student affairs conference. Although the findings reported by Talbot et al. and Pooch and Love can be generalized only to doctoral students in higher education administration, some of their findings are consistent with the findings of researchers who have studied program selection for medical students (Cleave-Hogg, et al., 1994) and entry-level physical therapy students (Ancrum-Small, et al., 2001; Johanson, 2004; Johanson, 2007; Moore et al., 2003; Wilcox, et al., 2005), as well as with the findings of researchers who have studied the concerns of practicing physical therapists interested in pursuing a t-DPT degree (Detwieler et al., 1999; Lombardo et al., 2001; Thomas et al., 2003).

#### *Medical School Selection*

Cleave-Hogg, et al. (1994) studied factors influencing student choice of medical schools. The authors surveyed all students who had received acceptance letters to the University of Toronto over a 4-year time period. A comparison was made between students who declined the offer to attend the university (56% response rate) to those who accepted the offer and actually enrolled at the university (76% response rate).

The greatest factor influencing application to the university for both groups was the reputation of the medical school. Those who accepted the offer to enroll also indicated that location within commuting distance to their current residence was an important deciding factor in applying to the university. Applicants who declined the offer to attend medical school at the university indicated that large class size, cost of living in the city, size of the university, and nature of the

community, university, and the program as reasons that they declined. Students who accepted the offer listed the reputation of affiliated teaching hospitals, reputation of the university, nature of the university and the program, reputation of the faculty, and proximity to home as important factors in their final decisions to enroll.

#### *Interest in transitional-Doctor of Physical Therapy Programs*

Detwiel, et al. (1999) surveyed a random sample of physical therapists belonging to the Nebraska and Iowa chapters of the APTA to determine the participants' level of interest in pursuing a t-DPT degree. The authors utilized the Dillman Tailored Design Method to administer their survey. Respondents were found to be similar to those surveyed in the 1993 APTA Active Membership Profile Report (as cited in Detwiel, et al., 1999) and the response rate was 71%.

Detwiel, et al. (1999) found that one third of the respondents were interested in pursuing a t-DPT degree. The respondents also indicated that cost, time commitment, and convenience were the most important factors in deciding whether or not to pursue the t-DPT degree.

Thomas et al. (2003) surveyed a nationwide random sample of APTA member physical therapists. As with Detwiel, et al., the authors utilized the Dillman Tailored Design Method to administer their survey questionnaire. The response rate was 56% and respondents were consistent with the most recent APTA membership survey. Narrowing the pool of potential participants to APTA members did introduce some bias. In addition to this limitation, the authors noted

that the timing of the study (shortly after September 11, 2001) may have resulted in a decreased response rate.

Thomas et al. (2003) found that one third of respondents were interested in pursuing a t-DPT degree. The most common motivating factors were increased knowledge base and self-improvement. Expectations included greater autonomy via participation in direct access (treatment without physician referral). The preferred format for instruction was a traditional classroom setting while the greatest barriers to pursuing the t-DPT were cost and lack of time.

Lombardo, et al. (2001) surveyed practicing physical therapists in the New York City metropolitan area to determine which factors were most influential in selecting a t-DPT program. The authors randomly selected APTA members from the New York metropolitan area, and the response rate for the survey was poor (29%).

Survey respondents were more likely than the typical APTA member to have a master's degree as their entry-level physical therapy degree and as their highest degree earned (Lombardo, et al., 2001). Respondents also had less experience and demonstrated differences in practice settings when compared to the average APTA member.

Lombardo, et al. (2001) found that therapists interested in pursuing the clinical doctorate were younger, less experienced, and more likely to have a master's degree as the highest degree earned than those therapists who were not interested. The authors also found that those individuals with 6 to 10 years of experience were more interested in administration, improving their skills as

consumers of basic science research, and improving entrepreneurial skills (Lombardo, et al., 2001). Therapists with 11 or more years of experience were most interested in improving their skills as educators. The authors also reported a significant difference in the level of interest in pediatric specialist certification, orthopedic specialist certification, consultation, and entrepreneurial skills based on the subjects' current practice setting.

Lombardo, et al, (2001) also asked respondents to rank 10 items related to program implementation. The availability of full-time study and the appeal of the facilities were ranked lowest by respondents. The remaining items (cost, distance to travel to program, program length, reputation of the institution, availability of distance education, availability of evening hours, degree awarded, and availability of tuition assistance) were ranked highest.

Respondents also had the opportunity to provide narrative comments (Lombardo, et al., 2001). From those comments, the following issues of importance were cited: assistance with job placement, program flexibility, the importance of content areas including radiology skills and differential diagnosis in the curriculum, and distance education as a method of course delivery. The authors summarized their findings as follows: Physical therapists interested in pursuing a t-DPT were most interested in flexible programs that would allow them to continue working full-time and in programs that would provide training in advanced practice in both clinical and nonclinical areas (Lombardo, et al., 2001).

Despite a difference in population samples, Detwiler et al. (1999), Thomas et al. (2003), and Lombardo et al. (2001) reported similar findings after

surveying practicing physical therapists regarding their interest in pursuing a t-DPT degree. Detwieler et al., who surveyed therapists in Nebraska and Iowa, reported that cost, time commitment, and convenience were most important. Thomas et al., who surveyed a nationwide sample of practicing physical therapists, reported that the primary barriers to pursuing a t-DPT were time commitment and cost. Finally, Lombardo et al., who surveyed therapists in metropolitan New York, reported that flexibility and the ability to continue working full-time were most important.

#### *Physical Therapy Program Selection*

Several researchers (Ancrum-Small, et al., 2000; Johanson, 2004, 2007; Moore, Beitman, Rajan, et al., 2003; Wilcox, et al., 2005) have studied the factors that are most important to entry-level physical therapy education program applicants. Ancrum-Small, et al. (2000) randomly selected 30 programs to participate in their study, 25 of which agreed to do so, and had a 92% response rate (23 of 25 programs). The authors found that the degree granted and accreditation status were the most influential factors for applicants. When accepted into more than one program, licensure examination pass rate, initial impressions, and faculty concern for student welfare were the most important factors in choosing a specific program to attend.

Ancrum-Small, et al. (2001) also found that women were more strongly influenced by safety concerns than were men while men were more influenced by perceptions of the professional performance of alumni. Students over the age of 25 were found to be more strongly influenced by distance from home and

family commitments while students under the age of 25 were more influenced by application deadlines and safety concerns.

Student to faculty ratio, small class size, and interactions with and perceptions of current students were more important to single students than to married students. Married students, on the other hand, were found to be more strongly influenced by distance from home and family commitments.

Students with a career prior to attending graduate school and those residing with children under 18 years of age were most strongly influenced by distance from home and family commitments. Students not residing with children under the age of 18 were most greatly influenced by the breadth of the curriculum, student to faculty ratio, small class size, and interactions with and perceptions of faculty. Students living with dependents were most strongly influenced by family commitments.

In a second study of entry-level physical therapy students, Moore et al. (2003) compared recruitment, selection, and retention of minority students to that of non-minority students. The authors conducted face-to-face semi-structured interviews with 74 first-year physical therapy students enrolled in programs in Pennsylvania, New Jersey, New York, and Massachusetts, all of whom had completed one year of their respective entry-level physical therapy programs.

Several of the findings of Moore, et al. (2001) are related to this study. When asked to give the three most important factors in choosing a physical therapy program, 91% of all participants answered program characteristics while 80% of all participants answered location. The minority group (30%) differed from

the non-minority group (14%), with the minority group indicating that the characteristics of the people at the school were an important factor in their decision. Females (86%) were more influenced by location than were males (68%). Minority females (35%) reported personal factors such as family, work, and finances as being more important than did their non-minority counterparts (8%). Non-minority females (19%) reported that the characteristics of the institution were more important than did minority females (4%). Minority males were more greatly influenced by the characteristics of the people at the school (57%) than were their non-minority male peers (17%). Non-minority males reported that personal factors (44%) and location of the school (78%) were more important program selection factors than did minority males (0% and 43%, respectively).

A second question related to this study asked of students who had been accepted to more than one program was, "What were the 2 or 3 most important factors in your choice" (Moore et al., 2001, p. 62). The two most important selection factors reported by all participants were personal factors such as family, finances, and work (57%) and the characteristics of the program (35%). There were no differences reported between the minority and non-minority groups. Personal factors (65%) and location (41%) were more important to females than to males (40% and 24% respectively). Non-minority females were more influenced by the characteristics of the college or university (23%) than were their minority female (4%) classmates. Finally, minority males reported that the characteristics of the people at the school (43% as compared to 6% for non-

minority males) and personal factors (57% as compared to 33%) were most important in their decision to choose one program over another.

Wilcox, et al. (2005) studied factors influencing minority students in the selection of a specific entry-level physical therapy education program. Sixty-six programs were randomly chosen from the 150 that initially agreed to participate in the study. Fifty-nine of the 66 programs participated for a return rate of 70%. The authors reported significant differences in the importance of cost, program faculty, and diversity considerations for minority students than non-minority students when selecting a physical therapy program.

In another study of entry-level physical therapy students, Johanson (2004) attempted to determine if entry-level master's students and entry-level doctorate (DPT) students differed in the factors they found most important when choosing a physical therapy program.

All of the CAPTE-accredited programs with matriculation dates between July and September were stratified into four groups: (a) public MPT programs, (b) private MPT programs, (c) public DPT programs, and (d) private DPT programs, and a random sample of ten programs was taken from each group (Johanson, 2004). The survey questionnaire was administered to students who had begun their program within the previous two weeks using the recommendations of Salant and Dillman (1994). The overall response rate for programs was 85% and for students was 78%.

The author reported a downward trend in the average number of programs applied to by each student (Johanson, 2004) as compared to ten years earlier

(APTA, 1994). Johanson also reported “significant differences between MPT and DPT students regarding the importance of length of program, degree conferred by program, size of physical therapy class, and marketability of a degree from the institution” (p.12). In addition, reputation of the program was a significant factor for students who chose a DPT program. Other factors that were found to be significant were: (a) the matriculation date, (b) reputation of faculty, (c) curriculum, (d) distance from home, and (e) degree conferred.

Johanson (2007) also reported differences between racial/ethnic groups and between men and women. Men and women differed significantly on the importance of the degree conferred, faculty reputation, cost, location, availability of financial aid, and campus environment, with men being more strongly influenced by the degree conferred and faculty reputation and women being more strongly influenced by the remaining factors.

Important or deciding program factors that differed based on racial/ethnic identity included *U.S. News & World Report* ranking of programs, number of prerequisites required, availability of financial aid, positive interaction with current students, and reputation of faculty (Johanson, 2007). Non-Whites were more greatly influenced by program rankings, number of prerequisites, financial aid opportunities, and positive interaction with other students while White students were more strongly influenced by faculty reputation. Non-White students were more strongly influenced by interaction with students than were White students. No other significant findings between racial/ethnic groups or between men and women were found. However, the author did find differences based on marital

status, age, and enrollment in private institutions versus public institutions.

Married students were more likely to rank location and accreditation status among the three most important program selection factors than were unmarried students. Older students were more likely to rank reputation as one of their top three selection factors than were their younger counterparts. Students enrolled in private physical therapist education programs were more likely to rank positive interaction with other students as one of their top three selection factors while those attending public programs were more likely to list location and cost (Johanson, 2007).

### *Program Characteristics*

The data from each of the previously discussed studies was collected through the administration of attitude surveys to current and potential students. To date, only Mohr, et al. (2005) have collected and analyzed objective data pertaining to physical therapy program characteristics. Mohr et al. studied entry-level program characteristics and pass rates on the National Physical Therapy Examination (NPTE). The authors surveyed program directors from all CAPTE-accredited education programs in the United States with a response rate of 75%. Data collection was limited to one graduating class and one point in time.

Significant correlations were found to exist “between the program pass rate and the following variables: number of PhD and EdD faculty, accreditation status, GRE requirement, years of preprofessional coursework, years of preprofessional and professional coursework combined, and PhD and EdD faculty/total number of students” (Mohr, et al., 2005, p. 62). A significant positive

correlation was also found to exist between program rankings by *US News & World Report* and pass rate. The authors also reported that accreditation status, the number of faculty with a PhD or EdD, and the years of preprofessional and professional coursework combined best predicted the pass rate on the NPTE.

### *Summary*

Currently, there is a strong need for doctorally educated faculty in entry-level physical therapy programs in the United States, with the greatest projected need being for individuals possessing terminal doctorate degrees in the basic and clinical sciences (Ball, et al., 2002; Brueilly, et al., 2007; Schmoll & Moses, 2007; Soderberg, 1989). Unfortunately, there are currently only 39 postprofessional doctorate programs that offer training at the terminal doctorate degree level in physical therapy, rehabilitation science, health science, or another closely related field. These programs have historically had residency requirements, but with new technological advances, it has become increasingly possible for such education programs to offer at least a portion of their curricula in a distance format.

Like Mohr et al. (2005), this dissertation study examined program characteristics. But instead of studying correlations between characteristics and pass rate on the NPTE, this study examined the relationship between program characteristics and program selection as measured by enrollment. In addition, this study investigated other factors that may make postprofessional education more feasible for clinicians who are interested in pursuing a career in physical therapy education.

## CHAPTER 3: RESEARCH METHOD

### *Overview*

The purpose of this chapter is to describe the research methodology employed in this dissertation study. To begin, a review of the research problem and purpose will be provided. Next, a description of the target population will be given, including the process of identifying and selecting the participants. The author-developed questionnaire will be described in detail, including the questionnaire development process and procedures used to ensure validity and reliability. An explanation of the study procedure, including the use of the Tailored Design Method will be provided followed by a discussion of data collection, processing, and analysis. Methodological assumptions, limitations, and delimitations will be discussed and ethical assurances provided. To conclude, a summary of key points will be provided.

### *Restatement of the Problem*

Physical therapy is one field in which the path to the professoriate does not follow a traditional route. Rather than continue from a baccalaureate degree to a master's degree to a doctoral degree in the same or a closely related field, the typical physical therapy educator has earned an entry-level physical therapy degree (most likely a bachelor's degree) and then entered the work force (CAPTE, 2008; Lehmann, et al., 1986). Over the next 10 to 15 years, while working as a clinician, that individual earns a postprofessional advanced master's degree in physical therapy or a related field such as education or health care administration before entering the world of academia, where clinical expertise

has historically been emphasized over earning a doctoral degree, researching, or publishing (Lehmann). While many individuals have gone on to earn a doctoral degree while teaching in physical therapy education, that has not been the case for all, and the field has been left with a shortage of doctorate level faculty and researchers (APTA, 1985; Elder & Nick, 1995).

As physical therapy education has changed over the past century, so too have the expected qualifications for faculty. The percentage of faculty currently holding postprofessional advanced doctoral degrees continues to rise slowly, increasing from 49% in 2005-2006 to 52% in 2007-2008 (CAPTE, 2008). At the present time, 14% of core faculty are enrolled in advanced doctoral degree programs (CAPTE) and new faculty members are commonly expected to have an earned doctorate degree at the time of hire.

In addition to having earned an advanced academic or research doctorate, clinical expertise continues to be emphasized (Lehmann, et al., 1986). Because there are so few doctoral degree programs in physical therapy in the U.S., a situation has been created in which many clinicians who wish to continue working are limited to pursuing an advanced doctoral degree in a related field from a university that is conveniently located to where the individual lives and/or works, much like their predecessors (Lehmann, et al.). Another option is to pursue a doctoral degree in physical therapy from an institution that offers the degree in a format that is more convenient for the working clinician, such as distance education, evenings, or weekends. Are program characteristics (factors), such as delivery format, associated with enrollment in advanced doctorate programs in

physical therapy? That was the research problem addressed in this dissertation study.

### *Restatement of Research Questions/Hypotheses*

The research questions examined in this study were: (a) Does a relationship exist between enrollment in postprofessional advanced doctorate programs in physical therapy and explicit cost, financial aid awards, stipend amount, program length, reputation of the affiliated entry-level physical therapist education program, graduation rate, number of specializations offered, or number of application requirements beyond the graduate school application; and (b) Is enrollment independent of Carnegie classification, type of institutional funding/support, accreditation status, delivery format, type of degree awarded, degree discipline, or primary recruitment method?

The hypotheses to be tested were taken from the research questions, and presented as a null hypothesis ( $H_0$ ) and an alternative hypothesis ( $H_a$ ) using the Pearson product-moment correlation coefficient, Spearman correlation coefficient, Fisher's exact test, and Fisher's exact test extended. The dependent variables (total enrollment, part-time enrollment, full-time enrollment, alumni enrollment, and international student enrollment) were all measured on the interval scale. The Pearson product moment correlation coefficient was utilized when both the dependent and independent variables were normally distributed and the independent variable was also measured on the interval scale (Gall, et al., 2007). The Spearman correlation coefficient was utilized when the

dependent variable was not normally distributed, when the independent variable was measured on the interval scale but not normally distributed, and when the independent variable was measured on the ordinal scale (Gall, et al.). Fisher's exact test was used when the independent variable was categorical and accommodated a 2 x 2 contingency table (Norušis, 2004), while Fisher's exact test extended was used when the independent variable required a larger contingency table (Kirkman, 1996).

H<sub>0</sub>: There is no correlation between explicit cost and enrollment in postprofessional advanced doctorate programs in physical therapy.

H<sub>a</sub>: There is a correlation between explicit cost and enrollment in postprofessional advanced doctorate programs in physical therapy.

H<sub>0</sub>: There is no correlation between financial aid and enrollment in postprofessional advanced doctorate programs in physical therapy.

H<sub>a</sub>: There is a correlation between financial aid and enrollment in postprofessional advanced doctorate programs in physical therapy.

H<sub>0</sub>: There is no correlation between annual stipend and enrollment in postprofessional advanced doctorate programs in physical therapy.

H<sub>a</sub>: There is a correlation between annual stipend and enrollment in postprofessional advanced doctorate programs in physical therapy.

H<sub>0</sub>: There is no correlation between program length and enrollment in postprofessional advanced doctorate programs in physical therapy.

$H_a$ : There is a correlation between program length and enrollment in postprofessional advanced doctorate programs in physical therapy.

$H_o$ : There is no correlation between the reputation of the affiliated entry-level program and enrollment in postprofessional advanced doctorate programs in physical therapy.

$H_a$ : There is a correlation between the reputation of the affiliated entry-level program and enrollment in postprofessional advanced doctorate programs in physical therapy.

$H_o$ : There is no correlation between graduation rate and enrollment in postprofessional advanced doctorate programs in physical therapy.

$H_a$ : There is a correlation between graduation rate and enrollment in postprofessional advanced doctorate programs in physical therapy.

$H_o$ : There is no correlation between the number of specializations offered and enrollment in postprofessional advanced doctorate programs in physical therapy.

$H_a$ : There is a correlation between the number of specializations offered and enrollment in postprofessional advanced doctorate programs in physical therapy.

$H_o$ : There is no correlation between the number of application requirements beyond the graduate school application and

enrollment in postprofessional advanced doctorate programs in physical therapy.

$H_a$ : There is a correlation between the number of application requirements beyond the graduate school application and enrollment in postprofessional advanced doctorate programs in physical therapy.

$H_o$ : Enrollment in postprofessional advanced doctorate programs in physical therapy is independent of Carnegie classification.

$H_a$ : Enrollment in postprofessional advanced doctorate programs in physical therapy is not independent of Carnegie classification.

$H_o$ : Enrollment in postprofessional advanced doctorate programs in physical therapy is independent of accreditation status.

$H_a$ : Enrollment in postprofessional advanced doctorate programs in physical therapy is not independent of accreditation status.

$H_o$ : Enrollment in postprofessional advanced doctorate programs in physical therapy is independent of delivery format.

$H_a$ : Enrollment in postprofessional advanced doctorate programs in physical therapy is not independent of delivery format.

$H_o$ : Enrollment in postprofessional advanced doctorate programs in physical therapy is independent of the type of doctoral degree offered.

$H_a$ : Enrollment in postprofessional advanced doctorate programs in physical therapy is not independent of the type of doctoral degree

offered.

H<sub>0</sub>: Enrollment in postprofessional advanced doctorate programs in physical therapy is independent of degree discipline.

H<sub>a</sub>: Enrollment in postprofessional advanced doctorate programs in physical therapy is not independent of degree discipline.

H<sub>0</sub>: Enrollment in postprofessional advanced doctorate programs in physical therapy is independent of primary recruitment method.

H<sub>a</sub>: Enrollment in postprofessional advanced doctorate programs in physical therapy is not independent of primary recruitment method.

H<sub>0</sub>: Enrollment in postprofessional advanced doctorate programs in physical therapy is independent of type of institutional funding/support.

H<sub>a</sub>: Enrollment in postprofessional advanced doctorate programs in physical therapy is not independent of type of institutional finding/support.

### *Research Method and Design*

The purpose of this dissertation study was to examine the association between enrollment and program characteristics/factors, thus a quantitative method was chosen (Ary, et al., 2002; Wiersma & Jurs, 2005). In addition, a quantitative method allowed for the testing of hypotheses and for the collection of data in numeric form.

A non-experimental design was chosen because manipulation of one or more independent variables was not feasible (Wiersma & Jurs, 2005). Survey

research was chosen over ex post facto research because this method allowed the investigator to summarize the characteristics of different groups and to measure relationships between variables among the same subjects (Ary, et al., 2002).

Because the entire target population received questionnaires and thus chance differences between samples were not a major concern, a cross-sectional survey design was used. In addition, the cross-sectional survey design allowed for time and cost savings and an increased chance for a larger sample size (Ary, et al., 2002).

### *Participants*

The participants in the proposed study were the program directors of the 36 active postprofessional programs offering an advanced doctorate degree in physical therapy or a closely related field such as rehabilitation science, human movement science, and health science as listed by the APTA (2005). Students were not included as participants in the study because of concerns regarding the inclination to defend their choice (Cleave-Hogg, et al., 1994) and concerns regarding accuracy of recall for events that may have taken place months or years in the past (Poock & Love, 2001).

The APTA's *Directory of Postprofessional Graduate Education Programs* (APTA, 2005) provided a list of advanced doctorate programs including equivalent programs located in Canada. For the purpose of this study, only active programs located in the U.S. were included in the study. In addition, because the Doctor of Physical Therapy degree by itself does not qualify an individual to be a

faculty member in a physical therapist education program (CAPTE, 2006c), t-DPT programs were not included in the study.

### *Materials and Instruments*

Data measuring the independent and dependent variables were collected via a self-administered questionnaire (Appendix B) that was developed by the author. The items included in the cross-sectional survey were developed based on the literature (Ancrum-Small et al., 2000; Burgess et al., 2004; Detwiler et al., 1999; Lombardo et al., 2001; Montgomery & Powell, 2006; Mohr, et al., 2005; Pooch & Love, 2001; Talbot et al., 1996; Thomas et al., 2003), the *2007-2008 Fact Sheet for Physical Therapy Education Programs* (CAPTE, 2008), and the recommendations of an expert in physical therapy education and survey research methodology (R. Mabey, personal communication, August 26, 2008).

Questions were worded based on the recommendations of Dillman (2007). Specific guidelines applied were the following: (a) simple words were chosen over specialized words; (b) the fewest words possible were used for each question; (c) complete sentences were used; (d) specificity that may exceed the participant's potential for having an accurate, ready-made answer or easily accessible answer was avoided; (e) primacy effects were reduced by avoiding check-all-that-apply question formats whenever possible; (f) mutually exclusive response categories were created whenever possible; (g) cognitive design techniques to improve participant recall were used; (h) appropriate time referents were provided; (i) questions were reviewed for technical accuracy; (j) double negatives were avoided; (k) double-barreled questions were avoided; (l)

participants were not asked to make unnecessary calculations; and (m) unordered responses were used to avoid the perception that responses ran from low to high or high to low (Dillman).

The questionnaire was designed based on the guidelines for format, ordering of questions, and construction of questionnaire pages as described by Dillman (2007). For ease of construction and a respondent-friendly design, standard letter-size paper was used with one-sided printing and a staple in the upper left corner (Dillman). Other recommendations related to the organization, formatting, and construction of the questionnaire that were utilized included: (a) bold print for questions and normal print for response choices; (b) the first question was one that was interesting, easy to answer, applicable to everyone, and demonstrated a relationship between the participant and the purpose statement for the study; (c) response and answer categories were listed vertically versus horizontally; (d) spacing and similarity were used to identify appropriate groupings of visual elements; and (e) questions were grouped in a general manner from most relevant to least relevant to the respondent based on the information provided in the cover letter (Dillman).

In order to establish the face validity of the survey instrument, the questionnaire received a cursory review (Wiersma & Jurs, 2005) by a university professor unfamiliar with physical therapy education. Content validity of the survey instrument was established by having the questionnaire examined by two professors of physical therapy, one of whom was also an expert in survey research methodology (Babbie, 1999). Revisions were made based on the

experts' comments and recommendations.

Content validity was further improved by having the questionnaire pre-tested using a pilot study (vanTeijlingen & Hundley, 2001). The pilot study targeted program directors in physical therapy programs that offer a t-DPT degree but no advanced doctorate, as well as program directors in advanced doctorate programs in occupational therapy, speech language pathology, and athletic training. Recommendations regarding content, the completeness and clarity of the instrument, and the time required to complete the questionnaire were requested and additional revisions were made based on those recommendations (vanTeijlingen & Hundley).

Concurrent validity was not tested because no other measurement of the "true value" for the variables studied was available for comparison. Re-administering the survey was feasible; however with a census of only 36 programs, that technique was not advisable for fear of a declining response rate (Ary, et al., 2001). Thus, it was not possible to calculate a test-retest reliability coefficient. Due to the brevity of the questionnaire and the objective nature of the questions asked, the use of redundant questions to improve reliability was kept to a minimum. The enrollment subset of data had a Cronbach's alpha of 0.608 and the financial subset of data (cost, financial aid, and stipend) had an  $\alpha = 0.558$ . The Cronbach's alpha for program length was only 0.106, while the remaining variables had an  $\alpha = 0.217$ .

#### *Operational Definitions of Variables*

Prior to developing the questionnaire, the dependent and independent

variables were operationally defined (Wiersma & Jurs, 2005).

*Accreditation status.* An accredited program was defined as a postprofessional advanced doctorate program in physical therapy that was currently accredited by one of the following regional accrediting agencies: the Middle State Association of Colleges and Schools, the New England Association of Schools and Colleges, the North Central Association of Colleges and Schools, the Northwest Commission on Colleges and Universities, the Southern Association of Colleges and Schools, or the Western Association of Schools and Colleges (ED, 2006).

Participants were asked to choose the appropriate accrediting agency for their institutions. In the case that the participant's institution was not accredited by one of these agencies, "other (please specify)" and "not currently accredited" were provided as additional options, as was the option "prefer not to report."

*Application requirements* were operationally defined as the number of items required, in addition to the standard graduate school application, for each program's application process (R. Mabey, personal communication, August 26, 2008).

Participants were provided with a list of 14 likely application requirements such as an interview, professional portfolio, and proof of licensure to practice physical therapy in the U.S., and asked to mark all items that were required for application to their programs. Participants were also provided with the option of "other (please specify)."

*Carnegie classification* was defined as the classification system that

categorizes institutions of higher education. The six classification categories that were utilized were: (a) research university/very high research activity, (b) research university/high research activity, (c) doctoral/research university, (d) special focus institution/health, (e) special focus institution/medical, and (f) graduate instructional programs (The Carnegie Foundation for the Advancement of Teaching, 2007).

Participants were asked to choose the Carnegie classification assigned to their institutions. Alternative responses were “other (please specify) and “our institution has not been classified by the Carnegie Foundation.”

*Discipline of study* was operationally defined as a specific “branch of knowledge or of teaching” (Webster’s II, New Riverside University Dictionary, 1984).

Participants were provided with a list of the most commonly represented disciplines of study as noted on the APTA’s (2005) *Directory of Postprofessional Programs* and asked to choose the discipline in which their advanced doctorate degree was awarded. Response categories included the following: health sciences, movement sciences, physical therapy, rehabilitation sciences, “other (please specify),” and “prefer not to report.”

*Enrollment* was defined as the number of students that were currently officially registered on the roll (ED, n.d.b) of each institution’s postprofessional advanced doctoral program in physical therapy.

Participants were asked how many full-time and part-time students were enrolled in their programs. The variable total enrollment was calculated for each

program by adding the full-time and part-time enrollment responses from each participant. In addition, participants were asked how many alumni and how many international students were enrolled in their programs.

*Explicit cost* was defined as the cost of tuition, measured in U.S. dollars, of pursuing a degree (Montgomery & Powell, 2006), and equaled the cost per credit hour multiplied by the minimum number of credit hours required to complete the degree.

Two questions were needed to calculate this variable. First, participants were asked to provide the minimum number of credit hours beyond the master's degree to complete their doctorate programs; second, they were asked what the current tuition cost per credit hour was at their institutions. In the case that an institution's tuition charge was per academic term versus per credit hour, participants were asked to provide the cost per academic term as well as the average number of academic terms required to complete their degree programs.

*Financial aid* was defined as monetary awards given to students to assist with meeting educational expenses (Ed, n.d.c). Types of awards included cultural diversity waivers, endowments, scholarships, graduate assistantships, fellowships, grants (ED), and "other (please specify)."

Participants were asked what percentage of students in their postprofessional advanced doctorate programs received full financial aid awards and what percentage received partial financial aid awards per year on average.

*Graduation rate* was defined as "the percentage of students in a given cohort graduating within a specified period of time" (Boston College, 2007, p. 1).

Participants were asked two questions pertaining to graduation rates. The first question was, “Of those students admitted to your postprofessional doctorate program, what percent have graduated from the program?” and the second question was, “Of those students in your postprofessional doctorate program, who have advanced to doctoral candidacy, what percent have graduated from the program?”

*Institutional funding/support* was defined as private or public based on the following definitions. *Private institutions* were all institutions “controlled by a private individual(s) or by a nongovernmental agency, usually supported primarily by means other than public funds, and operated by other than publicly elected or appointed officials” (ED, n.d.a, p. 1) and which have been categorized as private by the National Center for Educational Statistics (n.d.c). Private institutions included both private not-for-profit and private for-profit institutions. *Public institutions* were those institutions “whose programs and activities are operated by publicly elected or appointed school officials and which are supported primarily by public funds” (ED, n.d.a, p.1) and which have been categorized as public by the National Center for Educational Statistics (ED, n.d.c).

Participants were asked to indicate whether their institutions were publicly funded/supported or privately funded/supported.

*Program delivery format* was defined as the framework in which coursework is offered and included seven subcategories, six of which have been defined by and organized by the APTA. The APTA’s six subcategories of program format include the following:

(a) the majority of courses are offered by distance, (b) program is offered in full-time day format, (c) program is offered in full-time evening format, (d) program is offered in weekend format, (e) program is offered in part-time day format, and (f) program is offered in part-time evening format.

(APTA, n.d.a, p.1)

Participants were asked to identify which of these categories best described the format used to deliver their advanced doctorate programs. A seventh category “more than one format” was also included as a possible answer, as was “other (please specify).”

*Program length* was defined as the total number of semester hours required to complete the doctoral degree program and the total number of weeks that a student is enrolled in the program (CAPTE, 2005).

In order to determine the total number of weeks of enrollment, participants were asked the average length of time (measured by academic term) for students to complete their programs and the number of weeks per academic term. These two values were used to calculate the total number of weeks enrolled. Participants were also asked the minimum number of credit hours beyond a master’s degree required to complete their programs.

*Recruitment methods* were operationally defined as practices used by programs to recruit potential students and fell into three categories: traditional, electronic, and personnel (Burgess, 2004). *Traditional recruitment strategies* included brochures, college day/night programs, college campus visit days, outdoor advertising, participation in professional meetings at the state and

national level, print media advertising, printed view books, printed catalogs, and solicited and unsolicited mail outs; *electronic recruitment strategies* included CD-ROM, chat rooms, department and institutional World Wide Web pages, electronic mail, downloadable online applications, electronic catalogs, electronic newsletters, Internet advertising, online application submission, radio and television advertising, telecounseling, virtual tours, and videos/DVD; *personnel recruitment strategies* included faculty, professional recruiters, current students, and alumni (Burgess, 2004).

*Reputation of the affiliated entry-level physical therapy program* was defined as the most recent (2008) ranking of the entry-level physical therapy program affiliated with each postprofessional doctoral program as published by *U.S. News & World Report* (Mohr, et al., 2005).

In order to provide some degree of anonymity, rankings were categorized as 1-9, 10-19, 20-29, 30-39, 40-49, 50-59, 60-69, 70-79, and 80-89. Participants were asked to mark the category that represented the most current *U.S. News & World Report* ranking of their affiliated entry-level physical therapy program. Alternative responses included three options: (a) "Our program does not have an affiliated entry-level physical therapy program," (b) "Our affiliated entry-level program did not participate," and (c) "prefer not to report."

*Specialty areas* were defined as areas of focused study and included, but were not limited to, geriatrics, orthopedics, pediatrics, neuroscience, sports physical therapy, and cardiopulmonary rehabilitation (APTA, 1997). Participants were asked to identify those areas of specialization or study emphasis that were

available to students in their programs from a list of eleven options. Alternative responses were “other (please specify)” and “not applicable.”

*Type of doctoral degree awarded* was defined as the specific advanced doctorate degree awarded by the institution.

Participants were asked to choose the type of doctoral degree awarded by their programs/institutions from a list of four possible choices: Doctor of Philosophy, Doctor of Science, “other (please specify),” and “prefer not to report.”

### *Procedure*

The Tailored Design Method for survey research was used in order to improve response rate (Dillman, 2007). This method involved a five-step procedure for the administration of the survey questionnaire and included four contacts by first class mail, followed by a “special” contact made by priority mail.

*Procedure step one.* A pre-notice letter (Appendix C) was mailed to the program directors of the 36 active postprofessional advanced doctoral programs identified as the target population. The purpose of the pre-notice letter was to establish positive rapport and to give a timely notice that the participants would be receiving a request to participate in an important study (Dillman, 2007).

*Procedure step two.* Three days after the initial mailing, the second mailing was administered via U.S. mail to the entire target population and included the questionnaire (Appendix B), cover letter (Appendix D), and a return envelope. The mailing also included the letter of informed consent with a separate return envelope, and a postcard (Appendix E) that could be returned separately in the case that the individual did not wish to participate (Dillman,

2007).

*Procedure step three.* A thank you/reminder postcard (Appendix F) was mailed to all individuals in the target population a week after the questionnaire was mailed (Dillman, 2007).

As questionnaires were returned, the envelopes and questionnaires were separated. The identification number printed in the lower left hand corner of the return envelope was compared to the mailing list and the names were checked off that list. The envelope was then destroyed and the questionnaire was stored in a locked filing cabinet in the investigator's office.

*Procedure step four.* A replacement questionnaire with a revised cover letter (Appendix G) was mailed to all members of the target population who remained on the mailing list 4 weeks after the mailing of the original questionnaire (Dillman, 2007).

*Procedure step five.* A final contact (Appendix H) using priority U.S. mail was made to those individuals remaining on the mailing list 3 weeks after the replacement questionnaire was mailed (Dillman, 2007).

#### *Data Collection, Processing, and Analysis*

Two weeks after the final mailing, recipient responses were recorded using the Statistical Package for the Social Sciences (SPSS) software, 12.0 Student Version (Norušis, 2004). Responses included data for all independent and dependent variables except total enrollment, explicit cost, and program length in weeks. Total enrollment was calculated by summing the values provided by each participant for full-time and part-time enrollment. Explicit cost

was calculated by multiplying the program length in semester credit hours by cost per credit hour. Program length in weeks was calculated by multiplying the number of semesters to complete the program by the number of weeks per semester. Numeric data was then entered directly into SPSS. Categorical data was coded numerically prior to entry into SPSS.

*Data Analysis Methods.* Frequency distributions and measures of central tendency were calculated in order to describe the typical advanced doctoral program in physical therapy. The Kolmogorov-Smirnov test (K-S test) was used to test for normality ( $p > .05$ ). Means were calculated for numeric data that were measured on the interval scale and found to be normally distributed, and medians were calculated for data that were not normally distributed. The mode was used to report categorical data.

The Pearson product-moment correlation coefficient was used to measure relationships between variables that were normally distributed and measured on the interval scale (Gall, et al., 2007). The Spearman correlation coefficient was used to measure relationships between variables when both variables were measured on the interval scale but at least one variable did not have a normal distribution or when one variable was measured on the interval scale and the other was measured on the ordinal scale (Gall, et al.).

Due to the small sample size and the occurrence of individual cell counts of  $< 5$  for each categorical variable, Fisher's exact test was used to determine if the dependent variables were associated with the independent variables that were measured on the nominal scale and that accommodated a 2 x 2

contingency table (Gall, et al., 2007). Fisher's exact test extended was used to determine if the dependent variables were associated with the independent variables that were measured on a nominal scale but that required a contingency table larger than 2 x 2 (Kirkman, 1996).

The Pearson product-moment correlation was used to test the  $H_0$ : There is no correlation between explicit cost, which had a normal distribution, and enrollment in postprofessional advanced doctorate programs in physical therapy, when the dependent variable was total enrollment, alumni enrollment, or international student enrollment as these variables were normally distributed as well. The Spearman correlation coefficient was used when the dependent variable (enrollment) was full-time or part-time, as these variables were not normally distributed.

The Pearson product-moment correlation was used to test the  $H_0$ : There is no correlation between financial aid and enrollment in postprofessional advanced doctorate programs in physical therapy when the dependent variables were total enrollment, alumni enrollment, and international student enrollment and the independent variable was partial financial aid awards, which was normally distributed. The Spearman correlation coefficient was used when the independent variable was partial financial aid awards and the dependent variables were full-time enrollment and part-time enrollment, which were not normally distributed. The Spearman correlation coefficient was used with all dependent variables (total, part-time, full-time, alumni, and international enrollment) when the independent variable was full financial aid awards, a

variable that was not normally distributed.

The Spearman correlation coefficient was used to test the  $H_0$ : There is no correlation between annual stipend and enrollment in postprofessional advanced doctorate programs in physical therapy. Because the independent variable annual stipend was not normally distributed, Spearman was used with each dependent variable regardless of that variable's distribution.

The Pearson product-moment correlation was used to test the  $H_0$ : There is no correlation between program length and enrollment in postprofessional advanced doctorate programs in physical therapy when the dependent variable enrollment was total, alumni, and international enrollment because the independent variable, program length, was normally distributed. The Spearman correlation coefficient was used when the dependent variable was either full-time enrollment or part-time enrollment.

The Spearman correlation coefficient was used to test the  $H_0$ : There is no correlation between the reputation of the affiliated entry-level program and enrollment in postprofessional advanced doctorate programs in physical therapy regardless of the normality of the dependent variable because the independent variable reputation was measured on the ordinal scale.

Because the independent variable graduation rate was normally distributed, the Pearson product-moment correlation was used to test the  $H_0$ : There is no correlation between graduation rate and enrollment in postprofessional advanced doctorate programs in physical therapy when the dependent variable was also normally distributed (total enrollment, alumni

enrollment, and international enrollment). The Spearman correlation coefficient was used when the dependent variable was not normally distributed (full-time enrollment and part-time enrollment).

The Pearson product-moment correlation was used to test the  $H_0$ : There is no correlation between the number of specializations offered and enrollment in postprofessional advanced doctorate programs in physical therapy when the dependent variables were total enrollment, alumni enrollment, and international student enrollment because the independent variable number of specializations offered was normally distributed. The Spearman correlation coefficient was used when the dependent variable was not normally distributed, as in the case of full-time enrollment and part-time enrollment.

The Pearson product-moment correlation was used to test the  $H_0$ : There is no correlation between the number of application requirements beyond the graduate school application and enrollment in postprofessional advanced doctorate programs in physical therapy when the dependent variable was normally distributed because the independent variable number of application requirements was normally distributed as well. On the contrary, when the dependent variable was not normally distributed, as was the case with full-time enrollment and part-time enrollment, the Spearman correlation coefficient was used.

Fisher's exact test (Norusis, 2004) was used to analyze the independent variables accreditation status and institutional funding/support, while Fisher's exact test extended (Kirkman, 1996) was

used to analyze program format, recruitment methods, Carnegie classification, type of degree awarded, and degree discipline. The Chi-square test and Kruskal-Wallis test were considered as options but discarded due to the fact that at least one cell in each contingency table had a count of  $< 5$  (Gall, et al., 2007).

Fisher's exact test extended was used to test the  $H_0$ : Enrollment in postprofessional advanced doctorate programs in physical therapy is independent of Carnegie classification because Carnegie classification required a  $2 \times 7$  contingency table (Kirkman, 1996).

Fisher's exact test was used to test  $H_0$ : Enrollment in postprofessional advanced doctorate programs in physical therapy is independent of accreditation status, as well as to test the  $H_0$ : Enrollment in postprofessional advanced doctorate programs in physical therapy is independent of type of institutional funding/support, both of which used a  $2 \times 2$  contingency table (Norušis, 2004).

Fisher's exact test extended was used to test the  $H_0$ : Enrollment in postprofessional advanced doctorate programs in physical therapy is independent of delivery format, which required a  $2 \times 4$  contingency table.

Fisher's exact test extended was used to test the  $H_0$ : Enrollment in postprofessional advanced doctorate programs in physical therapy is independent of the type of doctoral degree offered and to test the  $H_0$ : Enrollment in postprofessional advanced doctorate programs in physical therapy is independent of primary recruitment method, both of which used

2 x 3 contingency tables.

Fisher's exact test extended was used to test the  $H_0$ : Enrollment in postprofessional advanced doctorate programs in physical therapy is independent of degree discipline which utilized a 2 x 5 contingency table.

*Statistical Software.* The Fisher exact test extended was performed on a personal computer, using an online statistical calculator (Kirkman, 1996). The remaining data analyses were also performed on a personal computer, but using the SPSS software, 12.0 Student Version (Norušis, 2004).

#### *Methodological Assumptions, Limitations, and Delimitations*

*Assumptions.* The primary assumption in this investigation is that the characteristics to be examined can be measured accurately through self-report (Marshall & Rossman, 1999). Operational definitions that have been previously defined in the literature or that are used by the APTA, the CAPTE, or the U.S. Department of Education were employed in order to assure that the variables were accurately measured through self-report.

A second assumption in the proposed study was that the survey respondents were honest and accurate in their responses (Marshall & Rossman, 1999). The majority of the data collected was the same or similar to the data collected annually by the CAPTE, from affiliated entry-level physical therapy programs, by regional accrediting agencies, and by the Carnegie Foundation, and should have been known by the participant or have been easily accessible (Dillman, 2007).

*Limitations.* The small target population and small sample size were the

primary limitations of this study. The validity and reliability of the author-developed questionnaire were also limiting factors in the proposed study. Face validity and content validity were improved by having the questionnaire reviewed first by a university professor in business and then by two experts in the field of physical therapy education, one of whom was also an expert in survey research methodology (Babbie, 1999). A pilot study, which included several entry-level physical therapy educators, was also employed to improve internal validity of the survey questionnaire (vanTeijlingen & Hundley, 2001).

Several intervening variables may have influenced the association between program characteristics and enrollment. Student debt, disposable income, and employer's contribution to continuing education may be mediating variables (Baron & Kenny, 1986) between cost and enrollment. Other mediating variables may have included the students' personal and work commitments, geographic proximity to the campus, accessibility to the technology required for distance learning, and the student's ability and comfort level in utilizing such technology. Measuring and controlling for these variables was beyond the scope of this study.

Explicit cost and program length were confounding variables (Ary et al., 2002) because the number of semester credit hours (length) was used to calculate explicit cost (tuition per credit hour multiplied by the number of credit hours). For that reason, program length was measured by more than one method. The first method used was to measure program length as the total number of semester credit hours required to earn the doctoral degree. The

second method was to measure program length as the total number of weeks, on average, that a student was enrolled in the program (CAPTE, 2008). Part-time and full-time enrollment were also confounding variables as these two variables were added together to determine total enrollment for each participating program.

*Delimitations.* This study was limited to surveying program directors in postprofessional advanced doctoral programs in physical therapy. In addition, the author collected data from the 2007-2008 academic year, limiting data collection to one point in time, which was intended to provide for uniform data from one program to another (Mohr, et al., 2005).

The number of programs from which data was collected was limited to those active programs recognized by the APTA as postprofessional education programs in physical therapy. This criteria narrowed the target population to 36 programs, making a census practical. The information that was collected was also limited in scope and included predominantly objective data versus student attitude surveys as has been done in other studies.

#### *Ethical Assurances*

*Problem Statement, Purpose Statement, and Research Questions.* The purpose of this study was to examine the association between program characteristics and enrollment in postprofessional advanced doctoral degree programs in physical therapy. As per Creswell (2003), research should benefit the participant in some way. By measuring the association between program characteristics and enrollment, program directors will be provided with information that may be used to evaluate and modify existing programs, develop

new programs, and attract and retain students.

The informed consent form included an explanation of the purpose of the study (Ary, et al., 2002) and the research questions to be answered. No deception was employed and the participants were fully informed of the objectives of the study.

*Data Collection, Analysis, and Interpretation.* Consent to participate was voluntary, informed, and given by competent individuals (Ary, et al., 2002; McNamee & Bridges, 2002). No sensitive or potentially embarrassing information, such as that pertaining to illegal acts or abuse, was collected. The benefits and risks of participating in the study (Polgar & Thomas, 2002) were explained to each participant in the informed consent document. The target population did not include vulnerable populations, but rather was made up of graduate-degree-trained program directors of postprofessional advanced physical therapy education programs, all of whom were professionally educated adults.

The principal investigator provided envelopes and postage to eliminate any financial cost to the participants, leaving the time to complete the survey as the only cost to the participants (McNamee & Bridges, 2002). The benefits and risks of participating in the proposed study, as well as the procedures that were to be followed and what would be required or expected of the participant were explained in the informed consent document (Ary, et al., 2002).

The right of each participant to withdraw from the study at any time and for any reason was explained in the informed consent document (Creswell, 2003).

Each participant was provided the opportunity to ask questions of the investigator and/or the dissertation committee chairperson via telephone or e-mail at any time prior to signing the consent form, at any time during the study, and at any time after the study was completed. The rights of each participant, such as the right to privacy (Polgar & Thomas, 2002; McNamee & Bridges, 2002), the right to confidentiality, and the right to obtain the results of the study after the data were collected, analyzed, and reported was explained in the informed consent document (Creswell, 2003). Finally, each participant, upon written request, will receive a copy of the results of the study.

The letter of informed consent was included with the second mailing. In order to increase privacy, surveys were anonymous and were to be returned separately from the informed consent document. Each participant was provided with a postcard indicating the desire to be removed from the mailing list for follow-up mailings in the event that the participant did not wish to participate (Dillman, 2007). This postcard could be returned separately from any other documents. As questionnaires and postcards requesting removal from the mailing list were received, identification numbers were compared to the mailing list and respondents were removed from the list. Once data collection was complete, the mailing list was destroyed so that individual names and programs could not be connected to the results of the study. In addition to the informed consent process, the proposed dissertation was submitted to the NCU Institutional Review Board and received approval prior the study being initiated.

Common concerns related to data analysis and interpretation include

confidentiality, length of time the data will be kept, how the data will be disposed of, and ownership of the data (Creswell, 2003). In order to ensure confidentiality, participants have not been identified individually, but rather as groups when findings are reported. The fact that the data collected will remain the property of the principal investigator and will be secured for 5 years in a locked filing cabinet in the principal investigator's office before being disposed of in a manner that will ensure continued confidentiality, was explained to each participant in the informed consent document (Creswell, 2003).

*Writing and Dissemination of Research.* Ethical issues related to the writing of and dissemination of research included the use of biased language; "suppressing, falsifying, or inventing findings, to meet a researcher's or an audience's needs" (Creswell, 2003, p. 67); and misuse of results. Unbiased language was used in the writing and dissemination of the results of this study and participants were acknowledged in general terms only. Findings were not suppressed, falsified, or created, and the details of the study including methodology and results, have been described.

### *Summary*

Data for this quantitative, non-experimental, survey design were collected using an author-developed questionnaire. The questionnaire was administered to the program directors of the 36 active postprofessional advanced doctorate programs in physical therapy located in the U.S. as identified by the APTA. Major assumptions made were that the data to be collected could be measured by self-report and that respondents were honest and accurate. Limitations included the

small target population, small sample size, and the fact that the individual who developed the questionnaire was a novice researcher. For this reason, two experts in physical therapy education, one of whom was also an expert in survey research design, were consulted and a pilot study was performed with several physical therapy educators participating. IRB approval was received prior to beginning data collection. Informed consent was received from all participants and confidentiality maintained.

## CHAPTER 4: FINDINGS

### *Overview*

The purpose of this dissertation study was to determine if program characteristics/factors were associated with enrollment in postprofessional advanced doctoral programs in physical therapy. In this chapter, study findings will be presented and discussed, beginning with descriptive data which was used to characterize the typical advanced postprofessional doctorate program in physical therapy. Next, findings related to the association of specific program characteristics/factors and enrollment will be presented. This will be followed by an evaluation of the findings, and a summary.

### *Results*

Survey questionnaires were administered via first class mail to the program directors of the 36 active postprofessional, advanced doctoral physical therapy programs as identified by the APTA (2005). Three programs declined to participate, stating that they were not appropriate for inclusion in the study because they offered degrees in areas other than physical therapy. Of the questionnaires distributed to the program directors of the 36 active advanced doctoral programs, 19 were returned for a response rate of 53%, which is greater than the 50% that Babbie (1990) stated was necessary for analysis.

Of the 19 questionnaires returned, some had questions that were not answered. Missing data was managed by use of listwise deletion. Despite the resulting decrease in statistical power (Cohen & Cohen, 1983) and increased likelihood of a Type II error (Raymond, 1986), listwise deletion was chosen over

pairwise deletion because pairwise deletion can result in correlation coefficients that fall outside of the normal limits of -1 and 1 (Cohen & Cohen). Mean imputation was not used for fear of lowering the correlation coefficient thus downwardly biasing the analyses (Raymond). The use of listwise deletion also made for easier analyses. For this reason, the  $N$  for each variable differed based on the number of programs that provided data for each variable.

When describing the typical advanced doctorate program in physical therapy, the mean was reported for data that were measured on the interval scale and found to be normally distributed. The median was reported for data measured on the interval scale that was not normally distributed and also for data measured on the ordinal scale. The mode was reserved for describing variables measured on the nominal scale.

### *Descriptive Statistics*

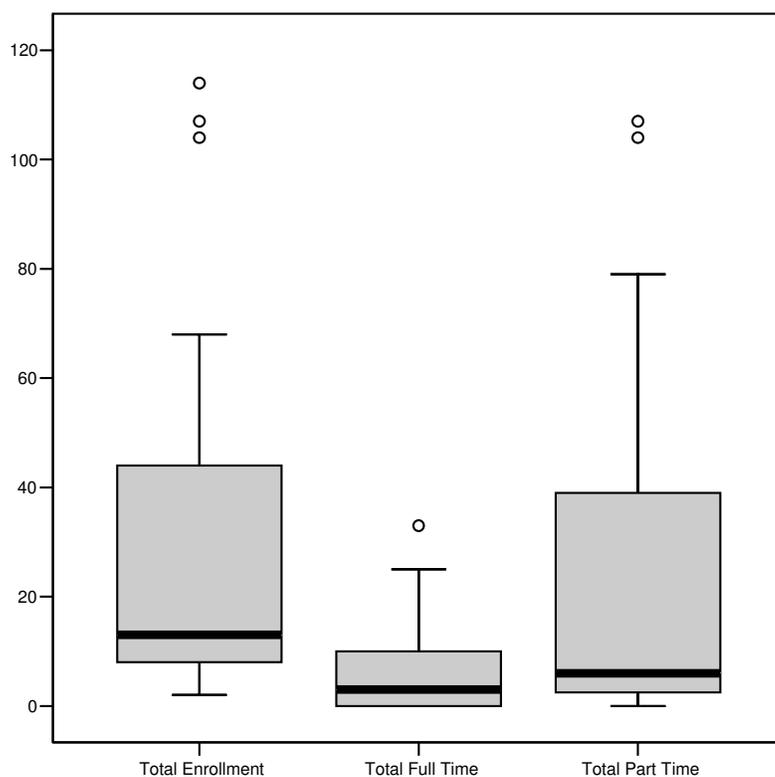
*Total enrollment.* The combined enrollments of all respondents ( $N = 19$ ) was 627 students. The data were normally distributed (K-S test,  $p > .05$ ) with a  $p$  value of .25. Figure 1 shows a broad range of enrollments, with the majority of programs clustered at the lower end and three outliers at the upper end. The result was a mean enrollment of 33.53 ( $SD = 36.47$ ).

Full-time enrollment was 139 students, while part-time enrollment was 488. Neither full-time enrollment (K-S test,  $p = .049$ ) nor part-time enrollment (K-S test,  $p = .02$ ) was normally distributed. As depicted in Figure 1, the median full-time enrollment was 3.00, while the median part-time enrollment was 6.00.

*New enrollment.* Respondents ( $N = 17$ ) received applications from 244

students for matriculation during the 2007-2008 academic year. Of those applicants (K-S test,  $p = .47$ ), 70% were offered a position. The mean number of applicants was 14.35 ( $SD = 15.42$ ). Outliers are shown in Figure 2.

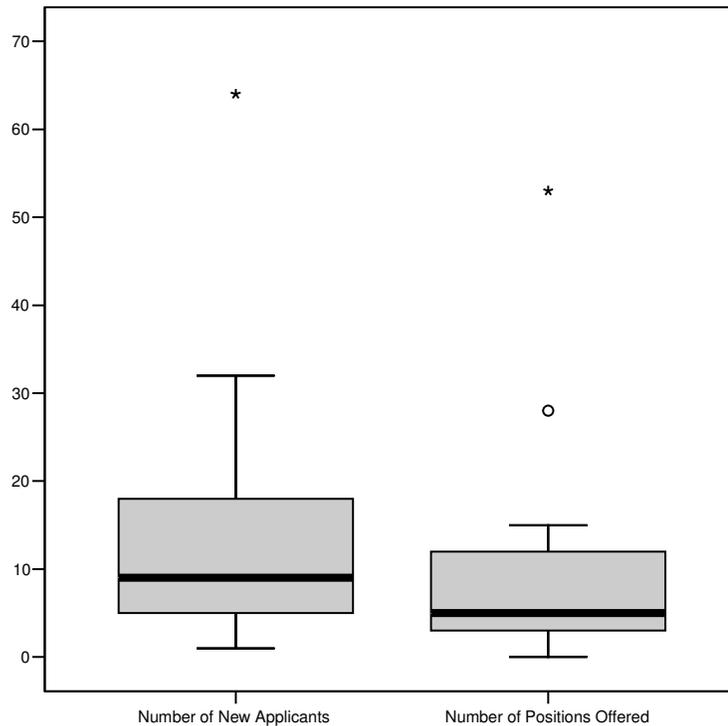
*Figure 1.* Total enrollment in postprofessional advanced doctorate programs.



*Note.* In this 95% confidence interval box plot, the box depicts the range between the first and third quartiles, while the bar depicts the median.

Fifteen programs provided complete data regarding the number of positions offered and accepted. Of the 113 positions offered (K-S test,  $p = .18$ ) by those 15 programs, 89% were accepted (K-S test,  $p = .77$ ). Figure 3 shows the presence of outliers for both variables. The mean number of positions offered was 7.53 ( $SD = 7.25$ ) and the mean number of positions accepted was 6.73 ( $SD = 6.88$ ).

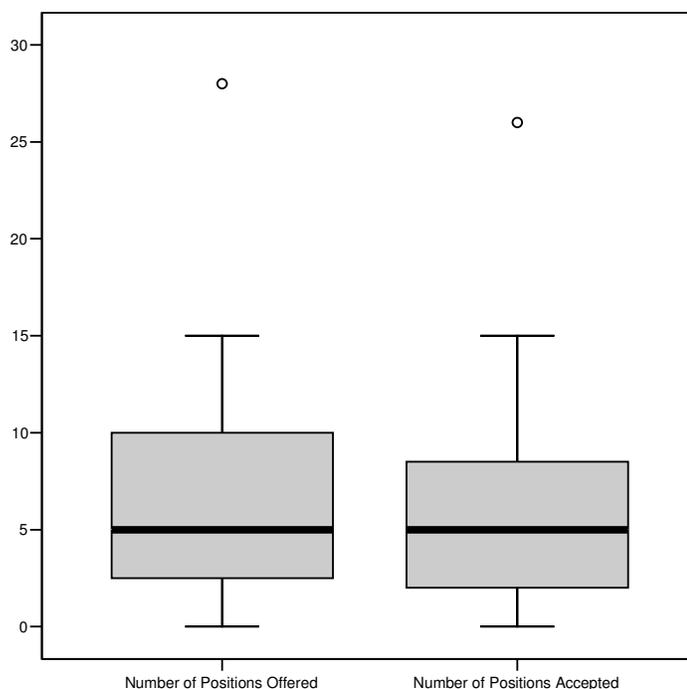
Figure 2. New applicants and positions offered.



*Note.* In this 95% confidence interval box plot, the box depicts the range between the first and third quartiles, while the bar depicts the median.

*Alumni and international student enrollment.* The total number of alumni enrolled ( $N = 19$ ) was 59 and was normally distributed (K-S test,  $p = .06$ ). International student enrollment ( $N = 19$ ) was 43, also with a normal distribution (K-S test,  $p = .34$ ). The mean was 3.11 ( $SD = 3.21$ ) for alumni and 2.26 ( $SD = 2.89$ ) for international students.

Figure 3. Positions offered and positions accepted.



*Note.* In this 95% confidence interval box plot, the gray box depicts the range between the first and third quartiles, while the black line depicts the median.

*Recruitment methods.* Respondents ( $N = 17$ ) identified electronic methods as the most commonly used type of recruitment method followed by traditional methods such as print media, catalogs, and brochures, and finally personnel methods including faculty and alumni. Electronic methods of recruitment were utilized by 47% of respondents over traditional and personnel methods while 35% of respondents used primarily traditional recruitment methods. The remaining 18% utilized personnel methods as the primary means of recruiting students.

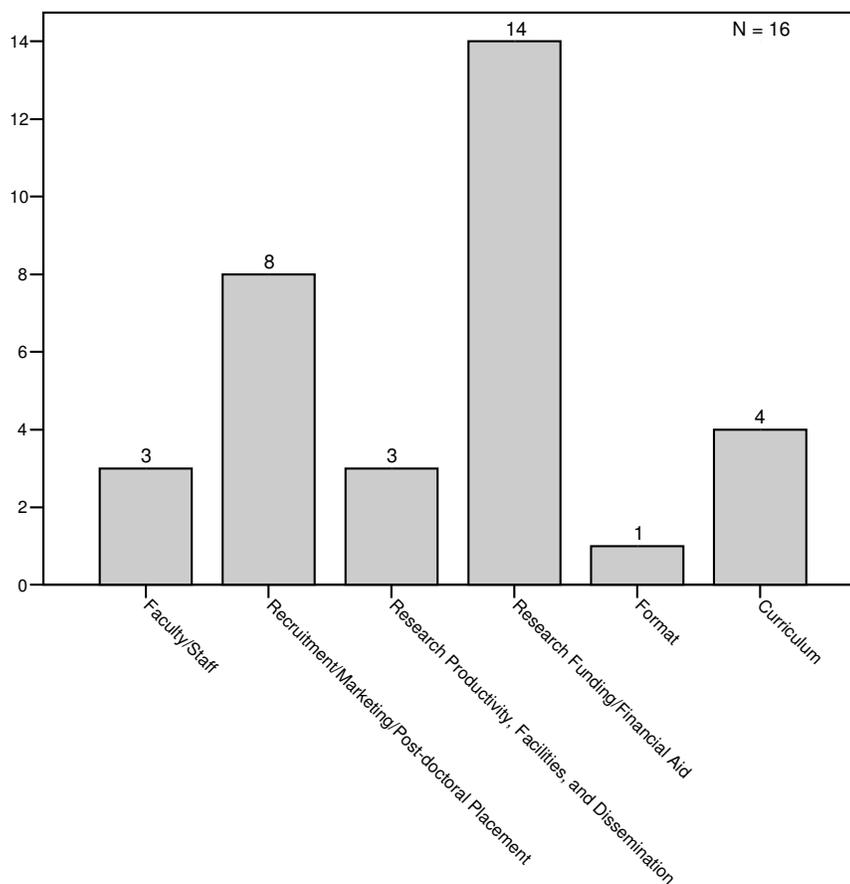
*Areas in need of improvement.* When questioned about areas in need of improvement (Figure 4), 50% of respondents ( $N = 16$ ) cited a need for improved student recruitment and marketing efforts, while 88% of respondents indicated a need for more research funding and/or student financial aid.

*Student characteristics.* Alumni made up 9% of enrolled students while in-state residents made up 50% and international students made up 7%. Of all enrolled students, 9% relocated to the area in order to attend school. Female students accounted for 60% of students while males represented 40%.

The most commonly represented racial/ethnic group was Caucasians, who made up 69% of students, while the most under-represented ethnic group was Native Americans at 0%. African American students made up 13% of the student population, Asian students accounted for 11%, and Hispanic students for 4%. Students categorized as being of an “other” or “unknown” racial or ethnic background accounted for 3%.

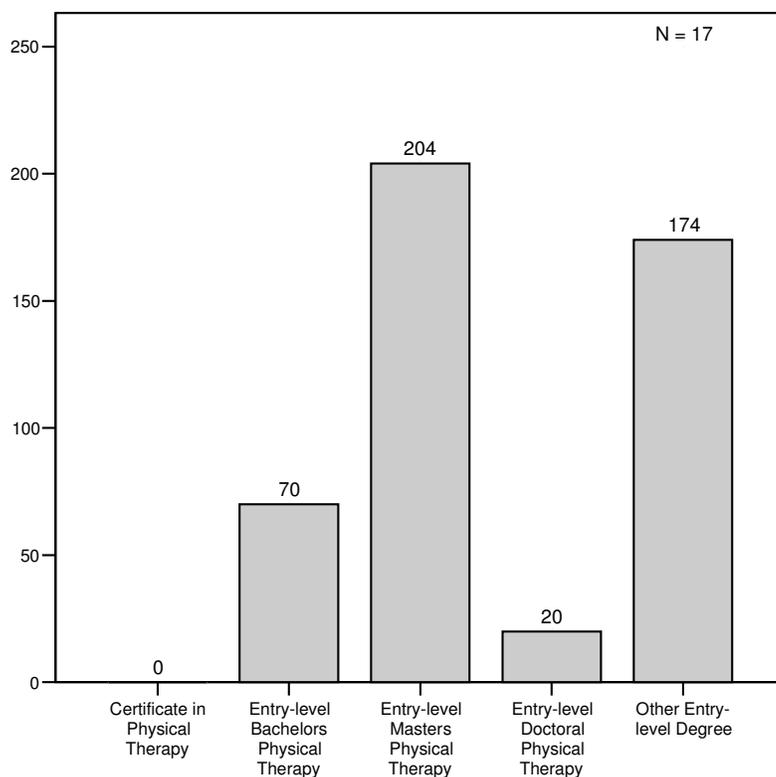
Because the students represented in this study were enrolled in doctoral programs in physical therapy as well as other closely related fields, the students’ educational backgrounds varied as shown in Figure 5. Students whose entry-level professional degree was a bachelor’s degree in physical therapy comprised 15% of students. Those with an entry-level master’s degree in physical therapy made up 44% and those with an entry-level degree in a field other than physical therapy made up 37%. The remaining 4% of students held an entry-level doctoral degree in physical therapy.

*Figure 4. Areas in need of improvement.*



Students whose highest earned degree at the time of matriculation was a professional master's degree accounted for 53% of students, while those whose highest earned degree was a master's degree beyond the first entry-level professional degree comprised 30% of students. Those holding a bachelor's degree as their highest degree made up 13% of students. The remaining 5% of students held a professional doctorate as their highest earned degree.

*Figure 5.* Entry-level professional degree.



*Institutional characteristics.* A relatively equal proportion of private institutions ( $N = 9$ ) and public institutions ( $N = 10$ ) were represented in this study. Carnegie classification varied with 39% of respondents ( $N = 18$ ) being classified as research university-very high (RUVH) and 22% being classified as research university-high (RUH). Doctoral Research Universities made up 17% of institutions, while Special Focus Institutions Medical or Health and Master's Colleges and Universities/Larger each made up 6%. Two (11%) institutions had not been classified by the Carnegie Foundation. Eighteen respondents ( $N = 19$ ) were regionally accredited institutions and the remaining program was a "candidate for accreditation."

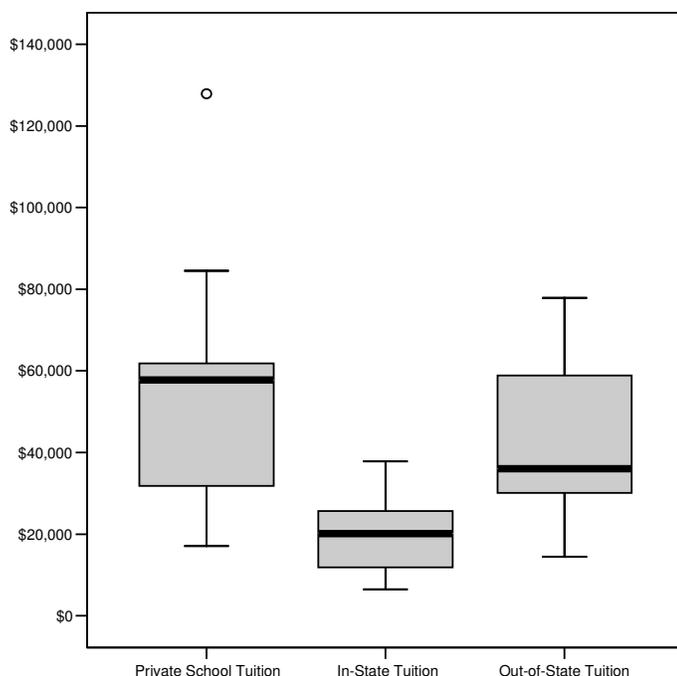
*Financial characteristics.* In-state and out-of-state tuition for public programs and tuition for private programs were normally distributed (K-S test,  $p =$

.99, .73, and .82, respectively). The mean tuition to complete a degree at private institutions was \$56,100 ( $SD = \$34,000$ ). As depicted in Figure 6 there was one outlier for this variable. The mean in-state tuition was \$20,000 ( $SD = \$9,400$ ) while the mean out-of-state tuition was \$43,000 ( $SD = \$20,000$ ).

The following types of financial aid were offered by responding programs/institutions: cultural diversity waivers or scholarships; research, service, graduate, and teaching assistantships; grants; loans; and scholarships. The most common types of financial aid offered were assistantships, which were offered by 74% of programs/institutions. More than half (58%) offered loans, 37% offered grants, and 37% offered scholarships. Cultural diversity waivers or scholarships were offered by 11% of programs.

The median number of students in each program ( $N = 18$ ) who received full financial aid was 0 (K-S test,  $p = .02$ ). Unlike the data for full financial aid awards, the data for partial financial aid awards were normally distributed (K-S test,  $p = .30$ ). The mean number of students who received partial financial aid was 6.5 ( $SD = 8.7$ ). Six of the 18 respondents offered stipends to those students who received a full tuition waiver (e.g., research and teaching assistants). The median amount of the stipend offered by those programs was \$21,062 (K-S test,  $p = .004$ ).

*Figure 6.* Tuition cost for public and private programs.



*Note.* In this 95% Confidence Interval Box Plot, the box depicts the range between the first and third quartiles, while the bar depicts the median.

*Program characteristics.* *U.S. News & World Report* ranks educational programs, including entry-level physical therapy programs. Fourteen (78%) respondents ( $N = 18$ ) had an affiliated entry-level physical therapy program that voluntarily participated in the most recent *U.S. News & World Report* rankings (Figure 7). Three respondents (17%) were affiliated with programs that did not participate and 2 respondents (11%) were not affiliated with an entry-level physical therapy program.

The most common type of degree offered ( $N = 19$ ) was the Doctor of Philosophy degree, which was offered by 68% of respondents. The Doctor of Science degree was offered by 26% of institutions and the Doctor of Health Science was offered by 5% of institutions.

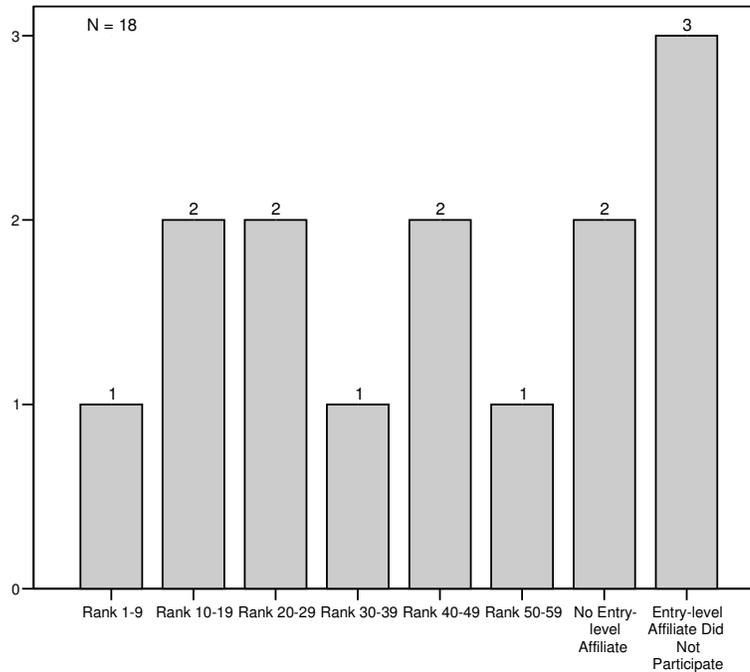
Ten (53%) responding institutions/programs ( $N = 19$ ) offered a doctoral

degree in physical therapy. Degrees in rehabilitation sciences and degrees in health sciences were offered by 16% of respondents each, while degrees in movement science were offered by 11% participating programs. A degree in health practice research was offered by 5% of programs.

Nineteen different specializations, as shown in Figure 8, were offered ( $N = 16$ ). The remaining 3 programs did not offer any areas of specialization. The three most common areas of specialization, in descending order of frequency, were neurological/neuromuscular, orthopedics, and pediatrics.

Programs were offered through a variety of delivery formats. The most common method of delivery ( $N = 19$ ) was evenings/weekends with 32% of programs using this format. A day format was used by 21% programs while 16% of programs each delivered their curriculum via a distance format, a hybrid format with a distance component, and in multiple formats.

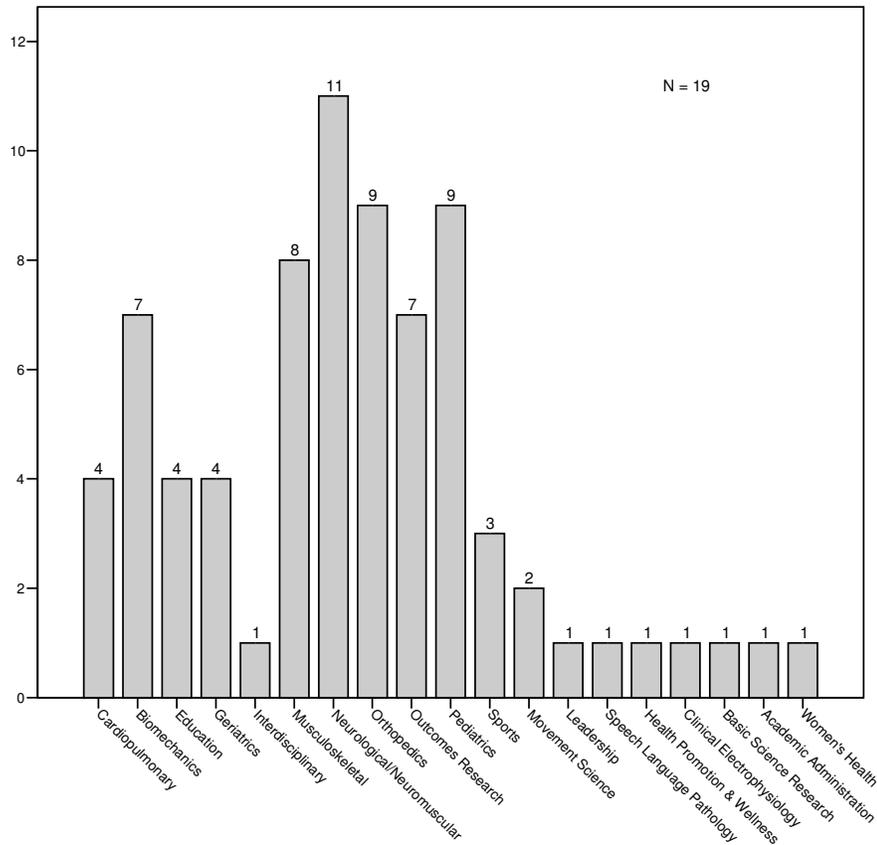
*Figure 7. Rank of affiliated entry-level physical therapy program.*



Program length was measured in semester hours ( $N = 18$ ) and in weeks (number of semesters multiplied by weeks per semester,  $N = 19$ ) and was normally distributed for both variables (K-S test,  $p = .52, .30$ , respectively). The mean length in weeks was 185 weeks ( $SD = 54$ ). As depicted in Figure 9, program length in weeks had one outlier. Mean length in semester hours was 54 ( $SD = 12$ ).

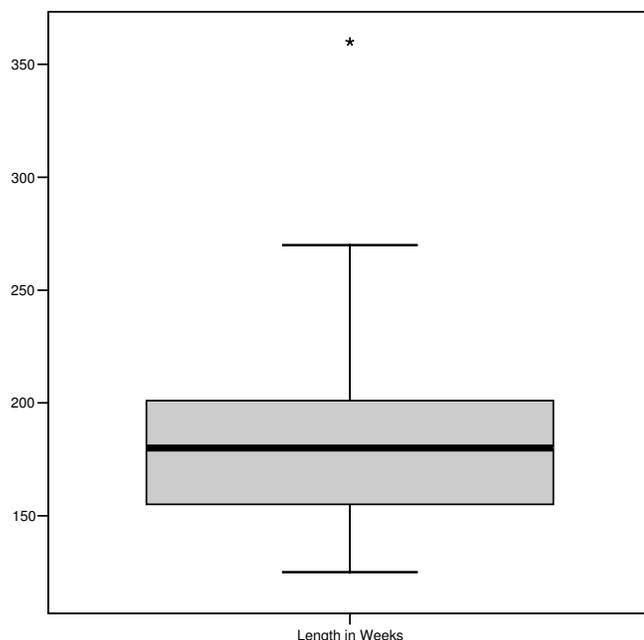
The data for the number of application requirements beyond the graduate school application were normally distributed (K-S test,  $p = .54$ ). The mean number of application requirements ( $N = 19$ ) beyond the graduate school application was 8.00 ( $SD = 1.67$ ).

*Figure 8. Areas of specialization offered.*



Respondents ( $N = 19$ ) reported a total of 84 graduates during the 2007-2008 academic year (K-S test,  $p = .19$ ). The mean number of graduates per program was 4.42 ( $SD = 5.72$ ).

Figure 9. Program length in weeks



*Note.* In this 95% confidence interval box plot, the box depicts the range between the first and third quartiles, while the bar depicts the median.

Overall graduation rate (K-S test,  $p = .94$ ) and graduation rate of those students reaching doctoral candidacy (K-S test,  $p = .13$ ) were normally distributed. As depicted in Figure 10, the mean graduation rate of all students who matriculated into a responding program was 63% ( $SD = 26\%$ ). The mean graduation rate of those students reaching doctoral candidacy was 88% ( $SD = 22\%$ ).

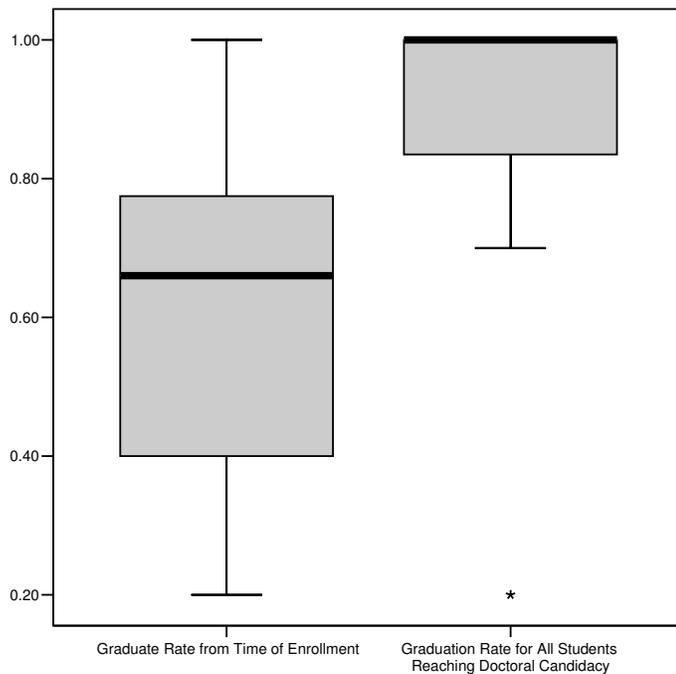
Program directors ( $N = 19$ ) were asked to identify the three most important resource needs of their programs. Student financial aid or funding (74%), research funding (63%), and a higher number of applicants or higher quality applicants (37%) were the three most commonly identified resource needs. More faculty and/or staff (26%) and space and equipment (21%) were also identified as common resource needs.

Participants were asked to identify the three top reasons that students choose their program. Degree plan and flexibility (81%), faculty/mentoring (63%), reputation/quality (44%), and location (44%) were the four most common responses ( $N = 16$ ). Cost (25%) and diversity (19%) were also common responses.

### *Measures of Association*

Data for total enrollment, alumni enrollment, international student enrollment, program length, graduation rate, number of application requirements, and partial financial aid awards were normally distributed, paired, bivariate, and measured on at least the interval scale thus meeting the assumptions of the Pearson product-moment correlation (Tritschler, 2000). Data for full-time enrollment, part-time enrollment, stipend amount, full financial aid awards, and reputation did not meet the assumptions of the Pearson correlation. These data did, however, meet the assumptions of the Spearman correlation coefficient as they were paired, bivariate, and measured on at least an ordinal scale (Tritschler, 2000). For this reason, both the Pearson product-moment correlation and the Spearman correlation coefficient were used to answer the first research question: Does a relationship exist between enrollment in postprofessional advanced doctoral programs in physical therapy and explicit cost, financial aid, stipend amount, program length, reputation, graduation rate, number of specializations offered, or number of application requirements, depending on which set of assumptions were met by the variables being analyzed.

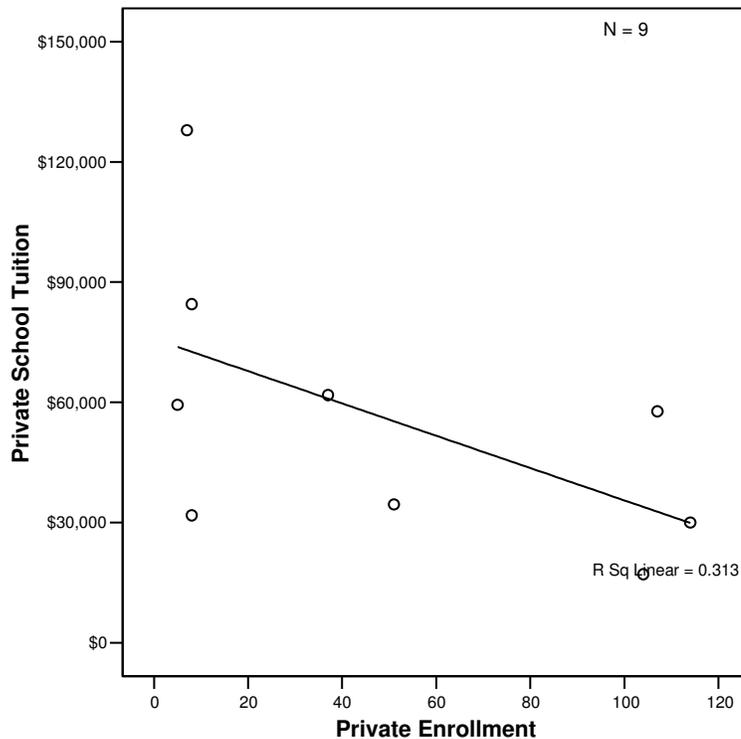
*Figure 10.* Graduation rates for doctoral students in physical therapy.



*Note.* In this 95% confidence interval box plot, the box depicts the range between the first and third quartiles, while the bar depicts the median.

*Correlation coefficients for enrollment and explicit cost.* As depicted in Figure 11, the Pearson product-moment correlation coefficient for private school enrollment and explicit cost (tuition) was  $r(7) = -.56$ ,  $p = .12$ , indicating a large effect size (Cohen, 1992). The Pearson product-moment correlation for alumni enrollment and explicit cost was  $r(7) = -.15$ ,  $p = .69$ , and  $r(7) = .46$ ,  $p = .21$  for international student enrollment and explicit cost.

*Figure 11.* Relationship between private program tuition and total enrollment.



The Pearson product-moment correlation coefficient was  $r(8) = .28$ ,  $p = .44$  for in-state tuition (explicit cost) and enrollment of students who were in-state residents at the time of admission in public programs while  $r(8) = -.22$ ,  $p = .14$  for out-of-state tuition and the number of students who were out-of-state residents at the time of admission.

*Correlation coefficients for enrollment and financial aid awards.* The Spearman correlation coefficient for total enrollment and the number of full financial aid awards given was  $r_s(17) = -.39$ ,  $p = .10$ . The Pearson  $r$  for total enrollment and the number of partial financial aid awards given was  $r(16) = .24$ ,  $p = .33$ .

The  $r_s$  for full-time enrollment and the number of full financial aid awards given was  $r_s(16) = .27$ ,  $p = .27$ , and the  $r_s$  for part-time enrollment and the number

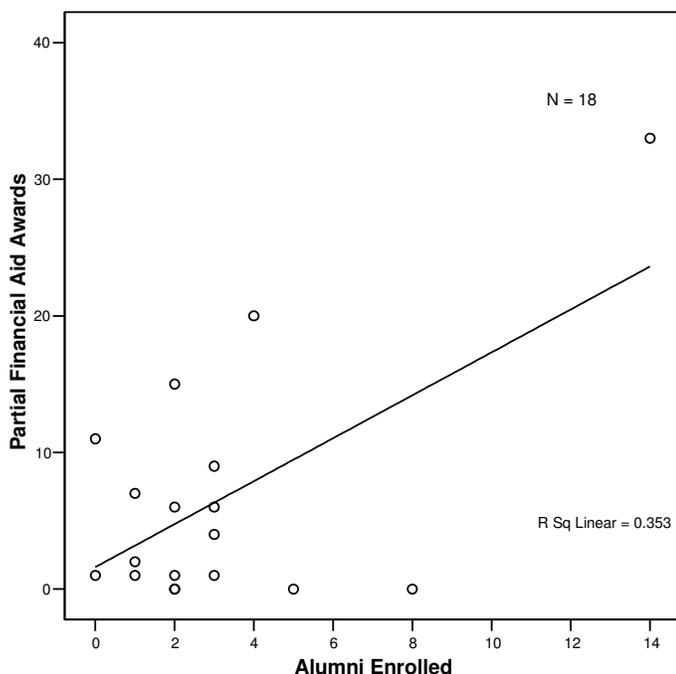
of partial financial aid awards given was  $r_s(16) = -.13, p = .62$ . The Spearman correlation coefficient for full-time enrollment and annual stipend was  $r_s(16) = .24, p = .33$ .

The Pearson product-moment correlation for alumni enrollment and the number of partial financial aid awards given was  $r(16) = .59, p = .01$  as indicated in Figure 12.

The Spearman correlation had a coefficient  $r_s(17) = -.09, p = .74$  for international student enrollment and the number of full financial aid awards given. The Pearson  $r$  for international student enrollment and partial financial awards was  $r(16) = .37, p = .13$ . The Spearman correlation for international student enrollment and amount of annual stipend was  $r_s(16) = .04, p = .86$ .

*Correlation coefficients for enrollment and program length.* The Pearson product-moment correlation coefficient for total enrollment and program length measured in semester hours was  $r(16) = -.14, p = .59$ . Full-time enrollment and program length had a Spearman correlation coefficient  $r_s(16) = -.40, p = .11$ . The  $r_s$  for part-time enrollment and length was  $r_s(16) = .18, p = .47$ . International student enrollment and program length measured by semester credit hours had a Pearson  $r(16) = -.39, p = .12$ .

*Figure 12.* Relationship between partial financial aid and alumni enrollment.



*Correlation coefficients for enrollment and reputation.* The Spearman rank order correlation coefficient for total enrollment and reputation was  $r_s(11) = -.25$ ,  $p = .40$ . The  $r_s$  for full-time enrollment and the reputation of the affiliated entry-level physical therapy program was  $r_s(11) = .18$ ,  $p = .55$ . Part-time enrollment and reputation of the affiliated entry-level physical therapy program had a Spearman correlation coefficient of  $r_s(11) = -.31$ ,  $p = .30$ . Alumni enrollment and reputation had an  $r_s(11) = .57$ , indicating a large effect size, and  $p = .04$ . As the ranking of the affiliated entry-level physical therapy program increased, alumni enrollment increased (Figure 13). International student enrollment and reputation had a Spearman correlation coefficient of  $r_s(11) = .23$ ,  $p = .44$ .

*Correlation coefficients for enrollment and graduation rate.* The Pearson product moment correlation for total enrollment and graduation rate was  $r(14) = -.02$ ,  $p = .95$ ; for alumni enrollment and graduation rate  $r(14) = -.12$ ,  $p = .65$ ; and

for international enrollment and graduation rate  $r(14) = .01, p = .97$ . The Spearman correlation coefficient for full-time enrollment and graduation rate was  $r_s(14) = -.02, p = .94$  and for part-time enrollment and graduation rate was  $r_s(14) = .10, p = .72$ .

*Correlation coefficients for enrollment and number of application requirements.* The Pearson  $r$  for total enrollment and number of application requirements was  $r(17) = -.29$  with a significance of  $p = .23$ . The Pearson  $r$  for alumni enrollment was  $r(17) = .39, p = .10$  and for international student enrollment  $r(17) = .14, p = .57$ . The Spearman correlation coefficient for full-time enrollment and number of application requirements was  $r_s(17) = .33, p = .17$  while the  $r_s(17) = -.36, p = .13$  for part-time enrollment and number of application requirements.

*Correlation coefficients for enrollment and number of specializations offered.* The Pearson product-moment correlation for total enrollment and number of specialization areas was  $r(17) = -.15, p = .53$ , and for alumni enrollment and number of specializations was  $r(17) = .06, p = .82$ . As depicted in Figure 14, international student enrollment and number of specializations had an  $r(17) = .52$ , indicating a large effect size, with a significance of  $p = .02$ . The Spearman correlation coefficient for full-time enrollment and number of specializations was  $r_s(17) = .16, p = .51$  while the  $r_s(17) = .08, p = .74$  for part-time enrollment.

*Figure 13.* Relationship between reputation and alumni enrollment

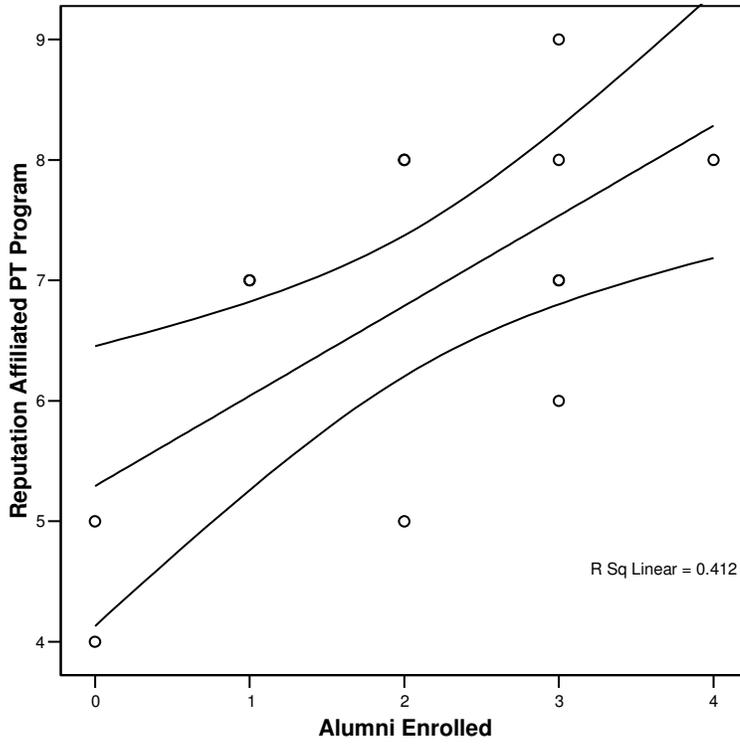
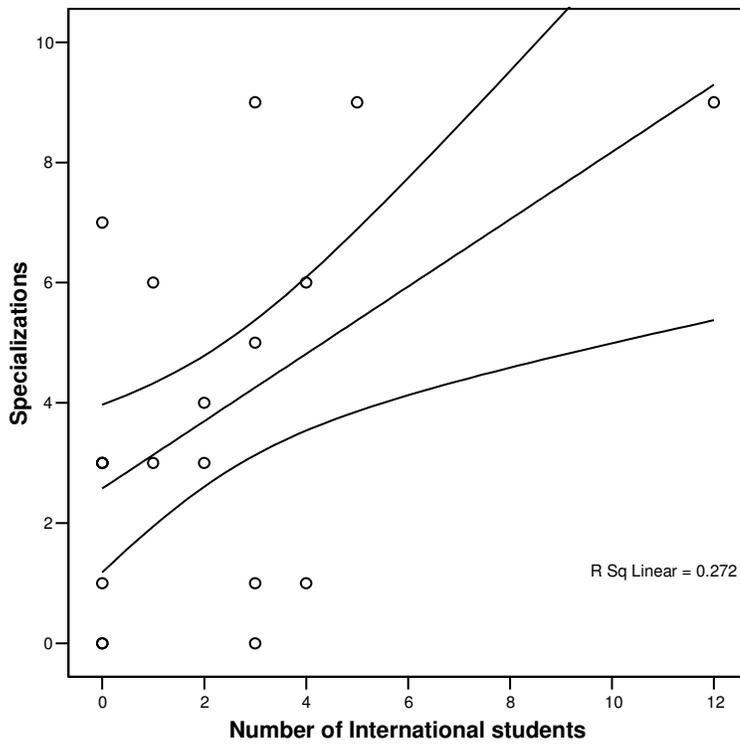


Figure 14. Relationship between specializations and international enrollment.



Data measured on the nominal scale did not meet the assumptions criteria for the Pearson chi-square or the Kruskal Wallis test due to having < 5 counts in at least one cell for each analysis (Gall, et al., 2007). For this reason, Fisher's exact test (Norušis, 2004) was used for those variables that were amenable to a 2 x 2 contingency table and Fisher's exact test extended (Kirkman, 1996) was used for the remaining variables that required a larger contingency table in order to answer the research question: Is enrollment independent of Carnegie classification, type of institutional funding/support, accreditation status, delivery format, type of degree, discipline, or primary recruitment methods?

*Tests of independence for enrollment and program delivery format.*

Fisher's exact test extended showed that total enrollment was independent of program delivery format,  $\chi^2(3, N = 19) = 2.03, p = .88$ ; that alumni enrollment was independent of delivery method  $\chi^2(4, N = 19) = 0.95, p = 1.00$ ; and that part-time enrollment was independent of delivery format  $\chi^2(6, N = 19) = 7.74, p = .17$ . Full-time enrollment and international student enrollment were found to not be independent of program delivery format,  $\chi^2(6, N = 19) = 28.85, p = .003$ , and  $\chi^2(4, N = 19) = 10.11, p = .01$  respectively.

*Test of independence for enrollment and primary recruitment method.*

Fisher's exact test extended was not significant for primary method of recruiting students and total enrollment  $\chi^2(2, N = 17) = 0.03, p = 1.00$ ; alumni enrollment  $\chi^2(2, N = 17) = 1.02, p = .61$ ; international enrollment  $\chi^2(2, N = 17) = 3.45, p = .21$ ; full-time enrollment  $\chi^2(4, N = 17) = 3.45, p = .49$ ; or part-time enrollment  $\chi^2(4, N = 17) = 2.48, p = .85$ .

*Test of independence for enrollment and Carnegie classification.* Fisher's exact test extended for total enrollment and Carnegie classification was  $\chi^2(5, N = 18) = 8.48, p = .12$ . For alumni enrollment and Carnegie classification, Fisher's exact test extended was  $\chi^2(5, N = 18) = 3.87, p = .67$ . For international enrollment and Carnegie classification, Fisher's exact extended was  $\chi^2(5, N = 18) = 2.84, p = 1.00$ . Fisher's exact extended for full-time enrollment and Carnegie classification was  $\chi^2(10, N = 18) = 10.86, p = .30$ , and for part-time enrollment was  $\chi^2(10, N = 18) = 12.67, p = .07$ .

*Test of independence for enrollment and institutional funding.* Fisher's exact test was insignificant for institutional funding and total enrollment,  $\chi^2(1, N = 19) = 4.55, p = .06$ ; for alumni enrollment  $\chi^2(1, N = 19) = 1.55, p = .30$ ; for international student enrollment  $\chi^2(1, N = 19) = 0.04, p = .84$ ; for full-time enrollment  $\chi^2(1, N = 19) = 0.15, p = .70$ ; and for part-time enrollment  $\chi^2(1, N = 19) = 1.31, p = .25$ .

*Test of independence for enrollment and accreditation.* Fisher's exact test was  $\chi^2(1, N = 19) = 0.95, p = .33$  for total enrollment and accreditation status. Fisher's exact was  $\chi^2(1, N = 19) = 0.38, p = .54$  for full-time enrollment and accreditation status and  $\chi^2(1, N = 19) = 2.29, p = 1.00$  for part-time enrollment and accreditation status. Alumni enrollment and accreditation,  $\chi^2(1, N = 19) = 4.0, p = .21$ , and international student enrollment and accreditation,  $\chi^2(1, N = 19) = 0.77, p = 1.00$  respectively.

*Test of independence for enrollment and type of degree awarded* Total enrollment,  $\chi^2(2, N = 19) = 2.77, p = .37$ ; alumni enrollment  $\chi^2(2, N = 19) = 6.23,$

$p = .07$ ; international enrollment,  $\chi^2(2, N = 19) = 0.82, p = 1.00$ ; part-time enrollment  $\chi^2(2, N = 19) = 4.09, p = .52$ ; and full-time enrollment  $\chi^2(2, N = 19) = 4.74, p = .22$  were found to be independent of the type of degree awarded (Ph.D., D.Sc./Sc.D, or D.H.S.).

*Tests of independence for enrollment and degree discipline.* Fisher's exact test extended yielded  $\chi^2(4, N = 19) = 6.66, p = .17$  for total enrollment and degree discipline;  $\chi^2(4, N = 19) = 5.36, p = .41$  for alumni enrollment and degree discipline; and  $\chi^2(4, N = 19) = 7.65, p = .11$  for international enrollment and degree discipline. Full-time enrollment and discipline had a Fisher's exact test of  $\chi^2(4, N = 19) = 11.4, p = .10$ , while part-time enrollment and discipline had a  $\chi^2(4, N = 19) = 7.74, p = .45$ .

### *Evaluation of Findings*

The findings from this dissertation indicate that the application process for advanced doctoral programs in physical therapy is less competitive than for entry-level physical therapy programs with 70% of applicants being offered a position as compared to only 40% of applicants to entry-level physical therapy education programs (APTA, 2008). This finding supports the need for more applicants, for higher quality applicants, and for improved recruiting efforts as cited by respondents in this study.

The ethnic/racial distribution of students represented in this study differs from the current faculty in entry-level physical therapy programs with the percentage of minority students being nearly triple that of current faculty (APTA, 2008). The gender distribution of students represented in this study is nearly

identical to that of the current faculty in entry-level programs with 40% being male and 60% being female (APTA, 2008). The entry-level professional degree differs between current advanced doctoral students and faculty. Current faculty most commonly have a bachelor's degree in physical therapy as the first professional degree (APTA, 2008) while the students represented in this study most commonly have a master's degree in physical therapy as their first professional degree. This reflects the transition from the bachelor's degree as the minimum standard for entry-level physical therapy education in the 1970s and 1980s to the master's degree in the late 1980s and 1990s.

The programs represented in this study were most commonly classified as Research Universities-Very High, which is in contrast to entry-level physical therapy programs, which are most commonly located in institutions classified as Master's Colleges and Universities/Larger (APTA, 2008). This may be due to the fact that research is a key component in advanced doctoral degree programs.

Tuition cost to complete a postprofessional advanced doctoral program in physical therapy was dramatically higher than the cost of a transitional-DPT program as show in Table 1 (APTA, 2007). This may be explained in part by the difference in the number of credit hours required to complete each degree with the average being 30 semester hours in transitional-DPT programs (APTA, 2007) and 54 semester hours in advanced doctoral programs. Interestingly, the cost to complete the advanced doctorate is less than the current cost to complete an entry-level physical therapy education program (APTA, 2008).

The findings of this dissertation support previous researchers (Johanson,

2004, 2007; Lombardo, et al., 2001; Wilcox, et al., 2005) who have reported that a relationship exists between cost and program selection in graduate and doctoral education. With regard to the relationship between financial aid and enrollment, this dissertation supports the findings of Johanson (2007) and Mark, Lusk, & Daniel (2004), who reported that financial aid and the amount of assistantship stipend were influencing factors in graduate program choice, but only for alumni enrollment.

Table 1

*Cost Comparison of Physical Therapy Education Programs*

Program Type		Public In- State	Public Out-of- State	Private
Entry-level Master's Programs*	Mean	\$22,178	\$47,514	\$70,155
	Median	\$23,409	\$49,662	\$77,217
Entry-level Doctoral Programs*	Mean	\$35,917	\$68,484	\$75,840
	Median	\$38,240	\$66,976	\$76,305
Transitional- Doctoral Programs**	Mean	\$10,462	\$12,939	
	Median			
Postprofessional Doctoral Programs	Mean	\$20,000	\$43,000	\$56,100
	Median	\$21,000	\$36,000	\$57,800

\*APTA (2008)

\*\*APTA(2007)

Thomas, et al. (2003) reported that therapists preferred a traditional classroom setting over other settings, including distance education. In the case of

full-time enrollment, the findings of this dissertation support those of Thomas, et al. (2003) and indicate that relationships exist between full-time enrollment and program delivery format and between international student enrollment and delivery format.

The findings of this study pertaining to enrollment and reputation of the affiliated entry-level physical therapy program indicated an increase in alumni enrollment as the reputation rank increased (top ranked programs have lower numbers). This is contrary to previous findings (Johanson, 2004, 2007; Mark, et al., 2004; Poock & Love, 2001) that report reputation to be a deciding factor in graduate, doctoral, and professional program selection. This does not necessarily indicate that students are drawn to lower ranked programs but rather that other factors may be more important than reputation in the decision making process.

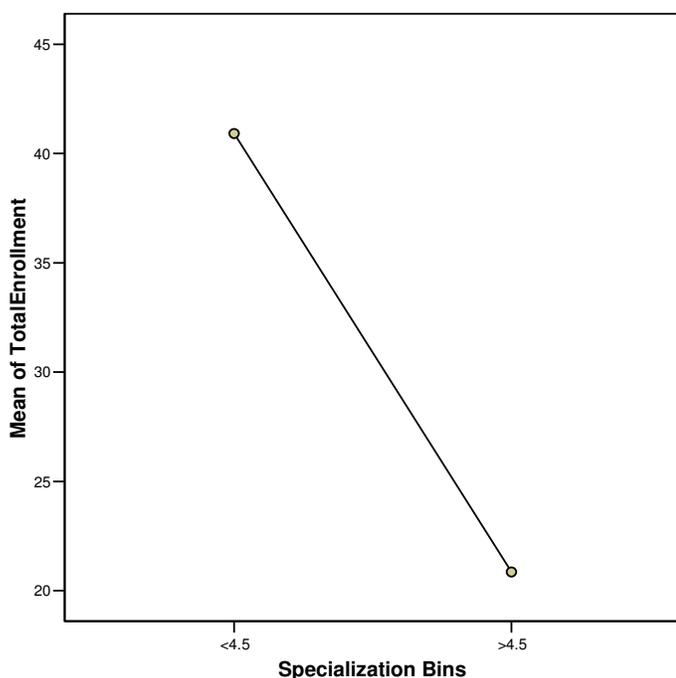
Location has been reported by numerous investigators as having an influence on program choice (Johanson, 2007; Moore, 2003; Poock & Love, 2001). The results of this study support the findings of these previous studies as fewer than 9% of students relocated to attend their current program.

Kallio (1995) and Olson (1992) found the discipline of study and areas of specialization to be influential factors in program choice. The findings of this study did not support these earlier findings, with the exception of international student enrollment, which was associated with the number of specialization areas offered. Of additional interest is the means plot when specializations are divided into bins. As seen in Figure 15, programs offering four or fewer

specializations appear to have higher total enrollments than their counterparts that offer five or more specializations.

The findings of this study are an important first step in identifying who advanced doctoral students in physical therapy are. Study results demonstrate similarities and differences in regards to the association between program factors and enrollment in doctoral programs that have been previously reported for other areas of study and provide data regarding enrollment in the rehabilitation sciences, most specifically physical therapy.

*Figure 15.* Means plot for total enrollment and specializations



### *Summary*

Keeping in mind the small sample size, the findings of this study indicate five statistically significant results. The first is a positive relationship between alumni enrollment and the number of partial financial aid awards given. A second

positive relationship was found between alumni enrollment and reputation rank, indicating alumni enrollment decreased in advanced doctoral programs affiliated with the top tier entry-level programs. The final statistically significant relationship was a positive relationship between international student enrollment and the number of specialization areas offered. In addition to these relationship analyses, full-time enrollment was found to be associated (not independent of) program delivery format, as was international student enrollment.

## CHAPTER 5: IMPLICATIONS, RECOMMENDATIONS, AND CONCLUSIONS

### *Introduction*

Although the practice of physical therapy is evidence-based, there has been a shortage of doctoral-trained faculty and researchers in the field for more than two decades (APTA, 1985; Snyder-Mackler, Binder-Macleod, & Mettler, 1997; Paris, 2006). The current and expected future needs for faculty are strongest in the basic and clinical sciences including the clinical science areas of physical therapy, rehabilitation science, movement science, and other similar degree programs (Ball et al., 2002). Unfortunately, there are not many programs offered in the U.S. in these areas of study

The problem examined in this research study was: Are program characteristics/factors associated with enrollment in advanced doctoral programs in physical therapy? The purpose was to determine if program characteristics/factors were associated with enrollment. In order to accomplish this, a quantitative, non-experimental, survey research design was employed. The Tailored Design Method was used to administer the author-developed questionnaire to the program directors of the 36 active advanced doctorate programs in physical therapy as listed by the APTA (2005).

The primary limiting factors of this study were the validity and reliability of the author-developed survey questionnaire, which was developed by a novice researcher; confusion over which academic programs were appropriate for inclusion in the study leading to a decreased response rate; and the small target population and sample size. The key ethical challenges were informed consent

and confidentiality, including creating a questionnaire that allowed for anonymity.

This chapter will begin with a discussion of the implications of the findings of this dissertation including how the findings relate to the research questions, limitations that may have affected the interpretation of the results, and an explanation of how the results fit within the current body of knowledge. Recommendations for practical applications and future research will be presented before a summary of key points is provided in the conclusion.

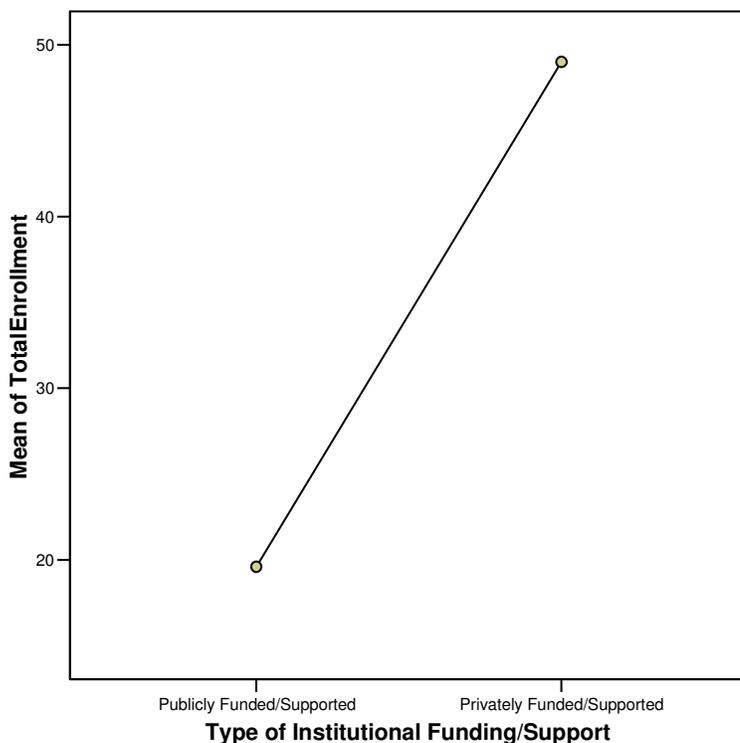
### *Implications*

The research problem driving this dissertation study was the following: “Is enrollment in postprofessional advanced doctoral programs in physical therapy associated with different program characteristics/factors?” The first research question that addressed the problem was: Does a relationship exist between enrollment in postprofessional advanced doctoral programs in physical therapy and cost, financial aid, stipend amount, program length, reputation, graduation rate, number of specializations, or number of application requirements?

Financial concerns such as cost, financial aid, and stipend amount have long been reported as influencing program choice for graduate and doctoral students. The findings from this study were not statistically significant in regards to cost or stipend amount. Alumni enrollment, however, was found to have a relationship with the number of partial financial aid awards. Also of interest, is the means plot for total enrollment and institutional funding/support (Figure 16), which may be an indicator that convenience or other factors are more important to advanced doctoral students in physical therapy than is cost as the mean tuition

for private programs is more than for public programs.

Figure 16. Means plot for total enrollment and institutional funding/support



The findings of this dissertation also did not support the existing literature in respect to the influence of reputation, graduation rate, program length or time to complete a degree.

The second research question that addressed the research problem was: Is enrollment independent of Carnegie classification, type of institutional funding/support, accreditation status, delivery format, type of degree awarded, degree discipline, or primary recruitment method?

The existing literature indicates that flexibility, convenience, distance education, and weekend and evening class offerings influence program choice for graduate, doctoral, and professional students. In this study, only the

enrollment of full-time students was found to be associated with delivery format.

Other factors commonly reported in the literature as having an influence on program choice are accreditation, degree awarded, and degree discipline. The findings of this dissertation study did not support the existing literature. The lack of agreement in regards to accreditation may be due to the fact that only one participating program in this study was not accredited. Contrasting results for degree discipline may be explained by the fact that some of the participating programs were multi-disciplinary and had students from other entry-level disciplines such as occupation therapy or speech language pathology. This finding may also be reflective of a continued trend for physical therapists interested in pursuing a doctoral degree to enroll in programs that are convenient, whether the degree offered is a Ph.D., D.Sc., or D.H.S. and whether the area of study is physical therapy, rehabilitation science, or another closely related field.

As per the purpose of this study, cost and financial aid were identified as program characteristics/factors that were associated with enrollment in postprofessional advanced doctoral programs in physical therapy. This information may be valuable for programs when recruiting students and to program administrators when evaluating existing programs and developing new programs.

### *Limitations*

*Validity and Reliability.* The validity and reliability of the author-developed questionnaire was one of the primary limiting factors in this study. Internal

consistency may have been limited because the brevity of the instrument did not lend itself to building in redundancy. As it was, at least five survey recipients declined to participate due to the time involved in compiling the data necessary to complete the questionnaire. The Cronbach's alpha for the data subset enrollment was found to be 0.608, which is adequate for decision making for groups (Ary, et al., 2002). The Cronbach's alpha for the data subset related to financial factors (cost, financial aid, and stipend) was 0.558, which was also adequate for decision making for groups (Ary, et al.). The Cronbach's alpha was 0.106 for program length and 0.217 for the remaining variables. This reliability coefficient was not adequate for decision making for groups.

Although face validity and content validity were established by having the questionnaire reviewed by an expert in the field of physical therapy research and a subsequent pilot study was performed, some participants had difficulty answering every question. One respondent indicated that questions 12 and 13 were "not easily assembled" as each student file would have to be reviewed individually. Another respondent, who chose not to return the questionnaire, indicated that some of the questions were unclear or otherwise difficult to answer. For example, some students attend the program part-time one semester and then full-time the next semester. The same individual commented that answering questions 22 and 23 could be misleading because no time frame was provided and that assembling some of the requested data would be too time-consuming. If the wording of a question or questions was not clear to all participants, responses may have been inconsistent and would not have

accurately measured the construct being tested.

*Response Rate.* Survey response rate was 53%, which was high enough for analysis, but could have been higher if there had not been confusion regarding from which education program (advanced doctoral degree versus transitional-DPT degree) data was being requested. Although the cover letter and questionnaire instructions clearly indicated that the survey was not intended for transitional-DPT programs, one participant forwarded the questionnaire to the director of that program. Likewise, a second survey recipient declined to participate, indicating that the transitional-DPT program at that institution had been disbanded. The response rate may also have been higher if the survey had not been mailed two weeks prior to the Combined Sections Meeting, one of only two annual, national physical therapy conferences. A higher response rate would have allowed for greater generalizability of the results (Ary, et al., 2002) and may have allowed for the use of a more powerful, more rigorous statistical test, again reducing the likelihood of a type II error.

*Sample size and statistical power.* The primary limitation affecting the interpretation of data for this dissertation study was the small sample size leading to low statistical power and the increased chance of a type II error. A larger target population may have resulted in a larger sample size, higher observed power, and a lower likelihood of a type II error.

### *Recommendations*

#### *Recommendations to advanced doctoral programs in physical therapy.*

Programs that wish to attract and retain students should keep tuition costs

relatively low and offer partial financial aid assistance to help defray costs. Adding more partial financial aid awards in place of stipends may also attract more students as stipend amount was not associated with enrollment, while financial aid was.

Recruitment efforts for programs with frequent on-campus visit requirements should focus on local therapists, who do not need to relocate to attend classes. Programs affiliated with a lower ranked entry-level program may consider focusing recruitment efforts on alumni while programs wishing to attract international students should consider offering a wide variety of specializations.

*Recommendations for methodological changes and future research.*

Recommended methodological changes include the following: (a) repeat this study, expanding the target population beyond those programs listed by the APTA; (b) perform a case study of several current doctoral-level physical therapy program faculty regarding their decisions when choosing an advanced doctoral program in the past; (c) conduct focused interviews with current advanced doctoral students regarding the factors that most strongly influenced their choice of program; and (d) identify clinicians who are interested in entering physical therapy academia and conduct an attitude survey regarding the factors that they find most important in deciding whether or not to pursue a higher degree or choosing an academic program.

By involving former, current, and potential students, much more can be learned about issues such as the desire to continuing working while attending school; the influence of spouses, employers, friends, and family; and the

importance of geographic location and on-campus visit requirements. Also, the relative importance of difference program factors could be studied in more detail. For example, is the ability to continue working while attending school part-time more important than geographic location or financial aid? In addition, use of a qualitative methodology would provide participants with an opportunity to express concerns that are not easily conveyed on an attitude survey.

### *Conclusions*

There is a need for more doctoral-level faculty and researchers in the field of physical therapy. Clinicians may be more apt to make the transition from working as a clinician to teaching in a physical therapist or physical therapist assistant education program if doctoral degree programs are more accessible.

Accessibility may take the form of cost or convenience. Low tuition cost and availability of financial aid may be factors in making a program more accessible. Delivery formats such as evenings, weekends, or distance education may be more convenient for the typical working therapist. The possibility of part-time study may also make the pursuit of a postprofessional doctoral degree more feasible for working therapists.

Although this dissertation study did not support previous findings indicating that graduation rate, recruitment methods, application requirements, or discipline of study influenced program choice, these factors may still be important to program choice for physical therapists who wish to enter academia. Thus, further research with a larger target population is recommended, starting with the identification of those physical therapists that are most likely to go on for an

advanced doctoral degree.

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## APPENDICES

## APPENDIX A

### Postprofessional Doctorate Programs in Physical Therapy

## Postprofessional Doctorate Programs in Physical Therapy

**Andrews University**

Department of Physical Therapy  
Berrien Springs, MI 49104-0420

**Boston University**

Sargent College of Health and Rehabilitation Sciences  
635 Commonwealth Avenue  
Room 519  
Boston, MA 02215

**Drexel University**

Programs in Physical Therapy and Rehabilitation Sciences  
245 N 15th Street, MS 501  
Philadelphia, PA 19102-1192

**Loma Linda University**

School of Allied Health Professions  
Department of Physical Therapy  
Loma Linda, CA 92350

**Marquette University**

Physical Therapy Department  
PO Box 1881  
Milwaukee, WI 53201-1881

**New York University**

Physical Therapy Department  
380 Second Avenue  
New York, NY 10010

**Nova Southeastern University**

Health Profession Division  
3200 South University  
Fort Lauderdale, FL 33328

**The Ohio State University**

Graduate Studies  
School of Allied Medical Professions  
453 W. 10th Avenue  
Columbus, OH 43210-1234

**The Ola Grimsby Institute**

4420 Hotel Circle Court, Suite 210  
San Diego, CA 92108

**Rocky Mountain University of Health Professions**

561 East 1860 North  
Provo, UT 84606

**Seton Hall University**

School of Graduate Medical Education  
400 South Orange Avenue  
South Orange, NJ 07079

**State University of New York at Buffalo**

Physical Therapy, Exercise, and Nutrition Sciences  
420 Kimball Tower  
3435 Main Street  
Buffalo, NY 14214-3079

**Temple University**

Department of Physical Therapy  
College of Allied Health Professions  
3307 North Broad Street  
Philadelphia, PA 19140

**Texas Woman's University (Dallas)**

School of Physical Therapy  
8194 Walnut Hill Lane  
Dallas, TX 75231

**Texas Woman's University (Houston)**

School of Physical Therapy  
1130 MD Anderson Boulevard  
Houston, TX 77030-7897

**Texas Tech University Health Sciences Center**

School of Allied Health Sciences  
3601 4th Street  
Lubbock, TX 79430

**University of Alabama at Birmingham**

Department of Physical Therapy  
RMSB 360  
1530 Third Avenue South  
Birmingham, AL 35294-1212

**University of California at San Francisco/San Francisco State University**

Graduate Program in Physical Therapy  
Department of Physical Therapy and Rehabilitation Science  
1318 7th Avenue, Box 0736  
San Francisco, CA 94143-0736

**University of Central Arkansas**

Department of Physical Therapy  
Physical Therapy Building  
201 Donaghey Avenue  
Conway, AR 72035-0001

**University of Colorado Health Sciences Center**

Physical Therapy Program  
Ed 2 South, Rm 3106  
13121 East 17<sup>th</sup> Avenue  
Denver, CO 80045

**University of Delaware**

Physical Therapy Department  
301 McKinly Laboratory  
Newark, DE 19716

**University of Florida**

Department of Physical Therapy  
College of Health Professions  
Box 100154  
Gainesville, FL 32610-0154

**University of Illinois at Chicago**

Department of Physical Therapy  
1919 West Taylor Street M/C 898  
Chicago, IL 60612

**University of Indianapolis**

Krannert School of Physical Therapy  
1400 East Hanna Avenue  
Indianapolis, IN 46227

**University of Iowa**

Physical Therapy and Rehabilitation Sciences  
Graduate Program  
1-252 Medical Education Building  
Iowa City, IA 52242-1190

**University of Kansas Medical Center**  
Department of Physical Therapy Education  
3056 Robinson Hall  
3901 Rainbow Boulevard  
Kansas City, KS 66160-7601

**University of Kentucky**  
Rehabilitation Sciences Doctoral Program  
College of Health Sciences  
900 South Limestone, 126E  
Lexington, KY 40536-0200

**University of Maryland**  
School of Medicine  
100 Penn Street, Suite 115  
Baltimore, MD 21201

**University of Medicine and Dentistry of New Jersey**  
Department of Developmental and Rehabilitative Sciences  
Physical Therapy Program  
65 Bergen Street  
Newark, NJ 07107

**University of Miami**  
Department of Physical Therapy  
Miller School of Medicine  
5915 Ponce de Leon Boulevard, 5th Floor  
Coral Gables, FL 33146-2406

**University of Minnesota**  
Program in Rehabilitation Science  
Mayo Mail Code 388  
420 Delaware Street SE  
Minneapolis, MN 55455

**The University of North Carolina at Chapel Hill**  
Division of Physical Therapy  
Medical School Wing E  
CB #7135  
Chapel Hill, NC 27599-7135

**University of Oklahoma Health Sciences Center**

Department of Rehabilitation Sciences  
College of Allied Health, Room 237  
PO Box 26901  
802 NE 13th Street  
Oklahoma City, OK 73190

**University of Rochester/Ithaca College**

University of Rochester School of Nursing  
601 Elmwood Avenue, Box SON  
Rochester, NY 14641

**University of Southern California**

Department of Biokinesiology and Physical Therapy  
1520 East Alcazar Street, CHP 155  
Los Angeles, CA 90089-9006

**University of Tennessee Health Sciences Center**

Graduate Program in Physical Therapy  
930 Madison Avenue, Suite 647  
Memphis, TN 38163

**University of Washington**

Department of Rehabilitation Medicine  
Division of Physical Therapy, Suite CC-902  
UW Medical Center, Box 356490  
Seattle, WA 98195-6490

**Virginia Commonwealth University**

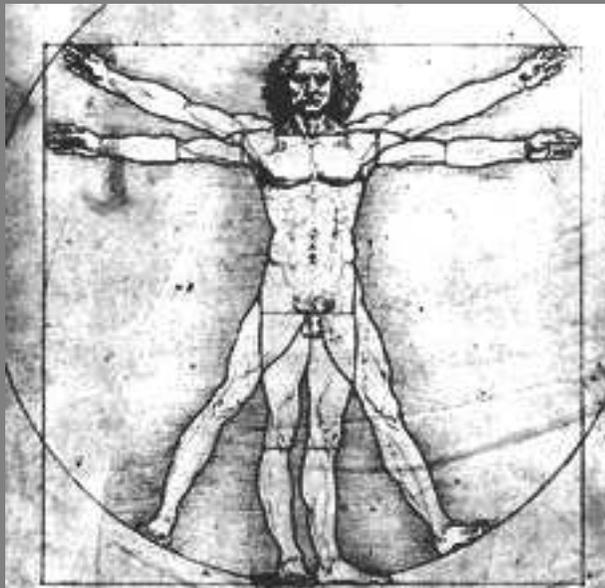
Department of Physical Therapy  
Box 980224  
Richmond, VA 23298-0224

**Washington University**

Program in Physical Therapy  
4444 Forest Park Boulevard  
Campus Box 8501  
St. Louis, MO 63104

APPENDIX B

Questionnaire



The Relationship between Program  
Characteristics and Enrollment in  
**Postprofessional** Doctorate Programs  
in Physical Therapy

*Please return your completed questionnaire  
in the enclosed envelope to:*

STEPHANIE WETMORE  
[Contact Information]

The Relationship Between Program Characteristics and Enrollment in  
Postprofessional Doctorate Programs in Physical Therapy

**Please remember to answer the following questions as they pertain to your terminal postprofessional doctorate program in physical therapy and not your transitional clinical or postprofessional clinical DPT program.**

**START HERE**

- 1. How many total students are currently enrolled in your postprofessional doctorate program?**

\_\_\_\_\_ Total students enrolled full-time  
\_\_\_\_\_ Total students enrolled part-time

- 2. How many students applied to your postprofessional doctorate program for matriculation during the 2007-2008 academic year?**

\_\_\_\_\_ Number of applicants

- 3. How many new students matriculated into your postprofessional doctorate program during the 2007-2008 academic year?**

\_\_\_\_\_ New students enrolled full-time  
\_\_\_\_\_ New students enrolled part-time

- 4. How many of the students currently enrolled in your postprofessional doctorate program are alumni of your institution?**

\_\_\_\_\_ Number of students who are alumni of your institution

- 5. How many of the students currently enrolled in your postprofessional doctorate program are in-state students?**

\_\_\_\_\_ Number of students who are in-state residents

6. How many of the students currently enrolled in your postprofessional doctorate program are international students?

\_\_\_\_\_ Number of students who are international students

7. How many of the students currently enrolled in your postprofessional doctorate program has each of the following degree types as his/her entry-level professional degree?

\_\_\_\_\_ Baccalaureate in physical therapy  
 \_\_\_\_\_ Postbaccalaureate certificate in physical therapy  
 \_\_\_\_\_ Master's in physical therapy  
 \_\_\_\_\_ Doctor of Physical Therapy  
 \_\_\_\_\_ Other (please specify) \_\_\_\_\_

8. How many of the students currently enrolled in your postprofessional doctorate program has each of the following degree types as his/her highest earned academic degree in any area of study?

\_\_\_\_\_ Baccalaureate  
 \_\_\_\_\_ Professional masters  
 \_\_\_\_\_ Postprofessional (advanced) masters  
 \_\_\_\_\_ Professional doctorate (DPT, JD, DVM, etc.)  
 \_\_\_\_\_ Postprofessional (terminal) doctorate (PhD, EdD, ScD, DSc, etc.)

9. Which of the following best describes the format in which your postprofessional doctorate program is offered?

Please mark your answer in the box  with a pen or pencil.

- The majority of courses are offered by distance  
 The program is offered in a full-time day format  
 The program is offered in a full-time evening format  
 The program is offered in a weekend format  
 The program is offered in a part-time day format  
 The program is offered in a part-time evening format  
 The program is offered in more than one format (please mark all that apply)  
 Other (please specify) \_\_\_\_\_

**10. Are courses in your postprofessional doctorate program offered in quarters, semesters, or another time frame?**

- Quarters  
 Semesters  
 Other (please specify) \_\_\_\_\_

**11. What is the length, in weeks, of each semester or quarter at your institution?**

- \_\_\_\_\_ Weeks per semester  
 \_\_\_\_\_ Weeks per quarter  
 \_\_\_\_\_ Other (please specify) \_\_\_\_\_

**12. What is the minimum number of credit hours required to complete your postprofessional doctorate program?**

\_\_\_\_\_ Minimum credit hours to complete degree

**13. What is the average length of time from enrollment to graduation to complete your postprofessional doctorate program?**

- \_\_\_\_\_ Semesters  
 \_\_\_\_\_ Quarters  
 \_\_\_\_\_ Other (please specify)

**14. How many postprofessional doctorate degrees did your program award during the 2007-2008 academic year?**

\_\_\_\_\_ Number of degrees awarded in 2007-2008

**15. Of those students admitted to your postprofessional doctorate program, what percent have graduated?**

\_\_\_\_\_ %

16. Of those students in your postprofessional doctorate program who have progressed to doctoral candidacy status, what percent have graduated?

\_\_\_\_\_ %

17. What is the current tuition cost in dollars per credit hour for in-state students enrolled in your postprofessional doctorate program?

\$ \_\_\_\_\_ per credit hour for in-state students

18. What is the current tuition cost in dollars per credit hour for out-of-state students enrolled in your postprofessional doctorate program?

\$ \_\_\_\_\_ per credit hour for out-of-state students

19. Which of the following types of financial aid are available through your institution or department for students in your postprofessional doctorate program?

*Please mark all that apply.*

- Cultural diversity waivers
- Endowments
- Graduate research assistantships
- Graduate service assistantships
- Graduate teaching assistantships
- Grants
- Loans
- Scholarships
- Other (please specify) \_\_\_\_\_

20. On average, what percent of your postprofessional doctoral students annually receive a full financial aid award (tuition waiver plus stipend) from your institution or department?

\_\_\_\_\_ % of students receiving full financial aid

21. What was the amount of the annual stipend (not including tuition waiver) awarded to your postprofessional doctoral students who received full financial aid awards during the 2007-2008 academic year?

\$ \_\_\_\_\_ per year

22. On average, what percent of your postprofessional doctoral students annually receive a partial financial aid award from your institution or department?

\_\_\_\_\_ % of students receiving partial financial aid

23. Of the following recruitment strategies, which are most frequently used by your department to attract potential students to your postprofessional doctorate program?

*Please rank in order of use, giving a 1 to the method most used and a 3 to the method least used.*

\_\_\_\_\_ Traditional methods including: brochures, outdoor advertising, participation in professional meetings, print media advertising, printed catalogs, and/or mail outs

\_\_\_\_\_ Electronic methods including: CD-ROMs, department and institutional Web pages, electronic mail, online applications, electronic catalogs, electronic newsletters, Internet advertising, and/or videos/DVDs

\_\_\_\_\_ Personnel methods including: faculty, professional recruiters, current students, and/or alumni

24. Of the following categories, where does the current (2008) ranking as published by *U.S. News & World Report* fall for the entry-level physical therapy program with which your postprofessional program is affiliated?

- 1-9  
 10-19  
 20-29  
 30-39  
 40-49  
 50-59  
 60-69  
 70-79  
 80-89  
 Our program does not have an affiliated entry-level physical therapy program  
 Our affiliated entry-level program did not participate  
 Prefer not to report

25. In addition to submitting an application to the Graduate School at your institution, which of the following are required as part of the application process for students interested in enrolling in your postprofessional doctorate program?

*Please mark all that apply.*

- Application to our postprofessional doctorate program  
 Curriculum vitae or resume  
 Faculty advisor or mentor agreement in place  
 Graduate Record Exam  
 Interview  
 Oral language requirement (international students)  
 Written language requirement (international students)  
 Letters of reference  
 Preliminary examinations  
 Professional portfolio  
 Professional writing sample  
 Proof of licensure to practice physical therapy in the U.S. or eligibility for licensure  
 Statement of academic and/or research interests, goals, and objectives  
 Transcripts  
 Other (please specify) \_\_\_\_\_

**26. What is the name of the degree awarded by your department?**

*Please mark all that apply.*

- Doctor of Philosophy (Ph.D.)
- Doctor of Science (D.Sc. or Sc.D)
- Other (please specify) \_\_\_\_\_
- Prefer not to report

**27. In which discipline does your department award a postprofessional doctorate degree?** Example: Ph.D. in Physical Therapy

*Please mark all that apply.*

- Health Sciences
- Movement Sciences
- Physical Therapy
- Rehabilitation Sciences
- Other (please specify) \_\_\_\_\_
- Prefer not to report

**28. Which areas of specialization or emphasis are available in your postprofessional doctorate program?**

*Please mark all that apply.*

- Biomechanics
- Cardiopulmonary
- Education
- Geriatric
- Interdisciplinary Studies
- Musculoskeletal
- Neurological/Neuromuscular
- Orthopedic
- Outcomes Research
- Pediatric
- Sports
- Other (please specify) \_\_\_\_\_
- Not applicable

**29. Which of the following Carnegie classifications has been assigned to your institution?**

- Research University (very high research activity)
- Research University (high research activity)
- Doctoral / Research University
- Special Focus Institution / Medical
- Special Focus Institution / Health
- Graduate Instructional Program
- Other (please specify) \_\_\_\_\_
- Our institution has not been classified by the Carnegie Foundation

**30. By which of the following regional accrediting agencies is your institution accredited?**

- Middle States Association of Colleges and Schools
- New England Association of Schools and Colleges
- North Central Association of Colleges and Schools
- Northwest Commission on Colleges and Universities
- Southern Association of Colleges and Schools
- Western Association of Schools and Colleges
- Not currently accredited by one of the above listed agencies
- Prefer not to report

**31. Is your institution of higher education publicly funded or privately funded?**

- Privately funded institution → Continue to #32
- Publicly funded institution → Skip to #33

**32. If your institution is privately funded, is it a for-profit institution or a not-for-profit institution?**

- For-profit
- Not-for-profit

**33. In which of the following areas, if any, is your postprofessional doctorate program in need of additional resources?**

*Please mark all that apply.*

- Additional faculty
- Higher quality applicants
- Number of applicants (more applicants)
- Research funding
- Space
- Equipment
- Student financial aid
- Other (please specify) \_\_\_\_\_
- No current needs

**34. In your opinion, what are the three top reasons that students select your postprofessional doctorate program over other similar programs?**

**35. In your opinion, what are the top three areas in which your program needs most to improve?**

Thank you for taking the time to complete this survey. Your assistance in volunteering this information is much appreciated. If you would like to make any comments regarding this study or this questionnaire, please do so in the space provided below.

Please return your completed questionnaire in the envelope provided to:  
Stephanie Wetmore  
[Contact Information]

IRB#

APPENDIX C

Pre-Notice Letter

Stephanie Wetmore, PT, MS

---

[Principal Investigator's Contact Information]

[Date]

[Recipient]

[Mailing Address]

As a physical therapist and a doctoral candidate at Northcentral University, I am studying the relationship between student enrollment and program characteristics in postprofessional (academic and research) doctorate degree programs in physical therapy and closely related fields.

Approximately one week from now, you, along with other program directors, will receive a request via mail to complete a questionnaire for this important research project.

This study is important because the results have the potential to influence postprofessional education in physical therapy by helping us to better understand how enrollment is related to different program characteristics.

Thank you for your time and consideration in responding to the forthcoming questionnaire. The generous assistance of individuals such as you is invaluable to the success of my research.

Sincerely,

Stephanie W. Wetmore  
Doctoral Candidate  
Northcentral University

IRB#

APPENDIX D

Cover Letter

Stephanie Wetmore, PT, MS

---

[Principal Investigator's Contact Information]

[Date]

[Contact]

[Institution]

[Program]

[Street Address]

[City, State, Zip]

Dear [Contact]:

As a doctoral candidate at Northcentral University, I am conducting a research study to learn about the relationship between program characteristics and enrollment in postprofessional (terminal) doctorate programs in physical therapy.

Knowledge concerning these relationships may have the potential to influence the delivery of postprofessional education in physical therapy and positively affect the number of doctoral-level faculty and researchers in the field.

I am inviting you to participate in this research study. You were chosen because your program is listed by the American Physical Therapy Association as a postprofessional doctorate program offering a terminal doctorate degree in physical therapy.

Your participation is voluntary and your refusal to participate will not affect your relationship with the principal investigator, Northcentral University, or the American Physical Therapy Association. All information is collected for research purposes only, and will be kept confidential.

**Should you decide to participate in my study I will ask you to do the following:**

- Complete, initial, and date the Consent Form for Participation.
- Return the Consent Form for Participation in the postage paid, self-addressed envelope.
- Record the number located in the lower left hand corner of the large return envelope included in this mailing, and retain for your records. This number will be important in the even you decide to withdraw from this study.

IRB#

- Complete the questionnaire titled The Relationship between Program Characteristics and Enrollment in Postprofessional Doctorate Programs in Physical Therapy, and return in the large, postage paid, self-addressed envelope.

**Whether or not you decide to participate, the acknowledgement that you received and responded to my request is very important.** In the event you choose not to participate and would like to have your name removed from the mailing list please complete and return the enclosed postage paid postcard.

Obtaining information from you is essential to the success of my research. If you have any questions regarding this study, you may contact me at [Principal Investigator's Telephone Number] or via e-mail at [Principal Investigator's E-mail Contact] or you may contact my dissertation committee chairperson, Dr. Linda Gaughan at [Chairperson's Telephone Number] or via e-mail at [Chairperson's E-mail Contact].

I thank you in advance, and sincerely hope that you will participate in my study.

Sincerely,

Principal Investigator:  
Stephanie Wetmore  
Doctoral Candidate  
Northcentral University

Enclosures

IRB#

APPENDIX E

Request for Removal from Mailing List / Withdrawal

The Relationship Between Program Characteristics and Enrollment in  
Postprofessional Doctorate Programs in Physical Therapy  
IRB #

In the event you choose not to participate or wish to withdraw from the study, please date and indicate your wishes by checking the appropriate space. If you are withdrawing from the study, you will also need to provide the questionnaire number, which was located on the lower left corner of the large return envelope included in the initial mailing. Please return all requests via U.S. mail. Thank you.

Date: \_\_\_\_\_

\_\_\_\_\_ I prefer not to participate in your research study at this time

\_\_\_\_\_ I would like to withdraw from your research study at this time

Questionnaire #: \_\_\_\_\_

APPENDIX F

Thank You / Reminder Postcard

[Date]

Last week a questionnaire seeking information about your postprofessional doctorate program was mailed to you. You were selected because your program is listed by the APTA as offering a terminal doctorate degree in physical therapy.

If you have already completed and returned the questionnaire to me, please accept my sincere thanks. If you have not, please do so as soon as it is convenient. I am especially grateful for your help because it is only by asking individuals such as yourself to share this information that I can successfully complete my research and hopefully have a positive influence on physical therapy postprofessional education.

If you did not receive a questionnaire, or if it was misplaced, please call me at [Principal Investigator's Contact Telephone] or e-mail me at [Principal Investigator's Contact E-mail] and I will get another copy in the mail to you today.

Sincerely,

Stephanie W. Wetmore  
Doctoral Candidate, Northcentral University  
[Contact Information]

APPENDIX G

Cover Letter for Replacement Questionnaire

Stephanie Wetmore

---

[Principal Investigator's Contact Information]

[Date]

[Contact]  
[Institution]  
[Program]  
[Street Address]  
[City, State, Zip]

Dear [Contact]:

About three weeks ago I sent a questionnaire to you that asked numerous questions about your terminal postprofessional doctorate program in physical therapy. To the best of my knowledge, it has not yet been returned.

The information provided by other program directors who have already responded to the questionnaire includes a variety of responses that I think will be useful in describing the typical postprofessional doctorate program and in studying the relationship between program characteristics and enrollment.

I am writing again because receiving your completed questionnaire is very important in order to get accurate results. Because there are so few terminal postprofessional doctorate programs in physical therapy in the United States, it is only by hearing from nearly every program director that I can be sure that my results truly reflect the realities of postprofessional physical therapy education.

A comment on my survey procedures: Protecting the confidentiality of your answers is very important to me. A questionnaire identification number is printed in the lower left hand corner on the front of the large return envelope included with this mailing. Once the questionnaire has been returned, the envelope and questionnaire are separated from each other. The numbered envelope is then cross-referenced with the mailing list so that I can check your name off the list. The envelope is then destroyed. Once data collection is complete, the mailing list is also destroyed so that individual names and programs can never be connected to the results.

If you have any questions, please feel free to contact me. The telephone number where I can be reached is [Principal Investigator's Telephone Number], or you may reach me by e-mail at [Principal Investigator's E-mail Contact].

IRB#

I hope that you will fill out and return the questionnaire soon, but if for any reason you prefer not to answer it, please let me know by returning a note or blank questionnaire in the postage paid, self-addressed envelope that has been provided for your convenience.

Sincerely,

Stephanie Wetmore  
Doctoral Candidate, Northcentral University  
[Contact Information]

Enclosures

IRB#

APPENDIX H  
Alternate Contact

Stephanie Wetmore

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[Principal Investigator's Contact Information]

[Date]

[Contact]

[Institution]

[Program]

[Street Address]

[City, State, Zip]

Dear [Contact]:

During the past two months I have sent you several mailings about an important research study that I am conducting as part of my work as a doctoral candidate at Northcentral University.

The purpose of my study is to better understand how specific program characteristics are related to enrollment in postprofessional doctoral programs in physical therapy.

The study is drawing to a close, and this is the last contact that will be made with the program directors of these programs.

I am sending this final contact by priority mail because of my concern that programs that have not responded may differ than those that have. Hearing from everyone in this small population will help to ensure that the results of the study are as accurate as possible.

I also want to assure you that your response to this study is both voluntary and confidential, and if you prefer not to respond, that is completely acceptable.

Finally, I appreciate your willingness to consider my request as I conclude this study to better understand postprofessional doctoral education in physical therapy. Thank you very much.

Sincerely,

Stephanie Wetmore  
Doctoral Candidate, Northcentral University

IRB#