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Exploration of Emotional Intelligence, DPT Curriculum, and Student Success

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Exploration of Emotional Intelligence, DPT Curriculum, and Student Success

A Dissertation
SUBMITTED TO THE FACULTY OF
CONCORDIA UNIVERSITY, ST. PAUL
BY

Lyndsey Vandenberg

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE DEGREE OF
DOCTOR OF EDUCATIONAL LEADERSHIP

Laura Wangsness Willemsen, Advisor

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Dedication

My journey through the Ed.D. program and the dissertation phase would not have been possible without the love and support from my family, friends and colleagues. First, my husband Justin has been instrumental with his encouragement, understanding and patience. My daughters, Brielle and Brynlee, are the absolute light of my life. They demonstrated flexibility, optimism and never ending love as I multi-tasked with coursework, research, a full-time career in academia, coaching soccer and being a mom. My parents, Ralph and Marian have always been there for me: understanding my academic and career goals, helping with our girls and making last-minute trips to our home for whatever our family needed. My friends and colleagues have been supportive and encouraging, I am grateful for that. I could not have done this without all of you!

Abstract

Positive professional performance as a physical therapist requires a combination of both cognitive and non-cognitive traits. To date, there has been little-to-no literature on how Doctor of Physical Therapy (DPT) programs engage, refine and enhance students' non-cognitive traits and abilities throughout a DPT curriculum. This dissertation had five foundational research questions that examined whether there was a statistically significant correlation between Emotional Intelligence (EI) and student success throughout a DPT program. Additionally, it explored how, when and where a DPT program embedded EI constructs in the 8-semester curriculum. The study took place in a private University in the Midwest and subjects included all core faculty and students who matriculated and graduated with the 2019 cohort. Quantitative methodology was used to answer four questions and qualitative support answered the final question. Quantitative data was analyzed using Spearman's rho, while qualitative was gathered from triangulation of artifacts and long-answer core faculty surveys. There were no statistically significant positive correlations between students' EI and their success throughout the program (academic, clinical, comprehensive examinations). However, qualitative findings demonstrated that EI constructs were embedded throughout the curriculum and instructional practices. This was done both intentionally and unintentionally through coursework, clinical experience, professional behavior development and advising. It is recommended that the DPT program studied, along with others, consider intentionally embedding opportunities for non-cognitive growth and development throughout the DPT journey from admission to graduation. If non-cognitive factors are the primary reason for positive professional performance, then DPT curriculum and instructional practices should focus more consideration and intent on developing them.

Keywords: Emotional Intelligence, Doctor of Physical Therapy, student success, Non-cognitive traits

Table of Contents

List of Tables	viii
Abbreviations and Acronyms	ix
Chapter 1: Introduction	1
Introduction	1
Statement of the Problem	3
Study Purpose.....	4
Paradigm that Frames the Study.....	5
Overview of Previous Research	5
Research Questions	7
Overview of the Specific Research Site	8
Significance of the Study	9
Definition of Terms	9
Hypotheses and Preview of Findings	11
Limitations	12
Conclusion.....	12
Chapter 2: Literature Review	14
Introduction	14
Historical Background.....	15
The Profession of Physical Therapy.....	16
Professional Success in Physical Therapy	23
Emotional Intelligence	25
EI in Healthcare Education and Healthcare Practices	34
Conclusion.....	42
Chapter 3: Methods	44
Introduction	44
Research Design.....	45
Institutional Description.....	48
Participants	49
Positionality.....	51
Research Ethics	52
Instrumentation and Protocols.....	54
Procedures and Analysis	61
Assumptions, Limitations, Delimitations and Generalizability	62
Conclusion.....	64

Chapter 4: Findings	65
Introduction	65
DPT Student Description	66
DPT Faculty Description.....	66
Students’ Level of EI.....	67
Program Success Measures	69
Correlational Between Student Success and EI	71
EI Components Embedded in the DPT Academic and Clinical Curriculum	74
EI Components Embedded in Faculty Pedagogy	77
EI Components Embedded in Student Advising.....	83
Summary of EI Embedded within the DPT Program.....	85
Summary	86
Chapter 5: Discussion	88
Introduction	88
Discussion of Results	89
Limitations	92
Contributions to Educational Leadership.....	93
Contributions to the Doctor of Physical Therapy Program.....	95
Implications.....	97
Future Directions of the Study	98
Conclusion.....	100
References	101
Appendix A	109
Appendix B	111
Appendix C.....	112

List of Tables

Table 1. Descriptive Statistics of Students' Emotional Intelligence.....	68
Table 2. Total Number of Students Scoring in EQ-i 2.0® Total and Composites	69
Table 3. Success Marker Scores Throughout DPT Program.....	69
Table 4. Spearman's rho Correlation Coefficient.....	72
Table 5. EI Components Embedded in Academic Coursework by Year in Program.....	75
Table 6. EI Components Embedded in Clinical Experiences by Year in Program	77

Abbreviations and Acronyms

APTA	American Physical Therapy Association
CAPTE	Commission on Accreditation in Physical Therapy Education
CPI	Clinical Performance Instrument
DPT	Doctor of Physical Therapy
EI	Emotional Intelligence
EQ-i 2.0®	Emotional Quotient Inventory (Version 2.0)
GPA	Grade Point Average
GRE	Graduate Record Examination
NPTE	National Physical Therapy Exam
OSCE	Objective Structured Clinical Examination
PPP	Positive Professional Performance
PT	Physical Therapy

Chapter 1: Introduction

Introduction

Physical Therapists (PTs) are health care professionals that are educated at the doctorate level in the United States and work to provide individualized, value-based services that optimize movement for clients/patients throughout the lifespan (American Physical Therapy Association, 2015). The Vision statement of the American Physical Therapy Association (APTA) is “Transforming society by optimizing movement to improve the human experience” (American Physical Therapy Association, 2018c). PTs strive to provide high quality care that is collaborative, valuable, and innovative which aligns with the guiding principles of the Association’s Vision (American Physical Therapy Association, 2018c). Given that, how do Doctor of Physical Therapy (DPT) programs ensure academic and clinical preparation of students that optimizes clinical performance, patient outcomes and success as a future practitioner?

In order to provide optimal care, PTs must demonstrate a combination of cognitive and non-cognitive traits (Cook, 2017). Traits specific to physical therapy (PT) practice should be intentionally embedded into DPT curriculum in order to optimize student learning and preparation. Examples of cognitive traits in PT practice include critical thinking, clinical decision making, use of evidence based practice, and knowledge of practice patterns (Cook, McCallum, Musolino, Reiman, & Covington, 2018). Examples of non-cognitive traits in physical therapy practice include commitment to learning, effective communication, organization, engagement, motivation, professionalism, and collaboration (Cook et al., 2018). The combination of traits is

crucial and must be shaped throughout DPT training and one's career in order for practitioners to be successful with patient care and their professional path (Cook et al., 2018).

Cognitive traits are commonly measured, tracked, and researched in healthcare education (Cook et al., 2018). The cognitive abilities of students serve as a means to gauge success prior to admissions, during the program, and following graduation. Measurement of cognitive ability is generally tracked by grade point average (GPA), standardized test scoring, and licensure examination passing scores/rates. However, non-cognitive traits such as motivation, integrity, temperament, grit, and emotional intelligence (EI) are tracked less frequently, but may actually have more impact on success and positive professional performance (PPP) (Cook et al., 2018). As a physical therapist, educator and Director of Clinical Education, I strive to shape both, as I care deeply about the success of my students and the impact they can have on their patients' lives.

Leaders in the physical therapy field identified that 69% of the traits that impact PPP are non-cognitive in nature and can be shaped throughout the course of a DPT program (Cook et al., 2018). As a response, some DPT programs are implementing holistic admissions with greater consideration to non-cognitive aspects of student applicants. Both cognitive and non-cognitive aspects are important factors in admissions and should be further shaped throughout the program. DPT curricula typically contain elements of social sciences such as professionalism, communication, reflective practice, and collaboration; however further investigation in this area is warranted (Cook et al., 2018).

This dissertation will seek to identify a correlational relationship between EI (a non-cognitive trait) and student success throughout the course of a DPT program, adding to the

relatively small body of literature regarding DPT students' EI and success within the program. It will also examine the curricular elements, pedagogy and advising practices of the DPT program that intentionally or unintentionally shape students' EI. Research in this area is sparse, at best, and therein lies an opportunity to contribute meaningfully to DPT education literature.

Statement of the Problem

Positive professional performance as a physical therapist requires a combination of both cognitive and non-cognitive traits (Cook et al., 2018). However, there is little evidence on what impact non-cognitive traits have on DPT student success throughout the academic and clinical education components of the DPT journey. Likewise, there is little to no research exploring how programs seek to shape non-cognitive student traits through curriculum, pedagogical practices, and student advising.

One non-cognitive trait is EI. EI is an individual's ability to process and regulate emotional information from oneself and others (American Psychological Association, 2018). It is important for physical therapists to be aware of the emotional needs of their patients, along with their own self-awareness and personal emotional attitudes (Patil, Naik, & De Sousa, 2016). Without intentional training, EI does not drastically change throughout the course of a DPT program (Lewis, 2011). A recent study specific to physical therapy practice determined that EI can be enhanced through specific education and training and impacts patients' perceptions of care (Patil et al., 2016). Various tools have been developed that seek to measure an individual's EI.

One of the specific tools designed to measure EI is the Emotional Quotient Inventory 2.0 (EQ-i 2.0®). Many elements of EI, as defined by the EQ-i 2.0®, are aligned with over half of

the generic abilities/professional behaviors of physical therapists (May, Morgan, & Lemke, 1995). This alignment demonstrates the criticality of EI within PT practice, as the generic abilities are not explicitly part of the cognitive or knowledge base of the profession, but instead seen as critical non-cognitive traits that impact success (May et al., 1995). This includes decision-making, communication, problem solving, interpersonal skills, social responsibility and stress management (Lewis, 2004; May et al., 1995).

While these generic abilities and professional behaviors are more challenging to quantify, educators and clinicians within the PT profession have made concerted efforts to measure and foster them within students and practitioners alike. It is anticipated that students' levels of EI, as measured by the EQ-i 2.0®, would have direct impact on their success throughout the DPT journey (admission through graduation) and DPT programs are likely already implementing and fostering EI of students throughout the curriculum. The study of this potential correlation along with exploration of program efforts to enhance EI is therefore warranted.

Study Purpose

The purpose of this study is two-fold. First, it is to determine if statistically significant correlations exist between student levels of EI, as measured by the EQ-i 2.0®, and their success throughout a DPT program. The specific components aimed to measure success of the program includes scores from admissions, academics, clinical performance, and comprehensive practical examinations (objective structured clinical examinations). Second, the study will examine what is embedded within one DPT program specific to the curriculum, pedagogy, advising, and mentoring of students on non-cognitive aspects of physical therapy (specifically EI) throughout their time in the DPT program. The results of the study have the potential to impact curricular aspects of the DPT program, admissions, pedagogy and student advising.

Paradigm that Frames the Study

This study will be framed by a post positivist orientation that is investigating and explaining the possible relationship between EI and student success in the DPT program journey. It will also elicit and draw out curricular, pedagogical, and advising practices within this program that are aimed at enhancing students' EI. This study has the potential to impact applications and operations in teaching and learning within the respective DPT program. It may also be useful for other DPT programs as they examine their own efforts in this area.

Overview of Previous Research

EI has been highly researched in healthcare. In medicine there have been positive correlations found between residents' EI and success within the program and as practitioners. Residents' EI is correlated with their individual performance and communication during Objective Structured Clinical Examinations (OSCEs)(Cherry, Fletcher, O'Sullivan, & Dornan, 2014). Medical residents with low EI are not prepared to manage the intensity and stress of training and practice (Gorgas, Greenberger, Bahner, & Way, 2015). Alternately, residents with high levels of EI have greater social skills, academic success, and can connect more easily with patients (Gorgas et al., 2015). EI is not fixed; rather, it has the ability to be changed over time and training residents on EI constructs has led to long term benefits as a practitioner and has positively impacted patient care abilities (Gorgas et al., 2015).

Positive findings are also present in the nursing profession. Specifically, EI of individual nurses has the ability to impact clinical performance, relationships with patients and colleagues, and interprofessional practice (Codier & Codier, 2017). EI additionally has an ability to impact longevity in healthcare related fields as it impacts occupational stress and burnout (Bidlan & Sihag, 2014). Therefore, it is recommended that EI training be developed and implemented in

healthcare organizations as a means to reduce situational anxiety in high stress situations and promote enhanced interprofessional team dynamics (Nooryan, Gasparyan, Sharif, & Zoladl, 2012).

Previous research studies have demonstrated conflicting evidence specific to EI and physical therapy student success (Gribble, Ladyshevsky, & Parsons, 2017; Larin, H el ene M; Benson, Gerry; Martin, Lynn; Wessel, Jean; Williams, 2011; H. Larin & Wessel, 2015; Helene Larin, Wessel, & Williams, 2009; Lewis, 2004, 2010, 2011; Patil et al., 2016). The results of this study will have similar outcomes. Multiple studies conducted by Lewis found that PT students' EI is average to greater than average, however EI does not comprehensively predict or correlate to clinical performance of physical therapy students (Lewis, 2004, 2010). However, this work utilized select components of the Clinical Performance Instrument (CPI), measured EI with a different tool and did not outline if and how EI constructs were embedded in the curriculum. An additional study conducted by Lewis found that without intentional training, EI does not change substantially over the course of physical therapy education, but may play a role in passing the National Physical Therapy Exam (NPTE) (Lewis, 2011). Additional research regarding PT students' EI demonstrated that students had normal levels of EI and there was no significant changes in EI during the first year of a PT program (Larin, H el ene M; Benson, Gerry; Martin, Lynn; Wessel, Jean; Williams, 2011; Helene Larin et al., 2009). However, EI was weakly correlated with clinical performance for in first and intermediate full-time clinical education experiences (H. Larin & Wessel, 2015). More recent multi-disciplinary therapy studies using the EQ-i 2.0  found that clinical education experiences may actually have a negative impact students' empathy, assertiveness, and EI (Gribble et al., 2017).

With that, educating physical therapy students on the constructs of EI has the potential to enhance student's self-awareness, personal emotional attributes, the patient's perception of student's empathy, and the therapeutic relationship/alliance (Patil et al., 2016). EI training should be included in educational curriculum including preparation, coaching, and mentoring of students prior to and during full-time clinical education experiences (Gribble et al., 2017; Patil et al., 2016). This study will demonstrate how one DPT program does this both intentionally and unintentionally throughout the program. It additionally will provide future considerations to enhance purposeful programmatic and faculty practices.

As EI has the potential to impact NPTE passing rates, performance in the clinic, and change over time with intentional training suggests physical therapy education programs should consider a more proactive approach. There is no current correlational research between the EQ-i 2.0® and student success throughout all phases of a DPT program, nor is there research that explores how constructs of EI are embedded in DPT programs. Therefore, foundational studies that outline this are necessary and valuable. This study aims to serve as base for educators, students, and clinicians regarding the impact of non-cognitive traits (specifically EI) on the DPT journey and programmatic practices that may enhance those traits.

Research Questions

The specific research questions of this study are as follows:

1. What is the level of EI of individual DPT students in one academic program cohort, as measured by the EQ-i 2.0®?
2. What is the relationship between DPT students' EI and cumulative admission scores?

3. What is the relationship between DPT students' EI and success in the clinical setting as measured by final CPI scores of four full-time clinical education experiences?
4. What is the relationship between DPT students' EI and success in the academic setting as measured by DPT cumulative grade point average and OSCE scores?
5. What is currently embedded within the DPT program curriculum, faculty pedagogy, and student advising practices that assesses, nurtures, and addresses the EI of DPT students?

Overview of the Specific Research Site

The research site of this study is located in the Midwest region of the US. The university is a liberal arts, Christian-based institution that has approximately five thousand total students. The DPT program is relatively new, achieving initial Commission on Accreditation in Physical Therapy Education (CAPTE) accreditation and graduating the first cohort in 2017. The DPT program admitted thirty students total to the specific cohort being studied, however, due to attrition, twenty-seven students were included in the quantitative portion of the study. At the time of the study, the DPT students completed all phases of the program and graduated from the institution in the previous academic year. The DPT faculty team at the university is comprised of eight core members. This includes the Program Director, Assistant Program Director, Director of Clinical Education and five additional core faculty. A majority of the courses in the DPT program are team-taught with more than one core faculty member contributing throughout the duration of the course. Overall, this site is optimal for the study as it looks to continuously develop and enhance curriculum, individual instructors' teaching pedagogy, and student advising practices; all with the goal of having a positive impact on student success.

Significance of the Study

To date, there have not been studies examining the embedded components of EI within a DPT curriculum. Through identification and generation of themes within one DPT program, there is potential to establish a baseline and future opportunities for the program, faculty, and student development. With recent evidence supporting that EI can be taught and enhanced through structured training and efforts with healthcare students, it is warranted to examine and provide ongoing opportunities for quality improvement (Gorgas et al., 2015).

DPT programs strive to graduate well-rounded students that go on to be successful practitioners. Over two thirds of what makes up PPP is based on non-cognitive traits and can be shaped throughout a DPT program (Cook et al., 2018). Additionally, EI, resilience, and grit are correlated to long-term success in healthcare (Cook, 2017). Therefore, the more a DPT program can do to shape non-cognitive abilities of its students, the higher likelihood of success within the program and following graduation. It is hopeful that this success will directly influence quality of patient care, delivery of services, therapeutic alliance and patient outcomes.

Definition of Terms

Ability Model of EI: asserts that EI is a pure ability that individuals possess.

Academic success: is defined as a student's ability to achieve passing grades in academic coursework.

Clinical performance: in physical therapy in the United States is primarily measured by the CPI which analyzes student's professional and performance based abilities taking into account supervision required, quality, complexity, consistency, and efficiency (Roach et al., 2012).

Clinical performance success: occurs when a physical therapy student meets or exceeds its institutions expectations for performance during clinical education experiences.

Emotional Intelligence: is defined as a an individual's ability to process and regulate emotional information from oneself and others (American Psychological Association, 2018). It has been progressively researched and developed as an important ability or trait that can affect success in personal and professional realms. Models or theories that describe EI can be categorized as either mixed model or ability models (Kewalramani, Agrawal, & Rastogi, 2015).

EQ-i 2.0®: is a mixed model, self-report tool created by Reuven Bar-On that measures an individual's EI. It is comprised of the following areas: self-perception, self-expression, stress management, decision making, and interpersonal (MHS Assessments, 2018).

Generic abilities: are attributes, characteristics, or behaviors that are not explicitly part of a profession's core of knowledge/technical skills but nevertheless required for success in that profession (May et al., 1995)

Mixed model of EI: asserts that EI is combination of an individual's personality and an ability they possess. Most EI models are mixed.

Trait model of EI: believes that EI is a stable characteristic that is part of an individual's basic temperament and personality (Zhang & Schutte, 2015).

Therapeutic alliance: is the working relationship between a therapist and patient that is based on the bond, goals, and tasks occurring throughout an episode of care (American Psychological Association, 2018).

Hypotheses and Preview of Findings

My hypotheses were based on the five main aforementioned research questions. First, I predicted that the overall EI scores from the majority of DPT students in this study would be at the moderate to high level when compared to normative data. Second, I anticipated there would be a statistically significant positive correlation between student success in admissions, clinical performance and comprehensive practical examinations with their respective levels of EI. Third, I did not expect a correlation between academic scores of the DPT program (GPA) with students' respective levels of EI. Lastly, I anticipated that the DPT program and faculty embedded components of EI constructs throughout their teaching, advising and mentoring of students that occurred consistently throughout the curriculum. Although not labeled specifically as EI, I predicted the program would have substantial evidence of working with students on professional behaviors and physical therapy generic abilities that align with EI.

The results of this study were partially aligned with my hypotheses. Specifically, the quantitative data confirmed that over 96% of students had mid-to-high levels of EI and EI did not correlate significantly with GPA, which confirmed my hypothesis for questions one and three. However, contrary my hypotheses there was not a statistically significant positive correlation between EI, clinical performance, admissions data and OSCE scores. This is likely due to study limitations, overall statistical power and low variance of quantitative data. Despite this, additional information uncovered was surprising and valuable. The qualitative data revealed that there were EI constructs embedded throughout all eight semesters of the DPT program in curriculum, instructional practice and advising. This was variable based on the faculty member and course itself, however lent to additional considerations for the program, profession and educational leadership moving forward.

Limitations

As with any research, there are limitations to this study. First, the correlation for the sample being studied does not validly represent all DPT students in the United States (US). Specifically, there are tens of thousands of DPT students in the US (Commission on Accreditation in Physical Therapy Education, 2018) and the sample of students in this study is from one cohort, in one DPT program, located in the Midwest. There is no literature on whether there are regional differences in DPT students' EI in the US. Therefore, there will be little ability to generalize the findings of this study to other DPT programs around the US. This limitation will ultimately impact power of the study due to overall low number of student subjects (n=27) and variability in student performance throughout the program. Second, the transferability of this study will need to be applied individually by readers of the research. EI is not necessarily a standard and labeled component of DPT admissions, teaching, and advising; therefore, it may not be tracked, measured, or analyzed in most programs in the US. Lastly, this study will not include the thoughts and views of DPT students in the curriculum regarding EI. While this may be beneficial to know and could be explored in the future in order to subjectively gauge student's impressions of EI and the impact it has on their success, it is beyond the scope of this study.

Conclusion

Success as a physical therapist requires a combination of cognitive and non-cognitive abilities (Cook et al., 2018). A majority of what is emphasized and taught in a DPT curriculum is based on cognitive skills such as knowledge, clinical decision making, and psychomotor skills. However, non-cognitive abilities of students can and should be shaped throughout a curriculum as well. This has the potential to impact success within and following graduation from the

program. There is very little research on how non-cognitive components, specifically EI, are embedded in DPT curriculum, pedagogy and advising along with the impact EI has on student success.

Chapter Two of this study is a review of the literature that outlines relevant scholarship as it pertains to the five research questions and overall problem of practice. The bodies of literature explored will include the following: the profession of PT, contributors of post-professional success in PT, EI historical information and models, and EI in healthcare related fields.

Chapter Three will outline the specific methodology used in the study. After examining multiple methodological approaches that have been used in the past, this study will highlight a quantitative approach with qualitative support that is most appropriate for answering the research questions. It will also provide an overview of the instruments, procedures, and analysis that occurred in order to determine the overall results and their significance.

Chapter Four of this study will provide qualitative and quantitative data results. Parallels between results will demonstrate a link between students' EI and what they are exposed to throughout the curriculum. While quantitative methodologies are used to answer a majority of the study questions, the qualitative support will be highlighted as it paints a picture of future opportunities for student, faculty and programmatic growth and development.

Chapter Five of this study will provide a comprehensive conclusion of the results and highlight implications and contributions of the work. While contributions of the work are specific to the institution being studied, there is possible transferability to other DPT programs. This will be discussed and emphasized. Lastly, the chapter will outline future directions of research related EI, student success and programmatic enhancements.

Chapter 2: Literature Review

Introduction

The physical therapy profession and physical therapy education have undergone exponential growth and development over the past century in the United States (US) (American Physical Therapy Association, 2016b). All physical therapy programs in the US are at the doctorate level and competition for students to get into a program is extremely high (Commission on Accreditation in Physical Therapy Education, 2018). Doctor of Physical Therapy (DPT) programs should consider a combination of cognitive and non-cognitive traits of applicants with the goal of predicting student contribution to the profession and success throughout the DPT program and as a professional (Cook, 2017).

Once in the field, physical therapists must demonstrate a high level of academic knowledge, hands-on skills, clinical decision making abilities, and positive affective traits in order to be effective (Cook et al., 2018). A recent study identified that 69% of the factors that contribute to positive professional performance (PPP) in physical therapists are non-cognitive in nature (Cook et al., 2018). Examples of non-cognitive traits include adaptability, grit, engagement, resilience, intuitiveness (Roll et al., 2018b). When taking this into account, academicians should explore the non-cognitive or affective traits that make their students, who are future therapists, successful. One of these non-cognitive traits is Emotional Intelligence (EI).

This chapter will explore a potential dyadic relationship of a non-cognitive trait/ability, specifically EI, and the relationship to being a successful physical therapist. The first body of literature will highlight advancements in the profession in addition to DPT schooling, admissions processes, and recommendations regarding the balance of cognitive and non-cognitive traits in

physical therapy (PT). The second body of literature will highlight contributors of post-professional success in PT including the therapeutic alliance and its impact on patient outcomes. The third and fourth bodies of literature investigate EI including historical backgrounds, various models of EI, and EI in healthcare related fields including nursing, medicine, and physical therapy. It is vital to understand the foundational role EI, amongst other non-cognitive skills, play in relation to patient outcomes, burnout, and overall practitioner success.

Historical Background

EI as a field of study is becoming increasingly researched in education, health care, leadership, and the workplace. It is rooted in psychology with multiple working definitions and documented impacts on an individual's life. EI is defined by the Encyclopedia of Applied Psychology as an ability an individual possess that allows them to perceive, understand, and manage their own and others' emotions (Spielberger, 2004). EI as a construct/theory has roots in social intelligence and has been referred to as emotional quotient (EQ), emotional literacy, and personal intelligence (Van Rooy & Viswesvaran, 2004).

A meta-analytic study looking at EI and performance outcomes found that the EI of individuals should be considered a valuable predictor of performance (Van Rooy & Viswesvaran, 2004). Along with correlations to performance, EI has an impact on health, work, and educational outcomes (Spielberger, 2004). This foundational information directly relates to multiple areas of an individual's life and demonstrates how EI can impact overall success.

High levels of EI in individual healthcare providers have been demonstrated as positively impacting relationships with colleagues, patients, and family members (Bidlan & Sihag, 2014). Healthcare providers with a higher level of EI are more reflective, communicate more

effectively, and have greater collaborative abilities (Herkenhoff, 2010). With the fast-paced changes in the US healthcare system, there is more focus on interprofessional collaboration, teamwork, and value for patients (Salmond & Echevarria, 2017). This is likely to be continually emphasized as professions grow and adapt in order to meet the demands of patients.

Exploration of EI as a construct/theory, and its relation to physical therapy, dates back to the early 21st century. Previous studies conducted in the US and internationally sought to determine whether individual's levels of EI are predictive of success in the academic setting, in the clinic, and in passing the National Physical Therapy Examination (NPTE) (Boyce, 2001; Gribble et al., 2017; Larin, Hélène M; Benson, Gerry; Martin, Lynn; Wessel, Jean; Williams, 2011; Leaderman, 2016; Lewis, 2004, 2010, 2011). However, there is very little research studying what academicians do throughout a curriculum or within individual pedagogical practices to expose, educate, and advance students' EI. This is important, as it has the potential to impact relationships with patients, patient outcomes, post-professional success of physical therapists, and the PT profession at large.

The Profession of Physical Therapy

PT in the US has gone through tremendous evolution over the past century. The profession itself is just over 100 years old and foundations began in 1918 when the office of the Surgeon General in the Army developed the first formal PT training program of Rehabilitation Aides (Woods, 2001). During that era, time spent in PT programs was approximately three months, with a combination of practical and didactic education (Gwyer, Odom, & Gandy, 2003). The American Physiotherapy Association (APA) was established in 1922 with a goal of developing and supporting education, practice and clinical research (American Physical Therapy Association, 2017). The APA supported exponential growth in the profession during the 1940's

and 1950's due to the polio epidemic and formally changed their name to the American Physical Therapy Association by the late 1940's (American Physical Therapy Association, 2017). The initial training requirements included formal schooling and obtainment of a certificate in physical therapy, however by the 1960's the Bachelor's degree became the standard (Woods, 2001). Due to ongoing advancements in practice and education, the profession moved to a post baccalaureate level in the late 1970's and then to the master's degree shortly thereafter (Woods, 2001).

The overall speed of professional growth and development has continued to be rapid, in parallel with the ever-changing demands in healthcare. Since the mid 1990's there has been an increased need for PTs to have well established examination, differential diagnosis, and critical thinking skills along with clinical practice that is rooted in evidence based medicine (Woods, 2001). In order to meet the demand, all entry level professional programs transitioned to the doctorate level and there are currently 250 accredited Doctor of Physical Therapy (DPT) programs (Commission on Accreditation of Physical Therapy Education, 2017; Grzesiak, 2016). The DPT degree equips students with foundational therapy coursework and enhanced education in areas such as administration, business, advocacy, medical screening, differential diagnosis, pharmacology, pathophysiology, research methods and prevention/wellness (Woods, 2001).

With the educational advancements of the physical therapy degree, PTs are positioned to meet the needs of patients throughout the US. Physical therapy has consistently been identified as a top career in terms of job outlook and satisfaction (Grzesiak, 2016; Zimbelman, Juraschek, Zhang, & W-H Lin, 2010). The profession itself continues to advance in terms of treatment approaches and patient access, including direct access. All fifty states have some form of direct access, in which patients are able to see a physical therapist directly, without a referral from their physician (Grzesiak, 2016). This allows patients to get into therapy in a timely fashion without

delay and unnecessary waiting for a referral. Physical therapists must be trained at determining what is within their scope of practice and what constitutes referral, collaboration with other providers, or perhaps a different level of care all together. The role physical therapists play is extremely valuable to the US population as the landscape of healthcare continues to change (American Physical Therapy Association, 2018a). Healthcare has continued to be costly and there are shortages of many healthcare professionals including nurses, physicians, and physical therapists.

In order to address the shortage, there has been a growth in DPT programs across the country. At present, there are 251 accredited DPT programs in the US and the employment rate (6 months post-graduation) is 99% (Commission on Accreditation in Physical Therapy Education, 2018). Dependent on attrition rates of physical therapists in the workforce, there continues to be a projected shortage of PTs in the tens-of-thousands in the US if annual attrition is around 3.5% (American Physical Therapy Association, 2016a). This number continues to shift over time, as it is contingent on the growth of the baby boomer population and increasing number and size of DPT programs. Physical therapy as a profession must continue to deliver high standards of practice and demonstrate value and quality within the healthcare arena; likewise, consumers must see that PT is critical to movement and the human experience (American Physical Therapy Association, 2018c; Zimelman et al., 2010).

Physical therapy admissions and schooling. Despite growth in the number of physical therapy programs in the US, there continues to be qualified applicants that do not get accepted into DPT programs. The competition to get into physical therapy programs is very high and the average amount of applicants per program is 502 with 330 who are deemed qualified by program standards (Commission on Accreditation in Physical Therapy Education, 2018). DPT programs,

and specifically DPT admission committees, have a great challenge in selecting the best candidates to fill their program, as they attempt to choose those who will be most successful academically, clinically, and as a future therapist (Jones, Simpkins, & Hocking, 2014). The average DPT class size is 45, but ranges from 12 to 100 students (Commission on Accreditation in Physical Therapy Education, 2018). Students spend an average of 88.2 weeks in the didactic portion of the curriculum and 35.7 weeks in the clinic (Commission on Accreditation in Physical Therapy Education, 2018).

In order to get into DPT school, applicants must demonstrate success in a variety of aspects. Most DPT programs, along with other health professions, utilize a combination of cognitive and non-cognitive admissions criteria to determine the most qualified candidates. Specifically, programs may assign points and weight items such as undergraduate grade point average (uGPA), graduate record examination (GRE) scores, on site interviews, letters of recommendation, personal statements, and observation hours (Jones et al., 2014). There has been recent emphasis on holistic admissions to DPT programs in attempt to better capture non-cognitive traits such as grit, flexibility and EI (Roll et al., 2018b). However, despite programs' best efforts, there is conflicting historical evidence on admissions criteria and the ability to predict success within the didactic phase of the DPT program, within the clinic, and in passing the NPTE (Hollman et al., 2008; Kume, Reddin, & Horbacewicz, 2018).

In order to become a practicing physical therapist, students must graduate from an accredited professional DPT program, pass NPTE, and obtain licensure in the state(s) they plan to practice in (Utzman, Riddle, & Jewell, 2007b). The high stakes and importance of the NPTE has been used as an indicator of success of physical therapy programs, assessing first-time and all-time pass rates of students. The NPTE is a computerized examination of 200 multiple choice

questions that assesses student knowledge through clinical based questions and scenarios (Utzman et al., 2007b). DPT programs must report pass rates as part of their ongoing curriculum review and assessment, per the Commission on Accreditation in Physical Therapy Education (CAPTE). Due to the criticality of the NPTE for both the student and DPT programs, it has been utilized for many years as an indicator of success (Kume et al., 2018).

Past researchers have sought to determine what factors contribute to first-time pass rates of the board examination/NPTE. GPA and verbal GRE scores have historically been closely tied to board pass rates (Hollman et al., 2008). In a study conducted by Hollman et al. (2008), students who failed the NPTE on the first attempt were six times more likely to have performed under the 20th percentile of the verbal GRE. The verbal GRE is aimed at analyzing and testing an individual's ability to evaluate and synthesize material/relationships and recognize relationships of certain concepts (Utzman, Riddle, & Jewell, 2007a). This has parallels to the style of the NPTE and therefore has practical ties to first-time pass rates. Additionally, uGPA has been tied to academic difficulty within DPT programs. Specifically, an uGPA of 3.15 or lower showed an increased risk of academic difficulty within the program; whereas an uGPA of 3.5 and higher were highly protective against academic difficulty (Utzman et al., 2007b).

In addition to focusing on candidates' academic skills, some DPT programs conduct interviews in order to assess the non-cognitive traits of student applicants; however, this has not consistently correlated with predicting academic or clinical success (Lewis, 2010). This is due to the inherent subjective nature of some non-cognitive assessments along with questionable reliability and validity. However, well-established behavioral interview questions and standard training of interviewers has demonstrated high inter-rater reliability and deemed to be a significant predictor of performance on the NPTE (Hollman et al., 2008). Graduates who failed

the NPTE on their first attempt were 2.75 times more likely to have a lower interview score (Hollman et al., 2008). It is vital to assure standardization of interview processes and alignment with core values of the profession and the DPT program (Jones et al., 2014).

The aforementioned studies indicate the need for DPT programs to consider a variety of factors during the admissions process. The APTA Academy of Physical Therapy Education (APTE) recommends that programs utilize a multifactorial approach during the admissions process considering applicants cognitive, non-cognitive and demographic factors (Utzman et al., 2007b). This is important as the APTE is the primary APTA component devoted to best practices in education (Academy of Physical Therapy Education, 2013). Previous research has examined admissions criteria in relation to student success within academic programs and NPTE board passing rates. However, the ultimate NPTE pass rate is 98.3%, therefore perhaps more consideration should focus on how successful graduates are as clinicians and future professionals.

Recommendations for physical therapy education. In order to sit for the licensure examination, students are required to graduate from a CAPTE-accredited program (Commission on Accreditation in Physical Therapy Education, 2017). This accreditation ensures quality standards and educational curriculum that meets expectations of the profession of physical therapy (Commission on Accreditation in Physical Therapy Education, 2017). However, in addition to CAPTE standards, programs must consider the importance of fostering as much professional growth and development as possible with their students. Professional growth and development is an obligation of the physical therapy profession in order to assure quality, a high standard of care, ongoing knowledge, competence, and practice within the accepted standards of practice (American Physical Therapy Association, 2014).

In recent years, there has been a general increase in the interest and importance of non-cognitive traits within physical therapy students and physical therapists (H. Larin & Wessel, 2015). Intelligence beyond pure cognitive knowledge is beneficial and should be embedded into admissions and teaching methods (Cook, 2017). Programs have considered and/or implemented holistic admissions, in which students are assessed and admitted based on cognitive abilities, non-cognitive traits/skills, service, leadership, and observation hours. Once students are in DPT programs, universities must invest in their students in order for them to be most successful; this includes coaching, mentoring, enhanced work with simulation, etc. (Cook, 2017). The ultimate goal is to create well-rounded and compassionate future physical therapists that put the needs of their patients first.

Overall recommendations include analysis and enhancement of non-cognitive teaching, advising, and practice within DPT education, from admission to graduation (Cook et al., 2018; Roll et al., 2018a). Non-cognitive abilities include things such as EI, grit, empathy, flexibility, self-assurance, attitude and integrity. DPT programs should include education for students on the constructs/theory of EI and provide education and materials on EI to clinical instructors (Gribble et al., 2017). This has the potential to empower students and clinical educators to be knowledgeable about the areas that contribute to EI as an ability and positively influence patient care. Additionally, programs should educate students on the importance of reflection and how to appropriately reflect for, during, and after clinical education experiences (Greenfield et al., 2015). Lastly, EI training has been identified as an effective tool for physical therapy students and has the ability to enhance patient/therapist relationships, build a stronger therapeutic alliance, and prepare students to cope with difficult situations that may arise in the clinic (Patil et al.,

2016). Therefore, programs should consider intentional instruction and training to enhance students' EI.

Professional Success in Physical Therapy

Positive professional performance (PPP) includes an individual's career satisfaction, professional advancement, and revenue (Cook et al., 2018). What specifically are the cognitive and non-cognitive traits that are key indicators of PPP of physical therapists? Is there a way that academic and clinical educators can affect PPP following graduation of DPT students? EI and social intelligence have an influence on PPP (Cook et al., 2018). A recently conducted Delphi study discovered four main areas that are required for success as a practicing physical therapist: excellence in clinical practice, education, service, and administration (Cook et al., 2018). A total of 42 traits impacting PPP were identified by experienced educational leaders and practitioners, 69% of them were non-cognitive (Cook et al., 2018). This includes "motivation, integrity, interpersonal interaction ... personality, temperament, attitudes, motivation, time management, grit, emotional intelligence, social intelligence, and self-regulation" (Cook et al., 2018, p.98). It is recommended that PT programs consider success of physical therapy students, beyond the NPTE, and should consider implementation of non-cognitive based training into the curriculum (Cook et al., 2018).

CAPTE requires DPT programs to have certain non-cognitive aspects embedded within the didactic and clinical education portions of the curriculum. However, these are less tangible than cognitive aspects that can be measured by GPA, test scores, and skills based assessments. Some of the main areas that CAPTE focuses on are: communication, ethics, values, and respect of diversity (Commission on Accreditation of Physical Therapy Education, 2017). While CAPTE is more direct with cognitive based elements, it is probable that DPT programs embed

non-cognitive training and development beyond what is measured within coursework. This includes areas such as teaching, academic advising, and clinical education experiences where students are directly exposed to and mentored in generic abilities and professional behaviors such as stress management, effective use of time and resources, use of feedback, responsibility, and communication (May et al., 1995).

Physical therapy and the therapeutic alliance. Physical Therapy educators must understand and work to facilitate a balance of cognitive and non-cognitive skills and abilities that make students and future practitioners successful (Cook, 2017). Part of maximizing patient outcomes and PPP is related to the patient/therapist relationship (Cook et al., 2018). Educators continue to affirm the association of human relationships and healing (Ferreira et al., 2013). Therapeutic alliance, bedside manner, and/or social and EI should be emphasized within academic programs so students can be more successful with their patients/clients (Karam, Sprenkle, & Davis, 2015). This aligns with recent recommendations to enhance non-cognitive emphasis in therapy programs and lends to future considerations and tying multiple intelligences, EI, and therapeutic alliance into curriculums.

Therapeutic alliance consists of three primary mutual patient/therapist components: agreement on patient related goals, agreement on interventions, and the overall relationship/bond that has been established (Ferreira et al., 2013). The relationship is founded on trust between the patient and therapist, which is enhanced through therapist's EI (Ellis & Conboy, 2004). Patients who have a strong therapeutic alliance with their physical therapist have demonstrated greater improvements and more meaningful outcomes in physical therapy (Fuentes et al., 2014). The therapeutic alliance is considered a strong predictor of patient outcomes in the areas of treatment effectiveness, patient function, pain, and disability (Ferreira et al., 2013). Since the effect of

interventions can be enhanced when physical therapists interact positively with their patients, PTs should optimize psychosocial context with patients and seek to enhance these characteristics as practitioners (Fuentes et al., 2014).

Researchers propose further studies be conducted on factors explaining the therapeutic alliance and explore education and training that could enhance PT practice (Ferreira et al., 2013). Further research is recommended in defining the specific role EI plays in physical therapy and as it relates to therapeutic alliance (Hall, Ferreira, Maher, Latimer, & Ferreira, 2010). Therapists with higher levels of EI would likely be more successful establishing strong relationships with patients, have more effective bedside manners, and a stronger therapeutic alliances (Patil et al., 2016).

In order to create an effective therapeutic alliance, a PT must demonstrate flexibility, authenticity, empathy, and EI (Ellis & Conboy, 2004). According to Ellis and Conboy (2004), “Emotional intelligence is the fuel that sustains the therapeutic alliance that effective therapists create with their clients when positive change occurs.” (Ellis & Conboy, p. 38). In addition, the assessments and tools that have been created in relation to EI have valuable information, strategies, and concepts that can be incorporated into education and clinical practices (Ellis & Conboy, 2004).

Emotional Intelligence

EI research is increasing in many settings and throughout the lifespan. EI constructs are rooted in psychology with multiple working definitions and documented impacts on an individual’s life. As previously stated, EI is defined by the Encyclopedia of Applied Psychology as an ability that allows individuals to perceive, understand, and manage their own and others’

emotions (Spielberger, 2004). Expanded and more robust definitions have developed in recent years and have explained that EI is a set of skills that impact an individual's perception and expression, have impact on social relationships, use emotional information effectively and allow individuals to handle challenges (MHS Assessments, 2018). EI is tied to social intelligence and has been referred to in various ways throughout the past several years including social emotional intelligence, emotional quotient, etc. (Van Rooy & Viswesvaran, 2004).

Meta-analytic studies conducted demonstrate that EI, as an individual ability, should be considered a valuable predictor of performance (Van Rooy & Viswesvaran, 2004). Along with correlations to performance, EI has an impact on an individual's health, work, and educational outcomes (Spielberger, 2004). This foundational information demonstrates that EI is related to multiple areas of an individual's life and can influence overall success.

Normative data collection and studies have shown minor differences with an individual's EI and demographics. In large samples within North America there is no statistically significant difference between various ethnic groups (Bar-On, 2006). Furthermore, EI tends to increase with age and with advanced education and training (Bar-On, 2006), this reinforces the dynamic nature of EI and ability to enhance EI with training. There are minor gender differences with EI. Specifically, women have traditionally demonstrated strengths and scored higher in empathy, interpersonal, emotional expression, and emotional self-awareness (MHS Assessments, 2018). Men have demonstrated strengths and scored higher in stress management, flexibility, optimism, self-regard, and self-reliance (Bar-On, 2006).

Historical background and models of EI. The shaping of EI as a construct/theory dates back to the 19th century. In 1872, Darwin wrote about the importance of adaptations in emotion in

both humans and animals (Spielberger, 2004). In 1920 development of social intelligence was led by Thorndike, as he recognized that intelligence included more than cognitive-based abilities (Cherniss, 2006). Further work in the 1940-50's by Wechsler, focused on non-intellective and intellective elements of intelligence and their contributions to predicting success in life (Cherniss, 2006). In the early 1980s, the concept of multiple intelligences arose in which Gardner explained the role of intrapersonal, interpersonal, and cognitive intelligence (Spielberger, 2004). Contributions to the overall concept of EI arose from established theories of social intelligence, interpersonal behavior, adaptability, emotional awareness, mindedness, and alexithymia (Bar-On, 2006).

Theories, models, and EI measurement instruments came to fruition during the 1990s and have been modified and further developed in successive years. The diversity of models has led to scrutiny over time; however, while there are differences in each model, the universal similarities revert back to the definition and general constructs of EI (Spielberger, 2004). Nearly all models have components that fall under four main areas: understanding self, understanding others, managing self and managing others (Kewalramani et al., 2015). Models are classified into two main categories: ability and mixed. Ability based EI models aim to recognize the skills and capabilities of people in relation to perception, utilization, understanding, and management of emotions (Webb et al., 2013). Mixed models paint a broader picture of EI in which there is emphasis on non-cognitive ability and that EI is an ability and an aspect of personality (Webb et al., 2013). While EI models vary slightly in their foundation, all models support the concept that an individual's EI is dynamic, can be developed and enhanced over time and includes components of understanding and managing oneself and others (Kewalramani et al., 2015).

To date, three main developers and instruments measure EI. This includes the Mayer, Salovey, and Caruso Emotional Intelligence Test (MSCEIT™), the Emotional and Social Competence Inventory (ESCI) developed by Daniel Goleman and Richard Boyatzis, and the Emotional Quotient Inventory (EQ-i 2.0) developed by Reuven Bar-On (Spielberger, 2004). The most commonly utilized tools in current literature are those developed by Mayer and Caruso and Reuven Bar-On (Hodzic, Scharfen, Ripoll, Holling, & Zenasni, 2018). While all three instruments have similar foundations and constructs, they vary in how and what they measure. They were developed differently by either inductive or deductive processes and are categorically different (Spielberger, 2004). Each instrument will be outlined in subsequent paragraphs.

The first and most widely used instrument of EI is the Emotional Quotient Inventory (EQ-i). It is a self-report measure that was developed by psychologist Reuven Bar-On in the 1980's after he coined the term 'emotional quotient', which assesses social and emotional competence (Bar-On, 2013). The EQ-i was the first EI measure published by a psychological publisher, *Buros Mental Measurement Yearbook*, is the most widely used EI measure worldwide, and has been translated to over thirty languages (Bar-On, 2006). The multi-stage development of the EQ-i included identification of competencies and behaviors impacting EI, clustering areas, incorporating research and clinical psychology practices, determining scales, finding norms of nearly 4,000 adults in North America, and validation across numerous cultures (Bar-On, 2006). There have been a few different versions of the EQ-i, including a short form version that was used in multiple previous PT studies (Larin, Hélène M; Benson, Gerry; Martin, Lynn; Wessel, Jean; Williams, 2011; H. Larin & Wessel, 2015; Helene Larin et al., 2009). In recent years, Bar-On modified the EQ-i from its original version to the EQ-i 2.0.

The EQ-i 2.0 is an enhanced version of the originally created EQ-i. Modifications stemmed from ongoing research, updated norms, reliability and validity studies, and general researcher feedback (MHS Assessments, 2018). For a fee, the electronic instrument allows clients to take an examination, get extensive results, and have individualized information on how to grow within their current school or work setting. Five main components make up a total EQ-i 2.0 score. The first component, stress management, includes stress tolerance, optimism, and flexibility (MHS Assessments, 2018). Second, decision making is made up of problem solving, reality testing, and impulse control (MHS Assessments, 2018). Third, the interpersonal component is comprised of interpersonal relationships, empathy, and social responsibility (MHS Assessments, 2018). Self-expression is made of emotional expression, assertion, and independence (MHS Assessments, 2018). Lastly, self-perception includes self-regard, self-actualization, and emotional self-awareness (MHS Assessments, 2018). The purpose and applications of the EQ-i 2.0 as a tool, is to enhance leadership development, organizational development, student development, team building, and selection (MHS Assessments, 2018). Internal consistency of the instrument, in over 10,000 clients tested between 2009-2010 revealed Cronbach's alpha of .97 for the total EI scale, composite scales between .88-.93 and subscales .77 and up. (MHS Assessments, n.d.). Test-retest reliability on smaller subgroups of clients revealed a value of $r = .92$ for a 2-4 week interval of time and $r = .81$ during an 8 week interval (MHS Assessments, n.d.). In summary, the EQ-i 2.0 is a measure that has good reliability, stability, and consistency. This in combination with the user-friendly online portal with extensive resources provided to clients is an important factor for utilization in an academic or workplace setting.

A second instrument commonly used in the sciences is the MSCEIT™ . It is an ability-based test that outlines and measures EI in a more scientific manner. Mayer, Salovey and Caruso's conceptual framework of EI is based on the premise that EI is comprised of mental abilities, skills, and capacities and stresses that intelligence is enhanced by emotions (Kewalramani et al., 2015). The developers assert that individuals with high EI are able to respond more appropriately to their own and others' feelings because they perceive them more accurately. In addition EI has an impact on mental health as individuals with high EI demonstrate flexibility, creativity, and balance of mood (Salovey & Mayer, 1990). The four branches within the MSCEIT™ are perceiving emotions, using emotions to facilitate thought, understanding emotions, and managing emotions in a way that enhances personal growth and social relations (Mayer, Salovey, Caruso, & Sitarenios, 2001). The MSCEIT™ is scored using general consensus and expert criteria and reliability of the two is .93 and .91 respectively (Brackett & Salovey, 2006). Test-retest reliability at a three-week interval was $r = .86$ during an 8 week interval (Brackett & Salovey, 2006). The MSCEIT™ has been used in multiple previous PT studies (Lewis, 2004, 2010, 2011).

The third major instrument measuring EI, the ESCI, was developed by Daniel Goleman and Richard Boyatzis. Goleman is one of the strongest and most influential founders of the construct/theory of EI. The ESCI, as an instrument, ties EI to emotional competence and performance; with the premise that emotional competencies build on each other and lead to more successful relationships (Kewalramani et al., 2015). There are 12 social and emotional competencies within the ESCI and they are grouped into four cluster areas: self-awareness, self-management, social awareness, and social skills. The internal consistency (Chronbach's alpha) range from .79 to .91 for each of the 12 competencies (Hay Group, 2011).

Additional notable instruments measuring EI have been developed exist, however are not as established and foundational in the EI arena. The Six Second concept and instrument of EI attempts to capture the practical value of EI. Key areas of EI according to this model include: increased self-awareness and identification of feelings, controlling oneself and delaying gratification, effective socialization, self-motivation, empathy and optimism, and commitment to goals (Kewalramani et al., 2015). Additionally, the Four Cornerstone concept and instrument of EI emphasizes an individual's career and occupational life. It moves EI out of the psychological and philosophical realms and into exploring, knowing and applying concepts. In order to accomplish this, the developers created an EI map with key areas in emotional literacy, emotional fitness, emotional depth, and emotional alchemy (Kewalramani et al., 2015).

As noted previously, two of the most frequently utilized models and instruments that measure EI are the MSCEIT™ and the EQi-2.0. The MSCEIT™ is an ability test that has a right/wrong answer for each item and scoring of each item is based on general or expert consensus (MHS Assessments, 2018). The EQ-i 2.0 is a self-report, trait best test, with different subscales/areas that comprise the total EI score. The correlation between the EQ-i 2.0 and the MSCEIT™ was found to be $r = .12$, demonstrating that the two do not overlap significantly and they are independent constructs (MHS Assessments, 2018).

In addition, there has been general question regarding the overlap of EI and IQ in relation to academic success. It is thought that EI should be an independent measure of ability without significant overlap with IQ (Bar-On, 2006). Specific research conducted found that the MSCEIT™ was significantly associated with multiple variables of IQ, whereas the EQi did not correlate with IQ (Webb et al., 2013). This is important, as the EQi was not designed to assess cognitive intelligence (Bar-On, 2006). However, it should be noted that the EQi did have

correlations personality traits and emotional well-being (Webb et al., 2013). Research specifically on the EQi-2.0 demonstrated that total EI scores for post-secondary graduates were higher than high school graduates and those individuals had higher problem solving, self-actualization, decision making, and stress management skills (MHS Assessments, 2018).

Due to the number of models and instruments of EI, there has been criticism about their overall lack of consensus. Arguments include concerns about the inconsistencies amongst the constructs of EI and that the constructs are not necessarily measurable (Waterhouse, 2006). Additionally, in a meta-analysis conducted by Van Rooy and Viswesvaran (2003), EI was correlated with personality in multiple areas and ability based instruments were correlated to general mental ability; suggesting overlap of cognition, personality, and EI. However, EI instruments and constructs have undergone refinement in recent years and large meta-analytic studies on the enhanced versions (EQ-i 2.0 and MSCEIT™) are limited.

While EI measurement tools and research continue to evolve, there are also critics that discuss a 'dark side' of EI. Specifically, individuals with high levels of EI could use their abilities to manipulate others, inflate personal levels of self-esteem, and create lower levels of psychological health (Davis & Nichols, 2016). While not specific to physical therapy, some have posited that it is possible that average EI, as compared to extremely high levels of EI, may be optimal in order to negate the possible negative impact (Davis & Nichols, 2016).

Development of EI and prediction of job success. An extensive meta-analysis on EI, conducted by Hodzic, Scharfen, Ripoll, Holling, and Zenasni (2018) analyzed studies published between 2006 and 2016. They found trends, made overall recommendations, and demonstrated the effectiveness of EI training within the healthcare and business fields. Average EI training periods consisted of a total of six sessions that were approximately 2.5 hours/session and

included multiple strategies to enhance EI including a combination of experienced based learning (role playing, reflections, discussing emotions) and theory based learning (lectures, group discussions, videos, reading, case studies, reading text books) (Hodzic et al., 2018). Overall findings of the meta analysis revealed that EI trainings do increase an individual's EI and trainings based on ability models demonstrated higher overall effects (Hodzic et al., 2018). This demonstrates that it is possible to enhance and influence an individual's EI and it should be considered an important non-cognitive aspect in higher education and within the workplace.

Based on meta-analytic findings, it is worthwhile to put emphasis on EI in a variety of settings. EI has continued to gain momentum and popularity in education, hiring of employees, staff development/training, team building, and leadership development (Joseph, D., Jin, J., Newman, D., O'Boyle, 2015). Nearly 75% of Fortune 500 companies have engaged with EI related products and services in the recent years (Joseph, D., Jin, J., Newman, D., O'Boyle, 2015). Rationale for EI training is to promote job success, mitigate burnout, and enhance employee's well-being.

A meta-analysis conducted by Joseph, Jin and Newman (2015) explored the relationship of different types of EI measurement tools and their ability to predict job success. Findings demonstrated that mixed models that combined characteristics of personality, affect, self-perceived abilities and EI were the most predictive of success within ones career (Joseph, D., Jin, J., Newman, D., O'Boyle, 2015). Ability based EI measures, such as the MSCEIT™, demonstrated a weaker correlation with job performance, as it has greater ties to overall intelligence (Joseph et al., 2015). Mixed models/measures of EI were strongly tied to job performance as they are geared at measuring multiple psychological constructs in addition to EI

(Joseph et al., 2015). This is an important consideration with tool selection, utility, and value for any organization.

Based on this information, it was determined that utilization of a mixed model measure of EI was the best choice to use with DPT students in the program. In order to avoid a tool that has overlapping constructs with intelligence, the mixed model tool of EI, specifically the EQ-i 2.0® was selected. Additionally, the EQ-i 2.0® aligns with over half of the PT professions generic abilities, which demonstrates alignment in standards and expectations. One would anticipate a greater ability to predict overall performance in the clinic, as it is similar to job performance results from previous research conducted. Additionally, the robust student report of the EQ-i 2.0® provide student self-reflection on their individual EI and have greater discussions with their academic advisor, clinical instructor and future employer.

EI in Healthcare Education and Healthcare Practices

EI models have defined multiple working definitions of EI, however within the healthcare field it implies that a health care provider is able to recognize emotions within specific contexts and situations and appropriately adapt to one's individual emotions and the emotions of others (Adams & Iseler, 2014). As a health care provider it is imperative to connect with patients, empathize with their current situation, and provide supportive and compassionate care. EI as a theory has been explored in relation to healthcare over the past twenty years. Specifically, research on EI in nursing, medicine, and healthcare leadership have contributed to an enhanced understanding of the interplay of an individual's EI in the healthcare environment. EI has been recognized as assisting with an individual's self-understanding, building interpersonal relationships, coping skills, and overall emotional expression (Bar-On, 2006).

Recently, EI has been paired with resilience and grit, noting that the combination of all three are imperative to individual long-term success in healthcare (Cook, 2017).

EI in physical therapy education. Exploration of EI in the physical therapy field has grown over the past twenty years primarily using quantitative methodologies (Larin, H  l  ne M; Benson, Gerry; Martin, Lynn; Wessel, Jean; Williams, 2011; H. Larin & Wessel, 2015; Helene Larin et al., 2009; Lewis, 2004, 2010, 2011). Initial research conducted in 2000 emphasized the importance of expression in physical therapists during interaction with patients (Gard, Gyllensten, Salford, & Ekdahl, 2000). Physical therapists interacted and respond to patients at an intellectual level, despite knowledge of the importance in understanding and expressing emotions (Gard et al., 2000). This work opened the door to further areas of exploration regarding the importance of emotions and EI in the physical therapy profession (Boyce, 2001; Lewis, 2004). Subsequent research examined correlations of an individual's EI with cognitive ability, academic success, and passing the NPTE (Lewis, 2010). Longitudinal studies with physical therapy students have looked at changes of EI over the course of a curriculum and also in relation to whether changes could be influenced by curricular design (Larin, H  l  ne M; Benson, Gerry; Martin, Lynn; Wessel, Jean; Williams, 2011; H. Larin & Wessel, 2015; Lewis, 2011). In order to grasp the breadth of EI research in physical therapy, it is necessary to consider results, implications, and recommendations from work that has already been conducted.

An individual's EI can assist with self-understanding, coping skills, emotional expression and building interpersonal relationships; which are all highly important affective skills for physical therapists when working with patients in the clinical setting (Bar-On, 2006). While different curricular models exist in the United States, all DPT programs have a substantial component of their curriculum devoted to clinical education. It is estimated that in most

programs, clinical education accounts for nearly 1/3 of student's time in the program (Gribble et al., 2017). Clinical education provides students the opportunity to connect academic and hands on skills, enhance professional competence, improve confidence, and acculturate into the physical therapy profession (Gribble et al., 2017). Research has shown that providers with higher EI have an ability to create better relationships with patients, enhance patient and provider satisfaction, and positively impact therapist resilience, burnout, and collaborative efforts (Gribble et al., 2017). In addition positive therapeutic alliance leads to better outcomes in physical therapy practice (Ferreira et al., 2013; Hall et al., 2010)

Physical therapy education in the United States mainly primarily uses the Clinical Performance Instrument (CPI), as developed by the American Physical Therapy Association (APTA), to assess clinical performance of students. Academic programs set standards that students should meet during each clinical education experience to demonstrate that they are meeting expectations with caseload, efficiency, quality, supervision, and patient complexity. The CPI includes 18 items that assess a student's professional practice and patient management (APTA, 2006). The items within the CPI align with the Generic Abilities, which are identified skills that have been foundational within physical therapy. This includes commitment to learning, interpersonal skills, communication skills, use of time and resources, use of constructive feedback, problem solving, professionalism, responsibility, critical thinking, and stress management (Lewis, 2010).

With this base knowledge, one would assume that students with higher EI would be more successful in the academic and clinical settings. However, early research in masters level physical therapy education found that there was low to no correlation between EI, GPA, and overall intelligence (Boyce, 2001). Subsequent work demonstrated that EI was not related to

clinical performance, nor was it significantly tied to three sub-categories of the CPI thought to be highly impacted by EI: professional behavior, performing examinations, and performing interventions (Lewis, 2010).

There has also been work conducted to determine if certain curricular models or time in the therapy program influence students EI. Larin, Wessel, and Williams (2009) determined that without intentional training EI did not change significantly over the first year of a physical therapy program and students that were part of a problem based learning curriculum had a slightly higher increase in EI as compared to students in a traditional curricular model. Lewis (2011) conducted a longitudinal study to detect annual changes of EI throughout the course of a DPT program, the correlation between GRE, pre-requisite GPA, NPTE scores, and clinical performance. It was determined that without intentional training EI did not change significantly over time and clinical performance as measured by the CPI improved in all students (Lewis, 2011). This is expected as students get closer to graduation and become independent in clinical practice. EI was slightly higher in students that passed the NPTE on their first attempt, but not predictive of clinical performance as measured by the CPI (Lewis, 2011). One major downfall with this research is that there is homogeneity of the data including a ceiling effect in which nearly all students have a high-normal EI score and do well in the clinical setting (Lewis, 2010).

Multiple studies have looked at the changes of individual student's EI throughout clinical education experiences. Students are able to recognize and reflect on the criticality of EI during early clinical experiences and focus on patient-centered care and putting the needs of the patient first (Greenfield et al., 2015). A recent multi-disciplinary (physical therapy, occupational therapy, speech and language pathology) study conducted revealed that assertiveness actually decreased during full time clinical education experiences and most other areas of EI (as

measured by the EQ-i 2.0®) did not change (Gribble et al., 2017). There was a slight increase in emotional expression, independence, reality testing, and optimism (Gribble et al., 2017).

Conversely, a recent small-scale pilot study provided a multi-phased EI training to physical therapy students prior to and during clinical education experiences (Patil et al., 2016).

Statistically significant differences in EI were noted post training within physical therapy students; self-awareness and personal emotional attitudes were impacted the most (Patil et al., 2016). There was a positive impact on patients as well, as they perceived a significant difference in the student physical therapist's care that was provided to them (Patil et al., 2016).

EI in higher education, nursing & medical school. Robust work on the role of individual's EI has been conducted in medicine and nursing during the academic phase and post-professionally. Research has demonstrated variation in student's EI based on field of study (Topaloğlu, 2014). Medical, veterinary, and healthcare professional students must possess a certain level of EI in order to interact effectively with their patients/clients (Chapin, 2015). Coaching, mentoring, and educating students on EI could enhance students' abilities to make clinical decisions, take calculated risks, handle stress involved with graduate education, and succeed in difficult situations (Chapin, 2015).

Medicine has conducted research on multimodal admissions practices considering both cognitive and non-cognitive traits. Currently acceptance decisions into medical school are based on the Medical College Admission Test (MCAT), undergraduate coursework and grades, personal statements, experiences, letters of recommendation, review of social media, and an interview (Association of American Medical Colleges, 2017). The Association of American Medical Colleges (AAMC) endorses 15 core competencies for entering medical school and nine of them are related to professionalism and non-cognitive abilities: service orientation, social

skills, cultural competence, teamwork, oral communication, ethical responsibility, reliability/dependability, resilience, and capacity for improvement (Association of American Medical Colleges, 2017). The AAMC additionally requests students to fill out a self-assessment on core competencies and reflect on their level within that competency, importance of the competency, and plans to further develop the competency (Association of American Medical Colleges, 2017). This demonstrates that while medical schools instruct on high-level technical skills and knowledge to be an effective physician, there is increased emphasis on the interpersonal or soft skills of being a practitioner (Libbrecht, Lievens, Carette, & Côté, 2014). Research has demonstrated that EI of student's could be utilized as an admission assessment, as it predicts how well medical students perform in interpersonal academic components of the curriculum; whereas general mental ability scores do not predict how applicants would perform with interpersonal work (Libbrecht et al., 2014).

In addition to admission into medical school, EI has been linked to the Accreditation Council for Graduation Medical Education's (ACGME) core competencies while in medical school (Arora et al., 2010). Specifically through a systematic review of EI literature, it was found that the ACGME competencies: patient care, professionalism, systems-based practice, interpersonal and communication styles, medical knowledge, and practice based learning and improvement have foundations in EI (Arora et al., 2010). Medicine requires a combination of cognitive and non-cognitive skills and that selection systems and instruction throughout the curriculum is important to enhance physicians in training.

Similar research and recommendations have come from nursing education. Nursing students have shown to score well in emotional management, self-motivation, empathy, and social skills (Cerit & Gordeles Besser, 2014). Additionally, there is a significant correlation

between EI, self-motivation and empathy of nursing students (Cerit & Gordeles Besser, 2014). Nursing students and professionals alike must appreciate, recognize and adapt their emotion and feelings to promote optimal patient care (Mellor & Gregoric, 2016). When nursing students are transitioning to new graduate registered nurses, very few report clinical skills as obstacles, instead coping with the culture of nursing and socioemotional skills are primary challenges (Mellor & Gregoric, 2016). Therefore, it is recommended that nursing students and healthcare students in general go through training on EI prior to starting the program, while they are in the program and when transitioning to new professionals (Cerit & Gordeles Besser, 2014; Mellor & Gregoric, 2016).

EI in practicing healthcare professionals. Once medical professionals enter the healthcare field, they should consider the implications and benefits of EI on the workplace, patients, and colleagues. Healthcare professionals are highly susceptible to occupational stress, compassion fatigue and burnout due to the demands of investing emotions into serving those they treat on a daily basis (Bidlan & Sihag, 2014). Patients that present with complex conditions and multiple comorbidities can lead to high-stress decisions that have an impact on mental health, anxiety and the clinical decision making of providers (Nooryan et al., 2012). Healthcare providers are trained to meet the needs of their patients first, which may compromise their own well-being (Bidlan & Sihag, 2014).

In order to combat the stress and demands of healthcare, it is important to consider the role of an individual provider's EI. Healthcare providers with a higher EI have a greater ability to identify and express their feelings to colleagues, leading to the creation of a greater social support system (Nooryan et al., 2012). EI can positively impact and create more harmonious relationships with colleagues, patients, and family members (Bidlan & Sihag, 2014). Healthcare

providers with a higher EI are able to reflect and respond more appropriately, communicate more effectively and promote a collaborative and professional atmosphere (Herkenhoff, 2010). With enhanced emphasis in the US on interprofessional collaboration and teamwork, these are considerations for best practice in the healthcare arena.

In conjunction with creating a healthy work environment, EI research has demonstrated an impact on the resilience of medical providers. Specifically, a higher EI level leads to lower levels of emotional exhaustion, enhanced feelings of personal accomplishment and can mitigate the effects of occupational stress (Bidlan & Sihag, 2014). EI has been significantly correlated to burnout and job satisfaction; medical providers with a high EI demonstrated less fatigue in their career and higher levels of job satisfaction (Weng et al., 2011). Although no direct correlations have been found between EI and patient satisfaction, medical professionals with a high patient satisfaction perceived less burnout in themselves (Weng et al., 2011). Intuitively this makes sense and supports the notion that EI can enhance longevity throughout a career and impact mental health of providers.

In addition, EI has ties to quality of care and compliance with care of medical providers. The EI of nurses that are involved directly in patient care has an impact on patient outcomes. Individual nurses EI, was significantly correlated with quality of care variables in an inpatient setting including infections and patient falls leading to injury (Adams & Iseler, 2014). Additionally, EI has a significant impact on nurses' compliance with care, for example in regard to pressure ulcer screening for patients, which can impact skin integrity, infection, and hospital complications (Adams & Iseler, 2014). Within the US there has been increasing emphasis on patient outcomes and quality of care and recent studies have demonstrated that EI can certainly influence both (Adams & Iseler, 2014; Medical Economics, 2015).

This leads to the question, how often is EI embedded in employee trainings within medical institutions? The rationale for including such trainings is well-documented and ties EI to excellence in patient care, positive results in the healthcare setting, and enhanced clinical decision making (Arunima & Ajeya, 2014). Training medical professionals on the constructs of EI can lead to a healthier team environment with colleagues and support personnel (Herkenhoff, 2010). Sustained emphasis and contributions to EI throughout medical professional's careers can lead to greater retention and satisfaction (Weng et al., 2011). Hospital organizations that are looking to enhance quality of care measures and compliance with care should consider implementing EI training (Adams & Iseler, 2014; Nooryan et al., 2012).

Conclusion

The field of physical therapy, in addition to other healthcare professions, must continue to grow and adapt to the needs of patients and clients in the United States. In order to do this, academicians must balance cognitive and non-cognitive aspects when assessing applicants to DPT programs and strive to educate and enhance student's EI and non-cognitive skills when they are in the program. Multiple studies specific to physical therapy education and student success have not demonstrated statistically significant correlation between EI and success in the clinic, classroom, in regard to passing the NPTE, or changing without intentional training throughout the duration of a DPT program (Helene Larin et al., 2009; Lewis, 2010, 2011). However, more recent research has demonstrated that it is possible to enhance non-cognitive skills, specifically EI of physical therapy students, which can lead to a positive impact on the patient (Patil et al., 2016). This aligns with studies in nursing, medical education and the healthcare profession.

Much effort has been put into determining what factors will make DPT students successful in the program and in passing the NPTE. Yet, if the ultimate pass rate of the NPTE is

over 98%, perhaps more emphasis should be put on what will make students successful following graduation and passing boards (Commission on Accreditation in Physical Therapy Education, 2018). Nearly 70% of what contributes to PPP in physical therapists are non-cognitive in nature (Cook et al., 2018). One of the primary non-cognitive pieces is EI.

EI has the ability to positive impact the work environment by allowing providers to have greater support systems, collaborate effectively with colleagues, communicate, and respond appropriately (Bidlan & Sihag, 2014; Herkenhoff, 2010; Nooryan et al., 2012). Well developed and higher levels of EI within individuals can enhance longevity and satisfaction with healthcare professionals; which is crucial to healthcare in the US (Weng et al., 2011).

Further research on EI in DPT education is recommended. Specifically, it is important to continue quantitative research on correlations between EI and student success. Results may be different from previous research, particularly given the two primary tools used in the study have been updated and modified in recent years (CPI and EQ-i 2.0®). Additionally, it will be foundational to understand the embedded components of DPT curriculum that are non-cognitive in nature, as this could have a positive impact on faculty, students, and the DPT program itself. Further recommendations for advancements and intentional efforts to enhance students' EI will be helpful from an educational leadership perspective.

Chapter 3: Methods

Introduction

As a physical therapist and health care provider, it is imperative to provide patient centered and compassionate care. The ability to provide such care is related to providers' emotional intelligence (EI), as professionals with high levels of EI have been shown to possess the ability to better appreciate the emotional needs of their patients and facilitate an effective therapeutic relationship (Bidlan & Sihag, 2014). Recent research has found a correlation between student physical therapist success in the clinic and EI (Patil et al., 2016). EI allows students to make better decisions and navigate difficult situations and patient presentations (Chapin, 2015).

As EI is a set of skills and competencies that healthcare students, practitioners and interprofessional teams should strive to improve (Gribble et al., 2017), more research is recommended to determine how this can be done. This study is important as EI has the potential to influence students' admission to a Doctor of Physical Therapy (DPT) program and their success within the program. Thus, a greater knowledge base regarding EI may assist academicians, educators and practitioners in their efforts to prepare physical therapy students. Educators in healthcare fields must educate, advise and mentor students on non-cognitive aspects of patient care in addition to the foundational cognitive skills required as a practitioner as, ultimately, this has the potential to influence their future career and ability to provide patients quality care (Cerit & Gordeles Besser, 2014; Cherry et al., 2014).

The purpose of this study was to determine whether the level of EI in DPT students in one program is significantly correlated to admissions scores and success throughout the program. In addition, this study explored the presence of non-cognitive aspects, specifically EI, within this

DPT program and examined how the construct/theory and its components were embedded in curriculum, faculty pedagogy and student advising. The intended audience of this work includes academicians in healthcare related fields, site coordinators of clinical education, clinical instructors, administrators, healthcare students and practitioners. This chapter provides an in-depth look at the methodology used in this study. Within this chapter, I will outline the research design, participants, positionality of the researcher, research ethics, instrumentation, protocols, procedures, data analyses and key assumptions.

Research Design

Non-cognitive skills are critical to teach within DPT curricula and are related to student's future success as practitioners (Cook et al., 2018). However, within a DPT program, emphasis is typically put on cognitive aspects such as intelligence, factual knowledge and ability to integrate multiple sources of data/information to assist with clinical decision-making. The two gaps that this research explored are first, whether there is a relationship between EI and student success in the program and second, what specifically the DPT program did to enhance the EI of students. Quantitative methods were used to explore correlations of students' EI with admission scores and success throughout the program. Qualitative methods provided support and more information on what occurred in the DPT program that fostered EI.

An additional key consideration of this study was that holistic admissions processes are being discussed, refined and enhanced by DPT programs across the country as there are recent recommendations for programs to enhance the non-cognitive criteria in their admissions processes and curricular aspects of their program (Cook, 2017; Cook et al., 2018; Roll et al., 2018b). Therefore, the study considered and analyzed program admission processes specific to one DPT program in the Midwest. Exploration of the relationship between EI and admissions

scores may contribute to the advancement of the DPT program in the areas of holistic admissions.

A quantitative methodology was foundational in this research and has been the main methodology of previous EI inquiry in physical therapy education (Gribble et al., 2017; Larin, H  l  ne M; Benson, Gerry; Martin, Lynn; Wessel, Jean; Williams, 2011; Helene Larin et al., 2009; Lewis, 2004, 2010, 2011; Patil et al., 2016). Associational research was used to explore the correlation of student's individual EI, as measured by the EQ-i 2.0  , and student success in the DPT program: admissions, curriculum (academic and clinical) and comprehensive practical examinations. Similar studies have been conducted in the past, however these studies utilized different tools for measuring EI, namely the MSCEITTM, and looked at specific components of clinical performance in relation to the National Physical Therapy Exam (NPTE) (Lewis, 2010, 2011). The key question for consideration was whether there is a correlation in levels of students' EI and their success from admissions through graduation, a holistic view on the possible impact of EI.

The quantitative variables included numerical scores of students' EI and the numerical scores obtained throughout their DPT journey. The dependent variables were students' success, as measured by cumulative grade point average, and scores from admission, clinical performance and two Objective Structured Clinical Examinations (OSCE). Total admission score included a combination of cognitive and non-cognitive assessments. Specific items included undergraduate grade point average (uGPA), graduate record examination (GRE) scores, interview score and scoring for letters of recommendation. Cumulative GPA, OSCE and Clinical Performance Instrument (CPI) scores from all four full-time clinical education experiences measured students' success during the DPT program. The independent variable was student EI as measured by the

EQ-i 2.0®. The EQ-i 2.0® was selected for use in a second year course by the DPT program as part of student's learning about self-reflection, reflective practice, and enhancing the therapeutic alliance. The EQ-i 2.0® is thought to most accurately represent the skills required by students and healthcare professionals in the workplace setting (Gribble et al., 2017). It also includes a broad breadth of abilities that includes personality and motivational traits (Gribble et al., 2017).

The qualitative component of research was chosen in order to provide a more holistic account of the DPT curriculum and utilize multiple pieces of information to make assertions about programmatic practices (Creswell & Poth, 2018). This approach was appropriate as it sought to understand one single system (DPT program) within a real life setting (Creswell & Poth, 2018). This included a practical goal of identifying embedded components of EI in the DPT curriculum and enhanced insight into how faculty weave it into their teaching and advising practices (Maxwell, 2013).

In general, there is very little qualitative work on EI particular to the physical therapy field, specifically education. This creates a gap, which this study sought to fill. Qualitative research is effective in studying relationships in learning and the educational environment (Dutton & Sellheim, 2014). Recent qualitative studies in physical therapy education have been useful for exploring certain curricular components and the integration of concepts within a DPT curricula (Cammarata, 2018; Dutton & Sellheim, 2014). For example, one study in DPT education explored students' perceptions and experiences with informal or hidden curricula using a phenomenological approach (Dutton & Sellheim, 2014). A second explored successful curricular integration of humanities through a case study approach (Cammarata, 2018).

In order to provide qualitative support, an intrinsic case study design was used to explore the context of an organization, integrate multiple forms of data and make overall assertions

(Creswell & Poth, 2018). Through inductive and deductive reasoning and coding, themes and assertions were generated on what is currently embedded in the program in terms of current practices, the DPT curriculum, admission processes, faculty pedagogy, mentoring and advising.

Traditionally, case studies begin with the identification of a specific case that will be analyzed and further defines how it can be studied through certain parameters (timeframe, people, techniques, etc.) (Creswell & Poth, 2018). A deductive coding structure based on the main constructs of the EQ-i 2.0® including self-perception, self-expression, interpersonal, decision-making, and stress management was used. Each area was explored as to whether it was taught or advised upon during each semester of the DPT curriculum. This was completed in a sequential fashion as courses occur throughout each semester of the curriculum. Spiraling activities were used for each semester of the DPT program in order to manage and organize the data, describe and classify data into themes, and develop and assess interpretations (Creswell & Poth, 2018). Inductive coding was used to generate any organic themes that surfaced.

Institutional Description

The University that the research took place at is situated within a major metropolitan area within the Midwest. It is a four-year, private institution that has approximately 5,000 students. This includes graduate programs, traditional undergraduate programs and non-traditional undergraduate programs. The school has continued to grow in the past decade, specifically doubling in size since 2009 (Concordia University, 2019). The DPT program was part of the institutional growth and must continually assure high quality academic standards, clinical excellence and development of well-rounded graduates.

The DPT program is a post-baccalaureate program that is eight semesters in length and is housed within the College of Health and Sciences. Students graduate from various undergraduate institutions and apply to the program, which admits 30 students annually. The curriculum includes traditional onsite academic coursework and clinical education experiences. Foundational coursework occurs during the first and second years of the program. This includes courses in systems pathophysiology, research methods, medical screening, lifespan, clinical skills and anatomy. Clinical practice coursework occurs throughout all three years of the program. This includes clinical seminar courses, integrated clinical experiences, clinical skills assessment courses and four full-time clinical education experiences. PT roles courses occur each year and include service learning, health promotions, administrative roles, biopsychosocial aspects and ethics. Lastly, practice specific courses occur in the four major PT systems: neuromuscular, musculoskeletal, cardiopulmonary, and integumentary. Students also have full courses in women's health and biopsychosocial aspects of patient care, which is a unique feature of the DPT program.

Participants

A sample of convenience was used for the quantitative portion of this study. Specifically, the DPT cohort of 27 students who were enrolled in the program at the time. Inclusion criteria for students was acceptance to the DPT program and successful completion of clinical and academic coursework throughout the program. In addition, the students must have completed the EQ-i 2.0® within their 2nd year coursework. Students who did not successfully complete the academic or clinical portions of the DPT program were excluded from quantitative data analysis. However, the admissions data of the three students that did not complete the program was

viewed and analyzed. This provided additional insight and comparison with students who met inclusion criteria and graduated with the 2019 cohort.

This particular population was selected, as it was the first cohort to utilize the EQ-i 2.0® within the curriculum. The program secured funding to subsidize the cost of the EQ-i 2.0® so that students did not pay a fee for taking the test. This funding was made possible by a university faculty development grant. Previous cohorts utilized a free online tool that provided immediate results with subsequent discussion/education on EI as a whole. However, this tool lacked the statistical validity, reliability and did not provide students with in depth results or instructors with coaching strategies.

The students in this study completed the Emotional Quotient Inventory, version 2.0 (EQ-i 2.0®), as an embedded part of their academic coursework during the second year of the DPT program. In addition, they completed two 8-week clinical education experiences during their second year in the DPT program, one 8-week clinical education experience during their third year in the program, and a final 12-week clinical education experience at the end of the program. As part of their clinical education experiences, they were assessed on 18 items of the CPI at both midterm and final. There was 100% participation rate in all areas of assessment, as the EQ-i 2.0® and CPI are measures in place and required for successful completion of the academic and clinical curriculum components of the DPT program.

The qualitative design included a review of admission processes, course syllabi and long answer surveys completed by faculty members. Obtaining information from multiple sources allowed for triangulation of information to develop a thorough understanding of practices. The faculty participants included all full-time/core faculty that directly worked with the 2019 student cohort. This sample includes a total of eight faculty members. Purposeful sampling was chosen

in order to allow a broad view of pedagogical and advising practices that faculty members used with students, while still remaining specific to the case being studied.

Positionality

Investigator positionality is a crucial component because of the influence it has on this research study. Specifically, my ontological perspective is based on a post positivist perspective in which reality exists, is able to be viewed somewhat objectively and can be shaped and/or explained by multiple truths. This leads to seeking objective information on the correlation between EI and student success and investigation of what is currently embedded within the DPT program that has the potential to influence this. My epistemological perspective leads me to believe that it is possible to examine EI and student success in the program. While measurement may not be perfect all numerical scores indicative of student success have structures, rubrics and guidelines for scoring in attempt to increase objectivity. My ultimate goal through this work as an educator and researcher is to better understand why some students are more successful in the clinical and academic settings of the program and determine if individual student's EI plays into this success. Ultimately, I want to best-prepare students to effectively work with patients and make a positive impact on their lives. In addition, my work will seek to determine how individual faculty incorporate EI constructs into pedagogical practices and student advising. This has implications for educational practices of individual faculty members, the DPT team and the program itself. I anticipate this work will be foundational in determining if there are programmatic opportunities for quality improvement and enhancement in admissions, teaching, advising and helping students to be more successful.

One of my key roles as the Director of Clinical Education (DCE) within the program is to understand and appreciate individual student needs and help facilitate student success throughout

the DPT journey and specifically within clinical education (American Physical Therapy Association, 2018b). This positionality and stake in student success and the DPT program itself has led to my work and curiosity concerning non-cognitive aspects of physical therapy, specifically EI. As a DCE, practicing physical therapist and researcher, I believe that non-cognitive aspects of patient care play a key role in the relationship, therapeutic alliance and trust that is established with patients. This alliance has an impact on patient outcomes, which is an essential consideration (Ferreira et al., 2013; Hall et al., 2010).

The participants of the study included students and colleagues that I work with on a regular basis. My relationship with these individuals potentially impacted results of the study. Specifically, the length of time faculty were in the program and individual relationship I have with each may have shaped responses to the long-answer survey in unforeseen ways. I experienced this research process positively due to established collegiality and common goals for student success. This was a key consideration when designing my study due to my strong passion toward enhancing students' success and supporting my colleagues with additional information, tools, and strategies for teaching. As an educational leader, it was imperative to consider improvements that I could individually make within my own teaching and advising as well as supporting colleagues and the program itself.

Research Ethics

Throughout the research process, I ensured high ethical standards. The primary and quantitative portion was done retrospectively in that student participants had completed the program prior to data collection and analysis. Therefore, their grades, clinical education experience placements and overall success were not impacted by the study. Faculty participants were provided with an overview of EI during participation, but were not required to change or

modify individual pedagogy and advising to include non-cognitive components of being a physical therapy practitioner besides what is already part of the curriculum and required by Commission on Accreditation in Physical Therapy Education (CAPTE). There were no ramifications if either faculty or students who declined or were unable to participate.

Consent to participate in the study occurred once the academic and clinical portions of the curriculum were complete for the cohort. The 2019 cohort finished their fourth clinical education experience in the end of April, 2019 and graduated in May of 2019. The study was presented to students just prior to graduation and written consent was obtained from all students. Consent from faculty was obtained following written and verbal explanation of the study in June of 2019.

There was minimal risk anticipated for participants of the research study. I minimized the possibility of students identifying each other in the results by reporting general demographics separate from correlational variables that deemed a student more or less successful. A risk to faculty members was that this study could expose gaps in the balance of cognitive and non-cognitive teaching and advising practices. I minimized this by removing all identifying faculty information and reported trends and themes by semester, not by individual class or faculty member. The final risk for both faculty and students was data security. Therefore, data that was collected was on a computer that was password protected, in a locked office, on a secure floor of the university. Once data was collected and analyzed, it will be stored electronically and accessed only as needed/necessary for the DPT program.

The benefits of this research study were aimed at the individual and organizational stakeholders previously identified. Individually, students had the ability to take the EQ-i 2.0® and receive individualized robust recommendations at no cost. Individual faculty benefited from

review and reflection of their specific courses and advising practices. Additionally, through results of the study, they were able to appreciate and learn about what colleagues were doing to enhance practices. The DPT program itself benefited from the overall results, which may futuristically help enhance admissions processes, standardize faculty-advising practices with non-cognitive aspects of PT and enhance knowledge of the components that contribute to student success. These benefits are also applicable and may be transferrable to the wider DPT field.

This study was meant to be collaborative and improve the overall preparation of DPT students in the future. Ultimately, DPT faculty strive to help facilitate student success throughout the program. By providing an overview of practice and possible correlations to success, I was able to establish foundational knowledge that seeks to assist with possible program enhancements.

Instrumentation and Protocols

Instrumentation utilized for the quantitative portion of the study included items that were embedded within the DPT program. Specifically, nothing new was introduced or utilized for purposes of the correlational work. Items included: cumulative admission scores (GRE, GPA, letters of recommendation, and interview scores), GPA while in the DPT program, CPI scores for clinical education experiences I-IV, and OSCE I and II scores. Specifics of each of the aforementioned items will be outlined in greater detail in subsequent paragraphs. The qualitative support of the study was an intrinsic case study in which multiple data forms were collected, analyzed and triangulated. This included artifact review of course syllabi and admissions materials along with long answer surveys completed by faculty members. Long answer surveys were selected as the best method of capturing faculty information, as it allowed faculty members to look back into syllabi and specific course materials when answering. The specific elements of

each instrument used for both the quantitative and qualitative portions are outlined in paragraphs below.

Admission data was collected and reviewed for each student in the study. This included Undergraduate GPA (uGPA), GRE scores, letters of recommendation and onsite interview. uGPA was recorded on a standard grading scale that ranged from 0 to 4.0. Second, the DPT program awarded points based on student's scoring percentile of the GRE in verbal, quantitative and analytical sections. The GRE is made up of questions that resemble the type of critical thinking and analysis required in graduate school and includes three main areas: verbal reasoning, quantitative reasoning, and analytical writing (Educational Testing Services, 2018a). According to the Educational Testing Services, it has demonstrated evidence of construct, content, predictive, consequential, and external validity (Educational Testing Services, 2018b). Third, the program requires two letters of recommendation that are scored on a 0-5 point ordinal scale. Finally, the program conducts on-site interviews with each applicant. This consists of a 30 minute exchange between two interviewers (core faculty, departmental faculty, clinical partners) and the applicant. Students are asked two standard questions and answers are scored based on a standard rubric that was developed by the program. Each interviewer scores the applicant and the cumulative is recorded and included in the total admission score. Once students have completed all requirements for admissions they are offered a spot, put on a waiting list, or denied a spot based on all the cumulative score of all components.

Once students are admitted to the DPT program, they go through an eight-semester curriculum including didactic and clinical coursework along with two OSCEs. The OSCEs are at the end of the first and second academic years of the program. They are intended to showcase what the student has learned throughout the academic year and assure that students are prepared

to enter the clinical setting. Scores included in the study were cumulative GPA, CPI and OSCE. Specifically cumulative GPA while in the program, on a 0 to 4.0 scale, was used to gauge academic success. The CPI is the standard tool utilized by most DPT programs in the US and measures student performance in the clinical setting (see Appendix A). The most recent update to the CPI was in 2006 and the tool demonstrates good internal consistency (Cronbach alpha = .99) (Roach et al., 2012). There are 18 performance criteria in the CPI and these are grouped categorically as professional practice or patient management (see Appendix A). Student performance is measured based on consistency, complexity, independence and quality and the student is rated as beginner, advanced beginner, intermediate, advanced intermediate, entry level, or beyond entry level (American Physical Therapy Association, 2019a). The CPI is completed electronically by students and their clinical instructors via a sliding scale with anchors at each level. The CPI 2.0 scale puts numerical values to the levels of the CPI and also quantifies the intervals between each level (see Appendix B). This scale is 21 points total and is reviewed by the DPT program's Director of Clinical Education (DCE) for all clinical education experiences in order to determine the overall success of the student in the clinic. DPT programs set standard expectations for where their students should score on each item during all clinical education experiences. According to the APTA, the validity and reliability of the instrument are preserved when it is used in accordance with the training and instructions in its original format (APTA, 2006).

Both students and clinical instructors complete the CPI twice during each clinical education experience - at midterm and final. The students and Clinical Instructors receive training on the CPI and must demonstrate competence in filling out the tool. This is done via an online training module and scenario-based multiple choice test (American Physical Therapy

Association, 2019a). The goal of this is to standardize and enhance the objectivity of ratings. Sample behaviors are provided for each item within the CPI and ratings are based on each student's caseload, complexity, consistency, efficiency, and quality (Roach et al., 2012). The items within the CPI are broken into categories: professional practice and patient management (American Physical Therapy Association, 2019a). The professional practice areas of the CPI are safety, professional behavior, accountability, communication, cultural competence, and professional development (American Physical Therapy Association, 2019a). The patient management areas of the CPI include clinical reasoning, screening, examination, evaluation, diagnosis & prognosis, plan of care, procedural interventions, educational interventions, documentation, outcomes assessment, financial resources, and supervision of personnel (American Physical Therapy Association, 2019a). Students are expected to progress in each level of the CPI as they move forward through each subsequent clinical education experience. For purposes of this study, final aggregate CPI scores were used for each clinical education experience. The range of scoring possible was 0-378 for each clinical education experience.

During the curriculum, students are educated on numerous non-cognitive skills such as self-awareness, reflective practice, professionalism and building a strong therapeutic alliance. Students take self-report assessments to enhance their own knowledge of tendencies, personality styles/types, and other factors that could apply to their success as future practitioners. This includes the Meyers Briggs Type Indicator (MBTI), Strengths Finders, and EI tests.

The tool selected by the program to measure EI is the EQ-i 2.0®. The EQ-i 2.0®, as developed by Bar-On, is a highly developed and researched tool that measures and assigns a score and overall level of EI. The EQ-i 2.0® is a Level B instrument which meets high standards in reliability, validity, norms, research, supporting material, and subject expertise (MHS

Assessments, 2018). This mixed model tool of EI minimizes overlap with cognitive intelligence and has been strongly tied to job performance (Joseph, D., Jin, J., Newman, D., O'Boyle, 2015). Additionally, it is believed to have many of the foundational skills that are required by both students and professionals working in a healthcare setting (Gribble et al., 2017). Internal consistency is high (Cronbach's alpha = .97) and test-retest reliability is $r = .92$ for a 2-4 week interval and $r = .81$ for an 8 week interval (MHS Assessments, n.d.).

The EQ-i 2.0® takes approximately 10-30 minutes to complete and provides students with individualized scoring and personalized information packet (MHS Assessments, 2018). Students answer questions on a 5 point Likert-scale ranging from never/rarely to always/almost always. Based on individual answers, the tool calculates 22 standard scores: 1 total score, 5 composite scores, 15 subscale scores and a well-being indicator (MHS Assessments, 2018). The five main categories that the EQi2.0 measures are self-perception, self-expression, interpersonal, decision making, and stress management (MHS Assessments, 2018). The EQ-i 2.0® provides a total numerical score that ranges between 70 and 130. Scores are categorized into ranges of low, mid and high; which is compared to the general population in the United States (US) (MHS Assessments, 2018). EI domain scores above 110 are high, between 90-110 are normal, and below 90 are low; which was specifically compared to normative data from over 4,000 adults in the United States within the recent years (MHS Assessments, n.d.). Normative comparisons intentionally include a diverse population including geography, age, race/ethnicity, and education.

The EQi2.0 was completed as part of a course in the summer semester of student's 2nd year in the DPT program. The administration timing was chosen, as it is conducted midway through the program. In accordance with previous studies specific to physical therapy students,

it was assumed that without specific education and advising, EI will not change substantially throughout the course of the DPT program (Helene Larin et al., 2009; Lewis, 2011). After EQ-i 2.0® administration, students participated in a lecture providing an overview of EI. It was purposeful to have the students complete the EQ-i 2.0® prior to participating in the lecture, to not bias or influence student responses. The students were later provided with their total EI score and all scores in the five main subcategories of the tool.

The last piece of information used for the quantitative portion of this study was the DPT students' numerical score on their comprehensive practical examinations or OSCEs. The OSCE is an evaluative tool that assesses health care professionals skills, abilities and competency in evaluating and providing patient care (Zayyan, 2011). Within the DPT program, it served to ensure essential skills, knowledge and standards required to participate in the clinical setting. At the end of the first and second year of the DPT program, students evaluate and provide treatment for a single patient, with a faculty member observing and scoring their performance. A standard rubric developed by the program assessed student performance in critical elements (communication, safety, respect), examination, interventions and documentation. Students received a numerical score for their performance and met with faculty members to discuss successes, challenges and opportunities.

The primary goal of the qualitative component of this study was to enhance understanding of what was embedded within the DPT program that taught, coached and advised students in the main categories or subcategories of EI. The components that were examined included the five domains of the EQ-i 2.0®: self-perception, self-expression, interpersonal, decision-making, and stress management (MHS Assessments, 2018). This included a review of

the admissions process, comprehensive review of all DPT courses, and long-answer surveys completed by core faculty members.

The document and record review was conducted sequentially by each semester. Specifically, a broad curricular overview occurred by viewing a document that the program used to track all required the Commission on Accreditation in Physical Therapy Education (CAPTE) criteria. Information that directly relates to any of the five EQ-i 2.0® domains was documented. In addition to looking at the entire curriculum by semester, I examined each course within the DPT program. This occurred through syllabi review and specific attention to course descriptions, objectives and assignments specific to the 2019 cohort. In attempt to preserve instructor/course anonymity, data was collected by specific course but will be reported by semester.

The secondary method used to capture faculty thoughts, perspectives and practices was through long-answer surveys completed by core DPT faculty. The long-answer survey format allowed faculty to review, reflect and thoroughly answer questions on the survey. This data provided a rich foundation and assessment on how faculty members incorporate components of the EI (as defined by the EQ-i 2.0®) into their teaching and advising practices with students. In order to ensure integrity of the survey, five standard questions were pilot tested with a current DPT faculty member and revised as necessary to more accurately capture the essence and intent of the study (see Appendix C for full survey).

1. How would you describe the relative importance of cultivating the following emotional intelligence skills/traits for DPT students: self-perception, self-expression, interpersonal, decision-making, and stress management?

2. Of the courses you teach, which of them have components of EI embedded in activities, objectives, practices or assessments?
3. Of these courses, please describe any specific activities, objectives, practices, or assessments in which you incorporate EI components or sub-components.
4. How do you currently advise students? How, if at all, do you discuss the components of EI in your advising meetings?
5. Moving beyond coursework and advising, which, if any, additional embedded activities in the program help foster students EI?

The questions were specific to faculty members' knowledge, teaching, advising, and other activities within the curriculum that related to EI and its constructs: self-perception, self-expression, interpersonal, decision-making, and stress management. These constructs and all sub-constructs were provided to faculty members prior to and during the survey. In order to assure accuracy of syllabi and long-answer surveys, member checking was used in which the faculty member was able to review and/or modify answers and provide further clarification as necessary. Faculty quotes obtained on the long-answer survey will be de-identified and illustrated anonymously in Chapter 4.

Procedures and Analysis

The quantitative portion of this study is a retrospective analysis of the relationships of multiple items from admission through completion of the DPT program. It is non-experimental in nature with the primary purpose of determining correlation between measured non-cognitive aspects of DPT students (EI) to measures of success throughout the program.

In order to determine this relationship, the data was tested for normality and then put into a correlation matrix. Normality testing was conducted using the Shapiro-Wilk test, as this was

an underlying assumption in using parametric statistics. The data was not normal and therefore statistical calculations using Spearman's correlation was used. Additional interpretations considered included the strength of the coefficient, variance shared by the two variables, statistical significance of the coefficient and the confidence interval around the coefficient. Statistics were run through SPSS version 23.0 (IBM, NY). The alpha level was set at .05.

For the qualitative portion of this study, spiraling activities of data analysis were used (Creswell & Poth, 2018). First, all artifacts, course syllabi, and curricular components were organized by course and semester. Faculty surveys were distributed, filled out and returned. I read all data and highlighted aspects specific to EI and the constructs defined by the EQ-i 2.0®. Memoing occurred throughout data review and included short phrases, ideas, or key concepts gleaned from the artifacts (Creswell & Poth, 2018). Following completion of all faculty long-answer surveys and artifact review, I used both inductive and deductive coding to categorize the information. Deductive coding, specific to the sub-categories of the EQ-i 2.0® was used to as a framework in addition to examining where themes occurred chronologically throughout the eight-semester program. Coding helped to make sense of the information collected from surveys and artifacts (Creswell & Poth, 2018). Coding also assisted with preservation of faculty and course anonymity. Lastly, through inductive coding, I assessed and developed interpretations specific themes that occurred more organically. Trustworthiness and quality was enhanced through triangulation of results and member checking of DPT faculty. Specifically, triangulation between contents of course syllabi and faculty surveys was completed. Additionally, member checking after syllabi review and survey completion was conducted if there was any additional clarification or information needed.

Assumptions, Limitations, Delimitations and Generalizability

This study has three key assumptions. First, students had successfully completed the admissions and DPT program phases. This means that they met all pre-requisite and admissions criteria including a minimum of a 3.0 GPA and had no red-flags on the interview. Additionally, once in the program, students successively completed all academic and clinical phases. Students that were unable to complete either phase went through specific programmatic remediation or were dismissed from the program. Second, it was assumed that students' EI does not change throughout the course of a DPT program without specific training or advising strategies (Helene Larin et al., 2009; Lewis, 2011). This enables the tool to be administered at any point throughout the curriculum without significantly changing results. Lastly, it was assumed that faculty members recalled and were able to accurately produce artifacts that were specific to the DPT cohort being studied. This had the potential to impact accuracy, as the program is eight total semesters, spanning a total of approximately 33 months. In addition, faculty schedules, teaching load, and other programmatic or personal factors may have contributed to the faculty's overall engagement in the process.

This leads to inherent limitations of the study. First, the study is specific to one DPT cohort in the Midwest. Results are not generalizable to all DPT students across the country, as the sample population is small and not necessarily representative in terms of gender, ethnicity, age, etc. Additionally, it is unknown if there are regional differences with DPT students' EI. Second, the study did not include students that were not admitted to the program or students that did not successfully complete the program with the cohort being studied. This means that there could potentially be additional information or connections that will not be explored. Third, there are not established measures of validity and reliability of this specific program's admission criteria, namely the interview questions/scoring and scoring of letters of recommendation.

However, while there are inherent limitations, the goals and outcomes of the study may be transferrable to the intended audience. The first goal is to determine the relationship between EI and successful admission and completion of a DPT program. The second is to appreciate what is embedded in that specific program to enhance student's non-cognitive skills, specifically, EI. This foundational work may allow for further development within the DPT program including admissions, teaching, advising and preparing students to be successful clinicians. The qualitative support provided will likely allow for transferability to the intended audience, as results of this study have the potential to allow readers to make connections between certain elements of this study to their own practice and experience.

Conclusion

In summary, this research quantitatively explored the relationship between EI and DPT student success throughout the DPT journey. This has traditionally been the method used in DPT education to explore EI (Larin, Hélène M; Benson, Gerry; Martin, Lynn; Wessel, Jean; Williams, 2011; Helene Larin et al., 2009; Lewis, 2004, 2010, 2011). Qualitative analysis focused on what was embedded within the DPT program that may have served to enhance and foster EI within students. Research has shown that the ability to assess EI of students during academic years, and intentional work to enhance it, could have a profound positive effect on the healthcare field (Chapin, 2015). Health professionals that have a higher EI are more empathetic, collaborate well with colleagues and interact effectively with patients (Bidlan & Sihag, 2014).

Chapter 4: Findings

Introduction

The purpose of this study was twofold and sought to fill gaps in Doctor of Physical Therapy (DPT) education literature. First, to determine, through quantitative methodology, if any statistically significant positive correlations exist between emotional intelligence (EI) and student success throughout a DPT program. Second, to understand through qualitative support, the trends, themes and faculty perceptions regarding what is embedded within the specific DPT program that seeks to enhance students' EI. Five main research questions guided the study and through quantitative methodologies and qualitative support, those questions were answered. This chapter will describe the program, student and faculty participants of the study and present the results. Parallels and divergent findings between qualitative and quantitative data will be highlighted.

The significance of the study, as stated in Chapter 1, is that there has been no previously published work exploring how DPT programs embed components of EI within their curriculum. The results of this study, therefore, will identify and generate baseline themes that further spark opportunities for growth and development of stakeholders. Knowing that EI can be taught and enhanced through training and EI contributes to long-term success in healthcare makes the results fascinating and opportunistic (Cook, 2017; Gorgas et al., 2015; Patil et al., 2016).

At the outset of this study, I anticipated seeing statistically significant correlations between EI and student success throughout the DPT program. However, this chapter will reveal that the quantitative data did not support my hypothesis. This is likely due to aforementioned limitations, overall statistical power and low variance of quantitative data. Yet, the information

uncovered is surprising and valuable. The qualitative data revealed that there are EI constructs embedded throughout all eight semesters of the program. While this is variable based on the faculty member and course itself, I believe there is an ability to be more intentional about teaching and advising certain areas of EI.

DPT Student Description

The study consisted of 27 DPT students. The 2019 cohort size started at 30 students and 27 matriculated and graduated. The students entered the DPT program in the fall of 2016 and finished in the summer of 2019. Data was analyzed retrospectively and therefore only students that completed all elements of the study were included. All students passed comprehensive written and practical examinations at the end of their first and second years of the program, took the EQ-i 2.0® during their second year of the program, maintained a GPA greater than 3.0 throughout the duration of the program and successfully completed four full-time clinical education experiences. There were 12 male students and 15 female students.

DPT Faculty Description

All eight DPT core faculty consented to participation in the study. Adjunct faculty were not included in the long-answer survey, however course syllabi that they taught were reviewed in order to assure consideration of all courses within the curriculum. Core faculty member's longevity at the institution ranged from 1 year to 6 years and total experience in academia ranged from 1 year to over 15 years. Academic rank varied from Instructor to Professor and all faculty were on a tenure track within the institution.

Qualitative data collection was specific to the 2019 student cohort, therefore faculty were asked to report practices that occurred with that exact group of students. Adequate time was

provided for faculty members to send all course syllabi, review courses and advising meeting notes, and complete the long-answer survey. Due to evolution with faculty pedagogy, advising and course instruction, it was noted that practices that occurred with the 2019 cohort, dating as far back as 2016, may not actually be what is occurring at present. Additionally, faculty memory may not be completely accurate as to what occurred three years prior.

Students' Level of EI

Research Question 1 asked, “What is the level of EI of individual DPT students in one academic program cohort, as measured by the EQ-i 2.0®?” As previously noted, the EQ-i 2.0® measured 5 composite scores and 15 subscale scores. The five main categories measured include self-perception, self-expression, interpersonal, decision making and stress management. According to MHS (n.d.), it is a tool that has good stability, consistency and test-retest reliability on multiple time intervals (MHS Assessments, n.d.). The total EQ-i 2.0® score and five composite scores were analyzed.

The total EI mean score for the study sample of DPT students was 104.74 with a standard deviation of 9.47. This falls on the higher end of the mid-level or normal range in respect to the US population (MHS Assessments, 2018). Nine students or 33% of the cohort scored in the high range for total EI and only one student or 3.7% of the cohort scored in the low range for total EI. This demonstrates that this specific cohort of the DPT program was at or above the average or mid-level of EI as measured by the EQ-i 2.0®. This is an encouraging finding, as DPT students and their future as physical therapists, will require them to interact and work with patients, colleagues and healthcare professionals on a daily basis. Having a mid-level or high EI will likely have a positive impact on the therapeutic alliance and patient outcomes (Ferreira et al.,

2013; Hall et al., 2010; Patil et al., 2016). Table 1 presents descriptive statistics including mean, median and standard deviation of the student’s EI scores.

Table 1.

Descriptive Statistics of Students’ EI

	Mean	Median	Std. Deviation
Total EQ-i 2.0®	104.74	104	9.47
Self-Perception	108.81	98	9.40
Self-Expression	95.52	98	13.04
Interpersonal	107.30	106	10.11
Decision Making	103.11	101	12.76
Stress Management	103.93	103	9.40

Total scores of the EQ-i 2.0® range from 70-130. Scores are classified as low, mid and high, which is compared to the general population in the US (MHS Assessments, 2018). Specifically, scores below 90 are considered low, between 90-110 normal/mid-level and high over 110 (MHS Assessments, 2018). Table 2 demonstrates how many students scored in each composite category and total EQ-i 2.0®. In general, students scored lowest in the self-expression and highest in the self-perception composites. The majority of total scores and all composite scores were in the mid-normal range with the exception of self-perception in which an equal number of students scored in the mid and high ranges. Overall, most students scored at the norm or higher when compared to the general US population (MHS Assessments, n.d.) in total and all composites.

Table 2.

Total Number of Students Scoring in EQ-i 2.0® Total and Composites.

	Low	Mid/Normal	High
Total EQ-i 2.0®	1	17	9
Self-Perception	1	13	13
Self-Expression	9	15	3
Interpersonal	0	18	9
Decision Making	4	14	9
Stress Management	4	12	11

Program Success Measures

Success throughout the DPT program was measured in several ways, all of which are reported in Table 3 and these components contribute to answering research questions 2-4. Success markers utilized include admission scores, DPT program cumulative GPA, Objective Structured Clinical Examination I and II scores and numerical scores for all four full-time clinical experiences. Table 3 includes descriptive statistics of mean, median, range and standard deviation.

Table 3.

Success Marker Scores Throughout DPT Program

Success Markers	Mean	Median	Range	Std. Deviation
Admission	77.44	77.75	10.72	3.08
GPA	3.49	3.5	.89	.19
OSCE I	135.37	138	39	8.02
OSCE II	106.81	108	12	3.61
Clinical Experience I	253.89	250	193	44.32
Clinical Experience II	297.19	301	89	23.40
Clinical Experience III	315.41	312	72	18.36
Clinical Experience IV	331.81	323	72	23.16

Cumulative admission scores included all points awarded from the students' undergraduate GPA, GRE scores, letters of recommendation and onsite interview. The average score for the 2019 cohort was 77.44. Students were accepted into the DPT program based on their cumulative admissions score, however following admission the scores had no further impact on students. One consideration to note is that admissions scores included a combination of cognitive (GPA, GRE) and non-cognitive (interview) measures. This has potential to impact correlation results with EI, which is a non-cognitive trait. Interestingly enough, the three students who did not complete the program and graduate with the 2019 cohort had cumulative admission scores above the mean. This demonstrates possible considerations for weighting of cognitive and non-cognitive measures within the admissions process.

Cumulative GPA and OSCE scores measured academic success throughout the DPT program. GPA was a 0 to 4.0 scale for all eight semesters of the program. Students were required to maintain a cumulative GPA at or above 3.0. OSCE I was scored between 0-150 total and included five total sections: critical elements, patient interview/history, examination and evaluation, interventions and plan of care (including documentation). OSCE II was scored between 0-56 points and included three total sections: critical elements, intervention, and plan of care (including documentation). The DPT program uses the OSCE in combination with a comprehensive written examination to assure that students are prepared to go to their clinical experiences and the next year in the program. Students must score 80% or higher on the written and OSCE cumulatively to move forward. All students in the 2019 cohort met this expectation.

Student's Clinical Performance Instrument (CPI) scores in all four full-time clinical experiences measured clinical success throughout the DPT program. This was monitored, recorded and reported by the DCE. The program uses the APTA endorsed 21-point scale where

1 is beginner and 21 is beyond entry level. Scores are reported and analyzed for all 18 items of the CPI, however for reporting purposes in this study the cumulative score for all 18 items was used. This creates a possible range of 18-378 for all experiences. Based on information presented in Table 3, it is evident to see the student progress from Clinical Experience I to Clinical Experience IV was extraordinary. The range in score for Clinical Experience I were highly variable, however this has been typical due to the variety of practice settings, student abilities, CI experience and overall ability to ramp up with caseload. Student must achieve entry-level scores in all elements of the CPI by the end of their final clinical, which would be a score of 306. As demonstrated, students were well above that level. However, it should be noted that this threshold can in essence create a ceiling effect, potentially impacting results.

Correlational Between Student Success and EI

Correlational statistics were used to determine the relationship between student's EI, as measured by the EQ-i 2.0®, and their success in the DPT program. Non-parametric statistics, the Spearman's rho, were used after determining data was not normal. Correlation was significant at the .05 level which is signified by the asterisk signs below (see Table 4).

Table 4.

Spearman's rho Correlation Coefficient (N = 27)

	EQi	Adm.	GPA	CE I	CE II	CE III	CE IV	OSCE I	OSCE II
EQi	1								
Adm.	-.063	1							
GPA	-.238	.205	1						
CE I	-.043	.086	.019	1					
CE II	-.210	-.062	.136	-.117	1				
CE III	.079	.000	.128	.001	.147	1			
CE IV	-.392*	-.121	-.091	.191	-.263	.183	1		
OSCE I	-.203	-.145	.189	.215	.147	-.090	.132	1	
OSCE II	-.256	.157	.070	.289	.411*	.002	-.139	.363	1

Research Question 2 asked, “What is the relationship between DPT students’ EI and cumulative admission scores?” Based on the 2019 student cohort studied, there was no statistically significant relationship between EI and admission scores. In fact, there was a negative correlation ($r = -.063$), with a significance of .756. This demonstrates and refutes the relationship. It should be noted that the total admission scores include a combination of primarily cognitive (GPA, GRE) and combined cognitive and non-cognitive interview items, which therefore may explain this relationship. It would be interesting in future studies to consider the relationship between interview or non-cognitive admissions scores and students’ EI.

Research Question 3 asked, “What is the relationship between DPT students’ EI and success in the clinical setting as measured by final CPI scores of four full-time clinical education

experiences?” There was no statistically significant positive relationship between students’ EI and cumulative CPI scores for Clinical Experiences I-IV, rejecting my hypothesis. However, there was a significant negative correlation ($r = -.392, p = .043$) between Clinical Experience IV and students’ EI. This suggests that the lower a student’s individual EI, the higher their performance and scores on the CPI on their final full-time clinical. This is somewhat alarming and unexpected. It certainly rejects my original hypothesis that there would be a statistically significant positive correlation between students’ clinical performance and EI. Based on my experience in clinical education and working with many students in both the clinic and academic setting, I would have anticipated this to be different. Previous research studies have used specific components of the CPI; noting that certain items such as educational interventions were positively correlated with EI (Lewis, 2004), thus using specific items of the CPI could be a potential consideration moving forward. Additionally, this result alludes to the ceiling effect of the CPI, in that students were expected to demonstrate entry-level performance upon completion of their final clinical and they all did. This leads to less variability with performance metrics.

Research Question 4 asked, “What is the relationship between DPT students’ EI and success in the academic setting as measured by DPT cumulative grade point average and OSCE scores?” I hypothesized that there would be no statistically significant correlation between GPA and students’ EI. The results of the study confirmed my hypothesis. This is similar to research completed in the past, as GPA and EI are measuring different things, cognitive and non-cognitive abilities respectively (Lewis, 2004). However, based on previous research (Cherry et al., 2014), I did expect to see correlations with EI and OSCE. Yet, there was no statistically significant correlation in this study between students’ OSCE score and their EI.

Although there was no statistically significant correlation between EI and Admission scores, GPA, or OSCE scores, there was a statistically significant correlation between OSCE II and student performance in their second clinical experience. While this is not related to the primary research questions, it is an interesting finding as students participate in and take the OSCE II just prior to leaving on Clinical Experience II. The program uses a comprehensive written exam and the OSCE to assure students are prepared to go to the clinic. This finding reflects that relationship and confirms usefulness of testing. It is also important to note that GPA was not correlated with EI or any other success markers in the program, which again is not related to the primary research questions, but leads to consideration of the overall weight that is put on GPA as a measure of student success and the relationship it has with student outcomes.

EI Components Embedded in the DPT Academic and Clinical Curriculum

In order to answer the final research question and provide qualitative support regarding EI components embedded throughout the curriculum, a curricular review, course review and faculty long-answer surveys were conducted. Through review of all course syllabi within the curriculum, it was apparent that students were exposed to EI constructs all three years of the program. Table 5 outlines where specifically EI components were embedded. The area mentioned the most within course syllabi was stress management, specifically the flexibility construct. This was because a professional behavior expectation of the program is that students ‘arrive punctually dressed appropriately for classroom and clinical activities and demonstrate flexibility and timely completion of tasks’; therefore it was in every syllabus. Additionally, students had a lecture on EI within the second year of the DPT program and therefore all constructs of stress management including flexibility, stress tolerance and optimism were discussed. Lastly, students had specific course exposure to stress management and were

expected to ‘Evaluate the role of the physical therapist in health promotion including, but not limited to, exercise, stress reduction, and nutrition counseling’.

Three other EI areas and constructs were embedded throughout all three years of the DPT program: self-perception, interpersonal and decision-making. These areas were covered throughout the curriculum by course objectives, course descriptions, lectures and assignments. There was a range from 9-12 total student exposures to the content, as listed in course syllabi. It should be noted that all of these were less prevalent in the third year of the DPT program, likely because it is two semesters in length, compared to the first two years of the program, which are three semesters.

The lowest area of EI specifically embedded within the curriculum was self-expression. This is interesting, considering it is also the lowest area of EI for more students in the cohort than any other area. Besides the actual lecture and in-class activities students received on EI, there were only a few other course objectives that covered self-expression. It is possible that the DPT program should consider reviewing proportions with exposure to EI, which will be discussed in Chapter 5.

Table 5.

EI Components Embedded in Academic Coursework by Year in the Program

	Year 1	Year 2	Year 3
Self-Perception	3	6	2
Self-Expression	2	5	0
Interpersonal	4	6	2
Decision Making	3	3	3
Stress Management	18	22	8
Total EI per year	30	42	15

In addition to student exposure of EI through coursework, each student receives additional training, assessment and individual reflection on professional behaviors throughout the curriculum. This is completed through a professional behavior tool designed to promote professional socialization (Dorsey, Kelly, Luetkemeyer, & Lojovich, 2018). Students complete self-assessments during their first and second years of the program, while faculty complete student assessments for professional performance for every course. The main EI constructs covered by the professional behavior tool include interpersonal, decision-making and stress management. The tool requires students and faculty to use a Likert scale rating and provide written justification of the rating. The tool is aimed at allowing students to acculturate into the profession through consistent feedback on their professional behaviors. Should students need additional support in professional behaviors, they work directly with the course instructor, their advisor and/or Assistant Program Director.

An additional area of the curriculum where EI is certainly apparent is clinical education. Following review of course syllabi and the Clinical Performance Instrument (CPI) it was noted that students received additional education, training and assessment within the areas of self-perception, interpersonal and decision making (Table 6). Self-perception, through student specific goal setting, was discussed during each clinical experience with the clinical instructor. Interpersonal skills were coached and assessed through students' professional behaviors, which is an item of the CPI. Decision-making was covered in every clinical experience as students participated in discussion boards that facilitated written conversation on clinical decision making and best practices. Additionally, an item of the CPI was clinical decision making, therefore students received additional feedback and coaching from their clinical instructors on this area.

Table 6.

EI Components Embedded in Clinical Experiences (CE) by Year in the Program

	CE 1	CE 2	CE 3	CE 4
Self-Perception	3	3	3	3
Self-Expression	0	0	0	0
Interpersonal	1	1	1	1
Decision Making	2	2	2	2
Stress Management	0	0	0	0
Total EI CE	6	6	6	6

EI Components Embedded in Faculty Pedagogy

Perhaps one of the most interesting components of this study was the qualitative support provided by understanding, analyzing and finding themes in the way faculty members’ view, teach and advise certain components of EI. In order to preserve faculty anonymity, all direct quotes from the long-answer survey are subsequently reported in quotations without identification (name, date, time). Overall, all faculty appreciate and know that there is both an art and science of successful physical therapy practice. This is actually a part of the DPT program’s mission statement. EI aligns with the ‘art’ or non-cognitive aspects, as evidenced in the following quote:

“In the context of establishing a healthy and productive therapeutic alliance with our patients/clients, all constructs of EI are important. Thus, they are vitally important to cultivate in our students from the very beginning of the program. For so many, it is about bringing awareness of strengths, opportunities for growth, non-verbal expressions, reactions to stress, etc.”

Educating students on the constructs of EI has the potential to impact self-awareness, empathy and the therapeutic alliance (Patil et al., 2016). The therapeutic alliance is crucial to patient success, as patients who have a stronger alliance with their PT have better outcomes (Fuentes et al., 2014). In addition, the therapeutic alliance predicts treatment effectiveness and patients pain and function (Ferreira et al., 2013). DPT faculty members echoed this consistently, as demonstrated in the following:

“Over the course of my career (38 years and counting), the therapists who possess emotional intelligence seem to make stronger connections with their patients and see greater outcomes sooner than other therapists. I see EI as the ‘art’ of our profession... You can be really smart, technical therapist and not get as much out of your patient as someone who is less technically savvy but stronger in communication and empathy.”

Faculty members also linked EI to effective communication, professionalism, ethical decision making, handling conflict and burnout. They noted that due to the constant interaction with patients, family members and the interprofessional team, it is imperative to teach, advise and create opportunities for students to enhance their EI. However, the question of what is actually embedded within programmatic practices remains.

According to review of syllabi and curriculum, EI is embedded throughout all semesters of the program. It is most prevalent within the second year, which has many courses that are application based and require clinical decision-making, hands-on skills and abilities to adapt to unexpected or unanticipated situations. Faculty noted many course activities that facilitate EI through peer communication, group activities, skills checks, practical examinations and working

with real patients. However, these activities were not necessarily constructed or created intentionally to shape, challenge or facilitate students EI, as a faculty member described:

“In none of the courses that I teach have I consciously designed activities with the objective of growing EI in my students. However, upon reflecting on my course objectives and activities, I do realize that many of the activities meet the goals of improving student functioning and EI. All of my courses have some element of fostering the growth of students’ EI.”

Upon further exploration and triangulation of specific activities, objectives and assignments between faculty surveys and syllabi, it was noted that all five EI constructs are touched upon in the curriculum. Each will be subsequently outlined, however it should be noted that very few were intentionally designed to facilitate EI. Decision-making and interpersonal were deliberately put into activities, assignments and assessments more than any of the other three constructs.

Interpersonal areas of EI are embedded throughout the curriculum through activities such as direct patient care, in-class discussions, case presentations, journal reflections, group work, interprofessional collaboration, research, peer mentoring and simulation. In many of the activities and assignments, students are required to build relationships, appreciate the feelings others; which is certainly within the interpersonal construct. Additionally, interpersonal constructs are intentionally embedded within specific courses that align with PT roles in the curriculum, as demonstrated in this response:

“Students experience and write reflections on intercultural speakers throughout the first year of the DPT program. They also participate in a ‘Day in the Life’

experience in which they spend a half day on urban streets learning about homelessness.”

These planned activities assist to facilitate and enhance students’ interpersonal abilities, which is a crucial component of patient care.

Likewise, decision-making is an essential component of physical therapy practice, as practitioners are required to think critically and make choices to optimize patient care and outcomes. DPT students participate in case studies, practical examinations, group discussions, simulation with peers, simulation with manikins, and work with community partners on health promotion projects. These activities serve to facilitate problem solving, objectivity and think through decisions thoroughly before making them and faculty provide strategies and information on how to best do this as demonstrated by the following quote:

“In this course, each week, students are given mock-patient case scenarios in which they have to act both as a patient and then a therapist for patients in a hospital setting. The simulation requires students to make decisions about examination, evaluation, progression of mobility and interventions. It requires on-the-spot decision making and requires therapists to alter how they develop their therapeutic alliance with patients.”

Decision-making was consistently embedded throughout the curriculum and faculty designed coursework to enhance students’ abilities in this area.

Self-perception was the least commonly commented on by faculty members. However, those faculty members that did specifically articulate areas that it is included within their courses seemed to be more intentional with embedding them as to enhance students self-regard, self-

actualization and emotional self-awareness. Self-perception is most prominently introduced in the first semester of the program and is woven into numerous courses through student self-assessments and reflections. Students are encouraged to discuss the results of their self-assessments with their faculty advisor and clinical instructors in order to optimize learning, which is echoed by faculty:

“Students take part in many self-assessments throughout the first and second year of the DPT program. This includes communication styles, Strengths Finders, Meyers Briggs Type Indicator (MBTI), Emotional Intelligence and ‘In the Grip’ behaviors based on MBTI. These assessments are embedded with intent to have students better understand their individual strengths and opportunities. Additionally students are encouraged to use the information to enhance group dynamics, capstone work and clinical performance.”

It was encouraging to see that students were exposed to self-perception early in the curriculum. This allowed time to reflect and use their knowledge to enhance individual and group performance throughout the remainder of the program.

Self-expression was commonly cited by faculty members as being embedded within their courses through hands-on skills work, patient education, presentations, mock interviews, advocacy, group assignments and working with real patients. These types of activities inherently challenge students to express feelings (verbally and non-verbally), communicate in a socially acceptable way and be self-directed and motivated towards learning. All of which align with the self-expression construct and areas of emotional expression, assertiveness and independence. However, it is interesting that while these are embedded expectations there was little to no evidence demonstrating that students had actually been coached, trained and/or educated on

appropriate and effective self-expression. This is a future area of opportunity, considering self-expression was the lowest category for more students than any other in the cohort studied. One faculty member describes it as follows:

“Students are expected to demonstrate ‘proper’ emotional and self-expressive interactions with both student (peer), faculty examiner and patient... Students are placed in the position of ‘challenging’ self-expression, awareness and empathy via discussion, peer to peer education, faculty testing and clinical experience.”

Moving forward, this may be an area of opportunity for the program and faculty members.

Likewise, stress management including flexibility, optimism, positive attitude and being receptive of feedback are seen as crucial in the curriculum. The program did implement class representatives that serve as conduits for information between faculty and students. However, students must be individually responsible for their individual stress management. In fact, each course in the program has professional behavior objectives that speaks to the stress management construct. The objective reads:

“Arrive punctually dressed appropriately for classroom and clinical activities and demonstrate flexibility and timely completion of tasks. Demonstrate active listening skills, neutral body language, and a positive attitude when receiving constructive feedback on performance.”

In addition to the course objective, faculty members also noted that stress management is crucially important; however do not specifically state how students are taught to manage the stress they experience within coursework or the clinic. Students are exposed to stressful situations and must therefore manage pressure during practical examinations, problem based

learning activities, standardized testing assignments, simulation labs and while creating business plans. However, it may be a future area of opportunity to enhance this portion of the curriculum.

EI Components Embedded in Student Advising

Faculty members advise between 4-6 students from each DPT cohort. It is standard practice within the program that advising meetings occur each semester and more frequently if necessary. There is not standard content or topics that faculty members advise students on, therefore results of the long-answer survey were highly variable. Overall, it was apparent that faculty members advise students in all EI constructs. The areas that were outlined and highlighted most frequently by faculty members included self-perception, self-expression and stress management. This is an exciting finding, as self-expression was least apparent and cited in faculty coursework, activities and pedagogy. This serves as a balance for students, should be highlighted, and potentially enhanced moving forward. One faculty member explains it by stating that:

“Addressing EI can be very difficult an advising situation due to the sometimes fragile ego of the student. Walking the line between giving the student valuable feedback related to performance in areas categorized under EI while not destroying the students underlying confidence can be a difficult line to two or element to balance.”

Faculty must walk a fine line of transparency and student confidence.

Self-perception was an area that was regarded as fragile and challenging by multiple faculty members. Faculty members noted discussions with students about managing emotions, perception of expression, acceptance of feedback and appropriate verbal and non-verbal

communication. There were students in the cohort studied that had difficulty with this specific area either in the academic or clinical setting. When this occurred, the student worked directly with their advisor on self-reflection activities and had regular meetings to assure progress.

Self-expression and managing emotions is something that was viewed as crucial to the faculty members of the DPT program. Students must understand how others perceive their expressions and adapt to challenging situations in the classroom and the clinic settings. This was apparent in both the classroom and advising settings:

“Students are developing the ability to talk with patients in a professional but patient friendly manner in PT school. This skill is new to most students. Pointing out areas of opportunity during advisement meetings is essential to the overall development and progress of the student.”

It is noted that self-expression, in patient friendly terms, is something that must be cultivated throughout the duration of a DPT program. Often times, students get accustomed to technical terms and descriptions unique to healthcare and PT practice; yet must shift and taper medical jargon when talking with patients.

Stress management is the final area of EI that many faculty members discussed with their advisees. Faculty noted utilization of stress management tools and discussion on strategies to manage the inherent pressures of being in a graduate program. Frequently cited areas of coaching included sleep routines, study habits (quality over quantity), nutrition, exercise, relaxation techniques and school/life balance. The pressures of a DPT program ebb and flow based on demands that students have: exams, skills-checks, practical exams, projects and clinical

experiences. Therefore, the more faculty members can do to advise and best prepare students to handle those pressures proactively, the better.

In addition to student advising and the curriculum, the DPT program has additional tools and resources to enhance students' EI. This includes simulation reflection, OSCE completion and reflection, chapel services, volunteer opportunities, professional behaviors tracking and feedback, faculty members modeling EI constructs, a Christian service Cornerstone, and peer mentoring. Though none of the aforementioned activities was specifically designed to enhance students' EI, all provide opportunity to develop EI through the experience itself.

Summary of EI Embedded within the DPT Program

The final research question asked, "What is embedded within the DPT program curriculum, faculty pedagogy, and student advising practices that assesses, nurtures, and addresses the EI of DPT students?" My hypothesis was that EI constructs would be embedded throughout the curriculum and results confirmed that. Based on faculty-provided information and review of academic and clinical components of the program, the curriculum includes consistent exposure to EI constructs. Three specific constructs: interpersonal, stress management and decision-making were covered most frequently through coursework. Self-expression was covered the least throughout the curriculum but faculty members reported advising students on this construct. Student advising most frequently centered around stress management, self-perception and self-expression. This demonstrated a balance of constructs throughout all eight semesters.

Summary

The results of the quantitative portion of the study were somewhat disappointing. There was no statistically significant positive relationship between students' EI and their success throughout the DPT program. Based on my experience as a clinical instructor and academician, I anticipated a different outcome. However, this outcome does align with some of the previous work on EI in and PT students (Larin, H  l  ne M; Benson, Gerry; Martin, Lynn; Wessel, Jean; Williams, 2011; Lewis, 2004, 2010). Focus for future work should certainly consider increasing the overall sample size to include multiple cohorts and possibly collaborate with outside institutions that use (or would consider using) the EQ-i 2.0   to conduct EI research.

Additionally, it may be beneficial to move to consideration of the impact EI on the therapeutic alliance that students develop with their patients. This alliance has the ability to impact patient outcomes and therefore contribute to student success as future practitioners (Cook et al., 2018; Ferreira et al., 2013; Hall et al., 2010).

Additional considerations and opportunities for program development were identified from the qualitative support component of the study. It is obvious through faculty responses and pedagogy that EI is intentionally embedded into coursework and activities but also occurs unintentionally. The unintentional occurrences of EI cropped up in course objectives and expectations of student performance. Students are expected to be flexible, manage stress and self-reflect; however, there is not specific or consistent exposure and instruction on how to do those things. This is an area of opportunity moving forward so that students are made aware of expectations and provided with tools to manage them. Additionally, students' scored lowest in

the self-expression construct of the EQ-i 2.0®. This trend should be tracked in subsequent cohorts and if consistent, the DPT program may consider implementation of tools and strategies for students to enhance this area. These opportunities should be considered and reinforced with emphasis on the fact that EI can be taught and enhanced through training and EI contributes to long-term success in healthcare (Cook, 2017; Gorgas et al., 2015). Through intentional instruction and course activities, consistent exposure throughout all years of the program and standard advising topics/strategies there is potential to enhance students' EI in the DPT program.

Chapter 5: Discussion

Introduction

Research related to EI and physical therapy education and practice has grown significantly in the past twenty years. This study adds to that body of literature and expands upon areas not previously explored. This study had two main purposes. First, it sought to determine whether statistically significant correlations existed between student levels of EI and their success throughout a Doctor of Physical Therapy (DPT) program. Second, the study examined the embedded components of EI in the DPT program curriculum, faculty pedagogy and student advising. The study was formed knowing EI is a crucial non-cognitive component of physical therapy practice (Cook et al., 2018; Roll et al., 2018a). Over half of the constructs that comprise EI align with generic abilities/professional behaviors of physical therapy practice (May et al., 1995). Therefore, exploration of both the relationship of EI and student success, along with DPT program practices regarding EI were warranted.

This chapter will provide a conclusion and comprehensive discussion of the findings. First, it will review the research questions and outcomes; further comparing these outcomes to previous literature. Second, it will discuss results and limitations. Next, the contributions to the Educational Leadership and Doctor of Physical Therapy fields will be deliberated. The implications including contributions to literature gaps and future directions of the study will conclude the chapter.

Five total research questions shaped this study. The first question sought to determine the level of EI of DPT students in one cohort. This was compared and contrasted with norms in the US. The second, third and four research questions examined the correlation between

students' EI and their individual success throughout a DPT program. Admission scores, clinical performance, Objective Structured Clinical Examination (OSCE) scores and GPA were used to measure student success. The final research question explored how, why, when and where EI constructs were embedded within the DPT program itself. This question and its findings lend to contributions to the educational leadership and DPT fields and provides future implications/opportunities for the DPT program itself.

Discussion of Results

Results of the quantitative portion of this study were somewhat disappointing, yet helpful in looking at EI as it relates to student success in a DPT program. Research Question 1 examined the levels of EI of individual students in one DPT cohort, as measured by the EQ-i 2.0®. My hypothesis regarding overall levels of students' EI was supported as results demonstrated that 63% and 33.3% had mid and high levels of EI compared to the US population, respectively. This aligns with previous work demonstrating PT students have mid to high levels of EI (Boyce, 2001; Larin, Hélène M; Benson, Gerry; Martin, Lynn; Wessel, Jean; Williams, 2011; Lewis, 2004, 2011). This is an encouraging finding, as EI of healthcare providers has the ability to impact clinical performance, therapeutic alliance, interprofessional collaboration, longevity in the field and burnout (Bidlan & Sihag, 2014; Codier & Codier, 2017). Additionally, since EI can enhance the therapeutic alliance, there is probable impact on positive patient outcomes (Ferreira et al., 2013; Hall et al., 2010).

Research questions 2-4 sought to determine the correlation between DPT students' EI and their success throughout the DPT program. Success metrics included admission scores, clinical performance scores, OSCE I-II scores and cumulative grade point average. My hypothesis was that there would be statistically significant positive correlations between admissions scores,

clinical performance, and OSCE scores. However, this was refuted, as there were no statistically significant positive correlations between EI and any of the program success metrics. This parallels previous research conducted in which EI was not significantly related to total scores on the Clinical Performance Instrument (CPI), GPA and GRE (Lewis, 2010). I anticipated that perhaps with the use of the EQ-i 2.0® as compared to previous studies, there may be a different outcome. Although statistically significant correlations with the main research questions and metrics did not exist in this specific study, it is possible that connections do nevertheless exist. This will be further discussed in parallel with limitations of the study. While not related to the primary research questions, a relationship was found between OSCE II and student performance in Clinical Experience II. This interesting finding supports the initiative to perform comprehensive practical examinations to assure student preparedness for clinical practice within the DPT program.

Another interesting finding, not related to the primary research questions, was that the three students that did not complete the DPT program with the 2019 cohort had admission scores higher than the cohort average. This reinforces the potential for future programmatic enhancements to the admissions process. Cognitive aspects such as GRE and GPA are more heavily weighted as compared to non-cognitive aspects. However, this may not necessarily capture the best candidates to be successful in the program.

The final research question provided qualitative support regarding EI constructs embedded throughout the curriculum, pedagogy and advising. I hypothesized that EI constructs would be consistently embedded throughout the program, which was supported. Faculty members universally attested to the importance of cultivating EI in students throughout the

curriculum. It was apparent that students in the DPT program were exposed to EI constructs throughout all three years of the program. Didactically, courses that required decision making, hands-on skills and working with cases or patients sought to enhance the interpersonal, self-expression and decision making constructs. Stress management was most frequently covered and cited in course syllabi as an expectation of students, however it is unclear (besides through faculty advising) how else students are taught to manage stress effectively. I anticipate this is through exposure to stressful situations and scenarios including, but not limited to, skills checks, practical exams, written exams and patient interactions. Whereas, self-expression was the least frequently covered and/or cited in artifacts. This is interesting considering self-expression was the lowest area for most of the students in the cohort studied. Students were exposed to the self-perception, interpersonal and decision-making constructs most frequently in their clinical education experiences.

Overall, it was apparent that there were intentional and unintentional efforts throughout all semesters of the DPT program aimed at enhancing students' EI. Greater emphasis on consistency and intentionality of embedded EI constructs is recommended, along with providing students with tools to manage and excel in EI constructs. This aligns with recent studies who provided recommendations to enhance non-cognitive instruction, advising, and practice within DPT education, (Cook et al., 2018; Roll et al., 2018a). Additionally, it is recommended that there be greater emphasis on EI and non-cognitive traits during students' clinical education experiences. In alignment with previous research, it is recommended the DPT include education for not only students, but clinical instructors on the constructs/theory of EI (Gribble et al., 2017). This would assure consistency in both academic and clinical phases of the program.

Limitations

The first limitation of the study is that it included one student cohort within one DPT program in the US. This led to a fixed sample size of 27 students and 8 core faculty. This is a relatively low number for quantitative statistical analyses. Additionally, because it is geographically limited to one state in the Midwest, results are not generalizable to other programs. It is unknown whether there are regional differences in the US regarding DPT students' EI. However, results could be transferrable and individually applied by readers.

A second limitation was that DPT students in the cohort studied had a moderate or high level of EI, making it difficult to assert correlations with success metrics. There was only one student in the cohort with a low level of EI, meaning over 96% of students were at or above standard scores of the US population. Like previous EI and DPT research, the homogeneity of the data lends to a ceiling effect that nearly all students had a normal-high EI score

A third limitation created a similar ceiling effect in respect to clinical performance as measured by the CPI and OSCE scores. All students improved their performance in the clinic setting throughout the 36 weeks of full-time clinical education experience. The DPT program sets specific requirements for student performance during each clinical experience. Students are expected to be at, or above, entry level by the end of their final clinical experience. While students in the cohort met this expectation, the downstream effect is that it may have impacted and created uniformity of clinical performance scores. This adds to the body of literature reinforcing ceiling effects with CPI scores on latter clinical experiences (Larin, H el ene M; Benson, Gerry; Martin, Lynn; Wessel, Jean; Williams, 2011; Lewis, 2010, 2011). Similarly, the OSCE demonstrated little variability in student scores making it difficult to assert statistically

significant correlations with EI. The DPT program sets a threshold of 80% cumulatively on OSCE and comprehensive written examination in order for students to progress to the clinical setting. All students met this expectation and while some variability in scores was evident, it was negligible.

A final limitation of the study was that faculty members were asked to recall and discuss practices that were specific to the cohort being studied. This truly retrospective aspect of the design was intentional in attempt to capture, quantify and qualify how components of EI were embedded specifically with the 2019 student cohort. There is inherent difficulty in accurately recalling specific pedagogy and advising practices that were used up to three years prior. Additionally, it is quite possible that practices used in previous years have been revised, enhanced and streamlined by individual faculty members.

Contributions to Educational Leadership

My role as an educator, Director of Clinical Education (DCE) and member of the DPT Leadership Team, means I have a strong stake in student success, programmatic excellence and continuous improvement. Relatedly, this study has contributed to three main areas within the educational leadership realm. These include, specifically, graduate admissions processes, curriculum enhancement and the importance of student success as practicing physical therapists.

First, the traditional admissions process aims to identify and accept students that would be successful throughout the DPT program and pass the National Physical Therapy Exam (NPTE). However, passing the NPTE does not guarantee DPT students will be successful in their career. I would challenge that we should look beyond the NPTE and consider factors in admissions processes that will lead to success as a future clinician. If 69% of the traits that

impact positive professional performance (PPP) are non-cognitive in nature and can be shaped throughout the course of a DPT program (Cook et al., 2018), shouldn't some of those traits be considered in admissions processes and beyond? Additionally, the all-time pass rate of the NPTE is greater than 98%, meaning most students will ultimately pass the boards (Federation of State Boards of Physical Therapy, 2018). Perhaps enhancing non-cognitive factors in admissions processes, throughout the curriculum and in the NPTE itself may have a greater impact on professional success, therapeutic alliance and patient outcomes. This holistic admissions approach should be considered, implemented and refined at an institutional level throughout the country.

The second area of impact of this study is in curricular review and enhancement. The program studied has professional behavior expectations of students that are included in all syllabi. This demonstrates commitment to non-cognitive behaviors such as communication, flexibility, punctuality. One thing that stood out was that students were expected to demonstrate abilities in the stress management realm of EI; however did not have any formal education, training or information provided formally to them. While some individual faculty members discussed stress management with students during advising meetings, it was inconsistent and variable. These expectations of social behavior speaks to a hidden curriculum, which I do not believe is the intent. Students are provided with expectations of professional behavior during their first semester, however this does not cover all aspects of EI, nor does it provide strategies to enhance certain areas. I would encourage greater transparency with professional expectations and implementation of a formal training program that provides students with tools to meet them.

Success in physical therapy practice requires a combination of cognitive and non-cognitive abilities. Recent studies demonstrate that non-cognitive traits can be shaped

throughout academic training (Cook et al., 2018). While there was some evidence of EI intentionally occurring in advising and pedagogy, I would recommend the program consider more consistency with non-cognitive training and education for students throughout the program. Additionally, student self-expression was the lowest area of the cohort studied. This trend should be tracked in subsequent cohorts and if consistent, the DPT program may consider implementation of tools and strategies for students to enhance this area.

Contributions to the Doctor of Physical Therapy Program

This study provides contributions to the DPT program itself and students within the program. First, it asserts and verifies that using the EQ-i 2.0® is an appropriate and valuable tool as it is aligned with many of the generic abilities/professional behaviors expected within PT profession (May et al., 1995). Students in the program had the unique opportunity to participate in taking the EQ-i 2.0® during the second year of the program. They received individualized feedback on their results and were encouraged to discuss their results with their faculty advisor and clinical instructors. Moving forward, more emphasis and direction should be put on intentional use of individualized student results in both the clinic and academic setting. This includes scheduled discussion with faculty advisors and clinical instructors. This contribution provides beneficial student growth and development throughout the course of the DPT program.

A recent study specific to physical therapy practice found that EI can be enhanced through specific education and training (Patil et al., 2016). As discussed previously, intentionally embedding curricular threads, advising and pedagogy could optimize the ‘art’ of physical therapy and assure students are provided with the tools to model behavior and traits that elevate success. This should be emphasized in both the academic and clinical setting. The DPT program may consider providing information to Clinical Instructors (CIs) on the importance of

non-cognitive traits (specifically EI), the therapeutic alliance and impact on patient outcomes. Therapeutic alliance has a positive impact on patient outcomes, is a predictor of performance and can impact health, work and educational outcomes (Ferreira et al., 2013; Hall et al., 2010; Spielberger, 2004; Van Rooy & Viswesvaran, 2004). Therefore, if there is consistency in academic and clinical components of the curriculum, it is possible to impact students' future success as practitioners along with patient outcomes.

Programmatic enhancements may be beneficial and provide significant contributions for faculty and students alike. It is recommend moving forward that the DPT program balance the delivery of all EI constructs and determine what other non-cognitive factors should be taught and emphasized in the curriculum. It was obvious that some constructs were covered by instructors and the curriculum, expected of students and advised more than others. Striving to better balance all constructs would likely be beneficial for students. Additionally, the DPT program should consider the consistency of exposure of EI and other non-cognitive aspects throughout the curriculum. While students are receiving exposure throughout all semesters of the program, strategically considering delivery may be beneficial.

EI can be taught and enhanced through training and EI contributes to long-term success in healthcare (Cook, 2017; Gorgas et al., 2015). In addition to embedding EI and non-cognitive training in the curriculum, it is recommended that the DPT program consider strategies to optimize individual student advising. There appeared to be significant variety in frequency of meetings, topics of discussion and faculty strategies with advising. If the program could identify what topics are important to discuss and advise on at a high level based on student needs, trends, and expectations, there may be greater consistency for all students. This intentionality may have

a positive downstream effect on students' future as physical therapy practitioners along with the healthcare profession itself. There is potential to positively impact healthcare practices, as providers with a higher level of EI demonstrate enhanced reflection, communication and collaboration (Herkenhoff, 2010). This is crucial as the ongoing changes in the US healthcare system require increased focus on interprofessional collaboration, teamwork, and value for patients (Salmond & Echevarria, 2017).

Implications

Through this study, it was evident that the DPT students within the cohort demonstrated mid-high levels of EI at baseline. This adds to the body of literature regarding levels of EI in DPT students and healthcare professions. This is an important consideration, as research within the healthcare field has demonstrated that providers with high levels of EI have greater social skills, academic success, and can connect more easily with patients (Gorgas et al., 2015). Likewise, EI impacts clinical performance, relationships with patients and colleagues, interprofessional practice, occupational stress and burnout (Bidlan & Sihag, 2014; Codier & Codier, 2017).

Training healthcare providers and physical therapy students on EI constructs may lead to long term benefits as a practitioner and positively impact patient care abilities (Gorgas et al., 2015). This study contributes significantly to the literature and sets a foundation in determining how DPT programs embed non-cognitive aspects, specifically EI, within the academic and clinical curriculum. Non-cognitive traits, including EI are crucial and must be shaped throughout a DPT program in both the clinical and academic setting. Concerted efforts should be made to assure this occurs from admissions through graduation.

Knowing the positive impact that non-cognitive traits have on professional performance, patient outcomes and career trajectory leads to the consideration of how applicants are screened, interviewed and admitted to DPT programs. DPT programs must consider student applicants holistically during the admissions process, which includes consideration of both cognitive and non-cognitive traits and abilities. It is recommended that DPT programs consider the importance of both and look beyond the traditional cognitive success metrics such as undergraduate GPA and GRE scores. Consideration of interviews and non-cognitive questionnaires of candidates may serve as an important tool moving forward.

Lastly, and perhaps most importantly EI impacts therapeutic alliance, contributes to PPP and patient outcomes (Cook et al., 2018; Ferreira et al., 2013; Hall et al., 2010). Therefore, the more DPT programs can do to shape students' EI; the greater impact students may have on transforming society. This is in alignment with the APTA's Vision "Transforming society by optimizing movement to improve the human experience"(American Physical Therapy Association, 2018d).

Future Directions of the Study

This study may be foundational for further exploration of the relationships between DPT student EI, therapeutic alliance, patient outcomes and DPT programmatic practices. I hold that this should start with consideration of EI and non-cognitive factors in DPT admissions. This focus has gained traction over the past several years in the profession and continued exploration of best practices is warranted (Roll et al., 2018a). Once students are admitted to DPT programs, it is important to have consistent and intentional training to enhance non-cognitive traits. Further research on how DPT programs incorporate this across the US would be interesting and perhaps facilitate a 'best practices' summary. A primary consideration in implementation and

enhancement of non-cognitive curricular components is based on recent shifts in exploring EI and student success to the impact EI has on the therapeutic alliance that students develop with their patients. This alliance has the ability to impact patient outcomes and therefore contribute to student success as future practitioners (Cook et al., 2018; Ferreira et al., 2013; Hall et al., 2010). Examination of the relationship between EI and therapeutic alliance in student physical therapists would be beneficial. This aligns with previous studies and recommendations within the profession (Hall et al., 2010).

Another interesting study specific to this institution would be to examine the relationship between EI and student professional behaviors. The DPT program tracks and measures student professional behaviors in every course within the curriculum. Therefore, it may provide insight in the possible alignment of these two tools. EI is not tracked over time throughout the program. However, if it were to be tracked, it would be interesting to examine whether there were parallels with growth between EI and professional behaviors.

Students within this specific DPT program are exposed to professional behaviors, Strengths Finders, MBTI and EI early within the curriculum. Future work could explore relationships between all four tools. Additionally, it would be interesting to see how students and faculty use results of these self-report measures in assisting with personal and professional development throughout the program.

Additional studies could also consider looking at the percentage of questions on the NPTE that require non-cognitive abilities. Since it is known that success within the PT profession requires a combination of cognitive and non-cognitive abilities, it would be expected that the NPTE test both. However, there is little-to-no research that has examined this.

Lastly, future research should focus on EI and the impact on career success and longevity. Healthcare professionals are highly susceptible to occupational stress, compassion fatigue and burnout (Bidlan & Sihag, 2014). Therefore, a longitudinal study on correlations between EI, professional success and burnout could be beneficial. This has been studied in other professions and could likely be helpful in PT.

Conclusion

EI and non-cognitive traits are a crucial component to physical therapy practice. Previous research demonstrates that non-cognitive traits are essential to embed within DPT programs and EI can be shaped through targeted education, pedagogy and advising. This study is the first to examine how EI is embedded into a DPT curriculum. While the study did not find statistically significant positive correlations between EI and student success, it did provide a lens to determine opportunities for programmatic enhancements. Results indicate that further research in the area of DPT student EI, therapeutic alliance and professional success is warranted.

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Appendix A

Clinical Performance Instrument Areas (American Physical Therapy Association, 2019a)

Professional Practice Performance Criteria	
1	Safety
2	Professional Behavior
3	Accountability
4	Communication
5	Cultural Competence
6	Professional Development

Patient Management Performance Criteria	
7	Clinical Reasoning
8	Screening
9	Examination
10	Evaluation
11	Diagnosis
12	Prognosis
13	Procedural Interventions
14	Educational Interventions
15	Documentation
16	Outcomes Assessment
17	Financial Resources

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Appendix B

Clinical Performance Instrument 21-point scale (American Physical Therapy Association, 2019b)

CPI 2.0 (21 point scale)	Description
1	Beginner
2-4	Beginner Interval
5	Advanced Beginner
6-8	Advanced Beginner Interval
9	Intermediate
10-12	Intermediate Interval
13	Advanced Intermediate
14-16	Advanced Intermediate Interval
17	Entry Level
18-20	Entry Level Interval
21	Beyond Entry Level

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Appendix C

Qualitative Interview Protocol

DPT Faculty Long Answer Survey

Emotional Intelligence Curricular Advising Practices

Date & Time	
Faculty Member Name	
Courses Taught Year I	
Courses Taught Year II	
Courses Taught Year III	

Background – success within the field of physical therapy requires robust cognitive and non-cognitive abilities and traits. Recent studies have determined that nearly 70% of positive professional performance in physical therapists is related to non-cognitive skills such as: motivation, integrity, interpersonal interaction, personality, temperament, attitude, motivation, time management, grit, emotional intelligence (EI), social intelligence, and self-regulation. The medical field has also defined and highlighted the importance of these traits for applications to their programs: service orientation, social skills, cultural competence, teamwork, oral communication, ethical responsibility, reliability/dependability, resilience, and capacity for improvement

Purpose – the purpose of this long answer survey is to gauge what is currently happening with individual faculty practices regarding EI in the CSP DPT program.

Instructions – please complete the five question, long-answer survey below. It is anticipated that you may need to look back through previous course syllabi and/or lectures to answer questions 2 and 3. Return your completed survey to me no later than 7/19/2019. Your participation is much appreciated!

1. How would you describe the relative importance of cultivating the following emotional intelligence skills/traits for DPT students: self-perception, self-expression, interpersonal, decision-making, and stress management.
2. Of the courses you teach, which of them have components of EI embedded in activities, objectives, practices or assessments?
3. Of these courses, please describe any specific activities, objectives, practices, or assessments in which you incorporate the following EI components or sub-components:
 - a. Self-perception (self-regard, self-actualization, emotional self-awareness)
 - b. Self-expression (emotional expression, assertiveness, independence)
 - c. Interpersonal (interpersonal relationships, empathy, social responsibility)
 - d. Decision making (problem solving, reality testing, impulse control)
 - e. Stress management (flexibility, stress tolerance, optimism)
4. How do you currently advise students? How, if at all, do you discuss the following components of EI in your advising meetings?
 - a. Self-perception (self-regard, self-actualization, emotional self-awareness)
 - b. Self-expression (emotional expression, assertiveness, independence)
 - c. Interpersonal (interpersonal relationships, empathy, social responsibility)

- d. Decision making (problem solving, reality testing, impulse control)
 - e. Stress management (flexibility, stress tolerance, optimism)
5. Moving beyond coursework and advising, which, if any, additional embedded activities in the program help foster students EI?

